November 17, 2016

Mr. Kevin Gregory
Director, Consultant Management Bureau
NYS Dept. of Transportation
POD # 33
50 Wolf Road
Albany, NY 12232

Attention: Mr. Tony Palumbo

Re: PIN HMFR.00.302
Stewart International Airport - New York Air National Guard Base (Sites: 336088 and 336089)
Newburgh, Orange County, New York
August-October 2016 PFCs Sampling

Dear Mr. Palumbo:

The following letter report summarizes the field investigative procedures and results of the additional sampling conducted between August and October 2016 by HDR Engineering, Inc. (HDR) on behalf of New York State at the above-referenced site (Figure 1). Sampling was conducted in accordance with HDR's original scope of work, approved by the New York State Department of Transportation (NYSDOT) on June 15, 2016, which included soil and groundwater sampling associated with the installation of new monitoring wells, as well as the request for additional sampling added later to include additional catch basin samples, a downhole geophysical survey, monitoring well elevation survey, and synoptic groundwater levels / site-wide groundwater contours as identified by the New York State Department of Environmental Conservation (NYSDEC).

Field Investigative Procedures

Prior to commencement of sampling, field instrumentation was calibrated according to the respective manufacturer's standards, and instrumentation and re-useable equipment were decontaminated using perfluorinated chemical (PFC)-free water and alconox. A decontamination pad was constructed within a designated staging area on the commercial side of the Airport and also on the Air National Guard Base (ANG) side for decontamination of the drill rig and equipment. As recommended by the NYSDEC, the Town of Newburgh was contacted as a water source for drilling and decontamination of equipment. The water was accessed via a hydrant provided for by

the Town Engineer and the Water Supply Department and was stored in high density polyethylene (HDPE) tanks newly purchased for the project. Sampling equipment was decontaminated in five gallon pails utilizing bottled distilled water. All decontamination water was transferred to drums and staged in the staging area until disposal. Sampling was conducted in accordance with the PFCs Sampling Checklist, which was attached to our original scope of work. NYSDEC was on-site providing oversight of all field investigation activities conducted with the exception of the work on the commercial side of the Airport where the number of people permitted on site was limited due to the availability of escorts.

Utilities were cleared prior to intrusive sampling activity. Airport Operations cleared utilities surrounding the locations on the commercial side. A subcontracted geophysical firm, Naeva Geophysics, Inc., cleared utilities surrounding the locations on the ANG side. In addition, Dig Safely/811 was notified. Access and escorts were arranged through and provided by Airport Operations and the ANG for HDR and our subcontractors during the respective, allowable working hours. Their respective representatives were on-site during all field investigation activities.

Soil samples were collected from four borings (SB-PFC-MW1 through SB-PFC-MW4) shown on Figure 2. Each boring was installed by a subcontracted driller, Parratt Wolff, Inc. of East Syracuse, NY, using a combination of downhole drilling techniques to accommodate the challenging drilling conditions. At each location, silty, clayey glacial till with rounded gravel that decreased with depth was encountered throughout the length of the boring. The material was extremely tight and dry with few intervals that contained observable moisture. Each location was first hand-cleared using an air knife. Shallow soil samples were collected from 0.5 ft using a hand auger. Hollow stem augers and/or air rotary was then used to drill down to depth and split spoon samplers were used to collect samples from the subsurface intervals, i.e., between 2-4 ft below ground surface (bgs) and at the groundwater interface, where applicable as described further in the following paragraph. At two of the locations an additional soil sample was collected approximately midway between the two subsurface samples. Samples were transferred to clean, HDPE, laboratory-supplied containers for analysis of PFCs. Soil cuttings were drummed and staged in the respective staging areas on site for later off-site disposal.

At SB-PFC-MW1, drilling was completed to a depth of approximately 57 ft; the clay content had increased and neither the apparent groundwater interface nor bedrock had been encountered; therefore, after consultation with NYSDEC it was decided that this location could be grouted and a monitoring well was not installed. At SB-PFC-MW2 and SB-PFC-MW4, the borings were completed to total depths of 36 ft and 50 ft bgs, respectively, where weathered shale bedrock was encountered. These locations were

completed as wells that were screened over the bottom 10 ft in the weathered shale bedrock as there had been no sign of groundwater in the overburden material. For this reason, groundwater interface soil samples were not collected from these two locations. At SB-PFC-MW3, drilling conditions varied slightly at this location than what had been observed at the other three locations. At approximately 15 ft bgs, the driller noted soft, wet conditions. Based on information received from the ANG onsite representative, a water main break had occurred adjacent to this location and was repaired/replaced within the last year. It was believed that wet conditions at such a shallow depth were due to this break and were not representative of the natural hydrogeology. An additional soil sample was collected from this location within the zone observed to be impacted by the water main. As drilling progressed, materials encountered had dried out considerably, and the apparent groundwater interface was reached at approximately 45 ft bgs. When drilling had reached the approximate target depth for the well screen in the vicinity of the water table, the drillers encountered significant difficulties with running sands that ultimately resulted in uncertainty regarding the actual depth to the water table and the ability to set the well at a specific depth. Drilling was terminated at a depth of approximately 55 ft and the well was completed to a total depth of approximately 53.5 ft after losing approximately 1.5 ft of the borehole due to collapse / running sands. When the open hole was left overnight (temporarily cased with augers), groundwater was observed at approximately 38 ft; therefore, the well was screened from 33.5 to 53.5 ft at this location to straddle the water table as requested by NYSDEC.

Each well was completed with two inch stainless steel riser and screen (slot size 10). The filter pack consisted of sand #0 from the bottom of the screen to two feet above the screen, followed by approximately 1.5 ft of choker sand #00, and then sealed with Portland cement to within one ft of the ground surface. Note that the bags the bentonite pellets come in contain PFCs for water resistance; therefore, bentonite was not used to construct the wells. Each well was then completed with a flush mount manhole cover within a concrete pad.

Once the wells were allowed to set for a minimum of 24 hours, each well was developed using pump and surge techniques. Due to insufficient yield, each well was pumped and surged, drawn down, and allowed to recover. This was repeated several times until acceptable low turbidity levels were achieved. Development water was drummed and staged at the respective staging areas for later off-site disposal.

Groundwater samples were collected from each of the three newly installed groundwater monitoring wells (PFC-MW2 through PFC-MW4) shown on Figure 3. Each well was purged using low-flow sampling techniques with a Waterra inertial pump with a stainless steel foot valve and stainless steel-weighted HDPE tubing.

Groundwater samples were collected directly from the HDPE tubing upon stabilization of the field parameters (temperature, turbidity, dissolved oxygen (DO), pH, specific conductivity, total dissolved solids (TDS), and oxidation-reduction potential (ORP)). Samples were transferred to clean, HDPE, laboratory-supplied containers for analysis of PFCs.

Surface water samples were collected from nine additional catch basins identified by NYSDEC on the ANG property as shown on Figure 4:

- CB2K: this location is identified on the base map as CB2 but as there are multiple locations with this same ID, a "K" was added to indicate it is within "Kilo";
- CB9A;
- W6
- D27;
- D15-A: there were two grates in the area of D15, requested by NYSDEC; however, neither of them provided access to the surface water flow here so a location immediately downstream along the same line was chosen for sampling;
- STM-UP: STM could not be sampled as requested due to insufficient flow and uncertainty regarding its location, so a location upstream of STM was sampled instead;
- CB;
- C17; and
- D8.

Surface water samples were collected from each of the catch basins by lifting the grate or cover, where possible, and using decontaminated stainless steel dip buckets, lowered down to the water surface/collection point with nylon rope, or a peristaltic pump with HDPE and silicon tubing. Where it was not possible to use a dip bucket, due to access or very low flow conditions, a peristaltic pump was used with HDPE and silicon tubing. Surface water samples were transferred to clean, HDPE, laboratory-supplied containers for analysis of PFCs. As recommended by NYSDEC the samples were collected during low flow/dry weather conditions, to avoid potential dilution of samples. Field parameters of temperature, turbidity, DO, pH, specific conductivity, TDS, and ORP were collected during sampling at each location.

Investigation-derived waste (IDW) samples were collected from the drums staged on the commercial side and ANG side of the Airport. One soil and one aqueous sample was collected from each side in laboratory-supplied containers for characterization purposes for the following parameters: target compound list (TCL) volatile organic

compounds (VOA), TCL base neutral semivolatile organic compounds (BNA), toxicity characteristic leaching procedure (TCLP) metals and mercury, reactivitiy (cyanide and sulfide), ignitability, and corrosivity. Upon receipt of the data, a subcontracted waste handling firm, Metro Environmental Contracting Corp., prepared the waste profiles for review and acceptance by the disposal facility, generated the waste manifests, and arranged for transportation of the drums. HDR oversaw the pickup of the drums, which were disposed of at Republic Env. Systems, Inc., in Hatfield, PA as non-hazardous non-DOT regulated material. Copies of the fully signed waste manifests were not available at the time this report was prepared; they will be forwarded to NYSDOT under separate cover once received.

Soil boring and monitoring well completion and development logs are provided in Attachment A along with the field notes on the overall investigation, groundwater and surface water sampling.

QA/QC One soil field duplicate was collected from SB-PFC-MW1 (56 ft), one groundwater field duplicate was collected from monitoring well PFC-MW-2, and one surface water duplicate was collected from catch basin D8. The duplicate samples were collected at the same time and for the same parameters as the respective parent samples. One matrix spike/matrix spike duplicate (MS/MSD) sample was collected for each matrix (i.e., one for soil [SB-PFC-MW4 3 ft], one for groundwater [PFC-MW3] and one for surface water [CB]). Equipment rinseate (field) blanks and decontamination water blanks were collected once per day of sampling. The field blanks were performed by rinsing the sampling equipment with laboratory supplied deionized water then transferring the rinse water to the laboratory-supplied sample containers. Water used for decontamination was direct-filled into the laboratory-supplied containers for the decontamination water blanks. Although requested, trip blanks were not collected. As directed by the laboratory, analysis of trip blanks requires an extraction and is therefore not applicable to the project.

Downhole geophysics was conducted on the six existing “TE” wells and the two newly installed wells (PFC-MW3 and PFC-MW4) on the ANG property. As boring and well completion information was not available for the existing wells, electromagnetic (EM) induction conductivity and/or natural gamma logging was employed to determine the nature of the geology in the areas of these wells. The two newly installed wells were also evaluated as a baseline of known conditions for comparison purposes to the “TE” wells.

A **synoptic round of groundwater levels** was collected from select wells on October 4, 2016 in order to prepare a site-wide groundwater contour map (see Figures 5A and 5B). Five HDR field technicians were mobilized to measure the groundwater levels in

wells located on the commercial side of the Airport, the ANG (including the Base and Base Landfill), and the Town of New Windsor Landfill. Water level measurements were collected over an approximate two hour period and under escort by the Airport, ANG, or Town representatives. The following wells were included in this task:

Commercial Side

- PFC-MW2
- DBF-MW-1 through DBF-MW-5 (DBF-MW-6 was dry)

ANG Base and Landfill

- TE1 through TE6
- PFC-MW3 and PFC-MW4
- MW-01, MW-04 through MW-19 excluding MW-13, which had been abandoned, note MW-10, -12, and -15 were dry.
- JMW-107 through JMW-109 could not be found and are assumed to have been abandoned

Town of New Windsor Landfill

- MW-4S, -6S, -9S, and -10S

Results

Soil and aqueous samples were analyzed by the subcontracted laboratory TestAmerica, Inc. to maintain continuity with previous sampling conducted on the site by NYSDEC. TestAmerica's Denver laboratory analyzed the samples under SOP WS-LC-0025, Modified Method 537 UCMR List. The analyte list includes the following six PFCs: perfluorobutane sulfonate (PFBS), perfluoroheptanoic acid (PFHpA), perfluorononanoic acid (PFNA), perfluorooctanoic acid (PFOA), perfluorohexane sulfonate (PFHxS), and perfluorooctanesulfonic acid (PFOS). Samples were analyzed at a 15 day turnaround time and delivered in a Category B data package with NYSDEC EQuIS electronic data deliverable (EDD). Results are summarized on Tables 1, 2, and 3 for soil, groundwater and surface water, respectively. Results are also displayed graphically on Figures 2, 3 and 4.

Soil results from the sampling conducted during installation of the new groundwater monitoring wells are presented on Table 1 and Figure 2 and were compared to the residential soil screening level established by EPA Region 2 in July 2016 for a site in upstate New York for the sum of PFOS and PFOA (1,000,000 nanograms per kilogram [ng/kg]). A copy of the analytical laboratory data is presented in Attachment B.

Detectable concentrations of one or more of the six PFCs analyzed were identified in the borings installed at each of the four locations with the highest concentrations found in boring SB-PFC-MW3. Detectable concentrations of PFOS and PFOA were generally limited to the 0.5 ft interval with two exceptions. PFOS was detected at a very low, estimated concentration in the sample collected from 56 ft bgs at SB-PFC-MW1 and PFOS was also detected at 2.5 ft bgs in boring SB-PFC-MW3. Overall, detectable concentrations of PFOS ranged from 280 (estimated) to 5,620 ng/kg and PFOA was detected in only one sample at a concentration of 300 (estimated) ng/kg compared to the EPA Region 2 residential soil screening level of 1,000,000 ng/kg for the sum of PFOS and PFOA. The results were all well below the soil screening level.

Groundwater results from the sampling of the three new monitoring wells are presented on Table 2 and Figure 3 and were compared to the EPA lifetime health advisory of 70 nanograms per liter (ng/l) for the sum of PFOA and PFOS. Field parameters are provided in the field notes presented in Attachment A. A copy of the analytical laboratory data is presented in Attachment B.

Detectable concentrations of one or more of the six PFCs analyzed were identified in monitoring well PFC-MW-3 only. The sum of PFOS (21 ng/l, estimated) and PFOA (37 ng/l) was 58 ng/l, which is below the EPA lifetime health advisory.

Surface water results from the sampling of the additional ANG catch basins are presented on Table 3 and Figure 4 and were compared to the EPA lifetime health advisory of 70 ng/l for the sum of PFOA and PFOS. Field parameters are provided in the field notes presented in Attachment A. A copy of the analytical laboratory data is presented in Attachment B.

Detectable concentrations of one or more of the six PFCs analyzed were identified in all nine surface water samples. Overall, detectable concentrations of PFOA in surface water ranged from 13 (estimated) to 520 ng/l and concentrations of PFOS ranged from 17 (estimated) to 3,610 ng/l (diluted sample). The concentrations detected exceeded the EPA lifetime health advisory value of 70 ng/l for the sum of PFOA and PFOS in all samples with the exception of W6 and CB.

In the samples collected from C17, D15-A, and STM-UP the concentrations of either PFOA or PFOS, individually, were less than 70 ng/l but the respective sums (500, 257, and 249 ng/l, respectively) were greater than the EPA health advisory of 70 ng/l for the sum of PFOA and PFOS. In the remaining samples, collected from CB2K, CB9A, D27, and D8 (including the duplicate of D8), the individual concentrations of PFOA and PFOS in the respective samples were greater than 70 ng/l; therefore, the respective sums (591, 550, 3,890, 940, and 1,180 (duplicate sample) ng/l were greater than the

EPA lifetime health advisory at these locations.

QAQC sampling was conducted as discussed above. There were no detectable concentrations of any of the PFCs analyzed in the equipment rinseate (field blank) samples or the decontamination water blank samples collected. Duplicate samples were collected from soil boring SB-PFC-MW1 56 ft bgs (PFC-MW-DUP1), groundwater monitoring well PFC-MW-2 (MW-DUP) and catch basin D8 (CB-DUP). The relative percent differences (RPDs) were calculated using the following formula:

$$\% \text{ RPD} = \frac{X_1 - X_2}{(X_1 + X_2)/2} * 100\%$$

where, X1 is the original value (parent sample), and
X2 is the duplicate value

RPD was not calculated for results where one or both samples were non-detect as good reproducibility is implied in this instance, as was the case for the soil and groundwater duplicates. Detectable concentrations were present for all six analytes in the surface water samples and it's duplicate. The RPDs ranged from 0 to 27.9%. The results of the RPD calculation indicate the results are within precision standards for both sampling and laboratory protocols.

MS/MSD samples were collected from soil boring SB-PFC-MW4 3 ft bgs, groundwater monitoring well PFC-MW-3, and surface water catch basin CB. The lab was not able to perform the MS/MSD for soil due to insufficient volume. There were no issues noted for the MS/MSD results associated with the surface water and groundwater samples.

Internal standard responses were noted to be outside of acceptance limits for select samples, where the lab also noted evidence of matrix interference; however, all other associated quality control parameters were generally within acceptable limits with the following exceptions. Note that these exceptions are for QC samples that were associated with other sample batches. The laboratory control sample (LCS), LCS duplicate (LCSD), and/or surrogate recoveries were noted to have been outside acceptable limits, but only slightly. For example, the results were at 63% or 69% when the acceptable limit was 70%, or the results were 132% when the acceptable limit was 130%, which likely does not impact the usability of the data.

Downhole geophysics was conducted to aid in the completion of the site-wide groundwater contour map by better understanding the construction of the existing wells on the ANG base. The report and logs are included as Attachment C.

In general natural gamma ray will be higher in both clay-rich soils and shale bedrock (whether it's weathered or competent rock), as evidenced in the newly installed well PFC-MW-4 that was screened in weathered shale, in comparison to silty sand with gravel, as evidenced in the newly installed well PFC-MW-3 that was screened in glacial till. When comparing the geologic conditions observed during drilling the newly installed wells with the results of the natural gamma ray in the existing "TE" wells, the survey indicates that existing wells TE-2 and TE-5 are most similar to PFC-MW-4 and existing wells TE-1, TE-3, TE-4, and TE-6 are most similar to PFC-MW-3 with TE-3 having relatively more sand content than the others. Overall the geophysical survey indicated that there did not appear to be any obvious widespread unconsolidated stratigraphic units that would act as preferential flow pathways over significant distances in the soils overlying bedrock.

Site-wide groundwater elevation contouring. The unconsolidated soils vary across the site. The unconsolidated soils are composed of glacial till that grades from a glacial till that contains more silt, sand and gravel to a glacial till composed of mostly clay. Groundwater will migrate faster in the till that contains silt, sand, and gravel than in the till that contains more clay. Till grades into weathered shale before competent bedrock at many locations, while at others, the till directly overlies the competent bedrock. It also should be noted that the elevation of the top surface of bedrock appears to vary across the site. This is demonstrated in PFC-MW-3 which was completed to a depth of approximately 55 ft bgs without encountering bedrock while weathered shale bedrock was encountered in wells PFC-MW-2 and PFC-MW-4 at depths of 36 ft and 50 ft bgs, respectively.

Groundwater in the till was mapped separately from the weathered bedrock. Till well locations and contours are shown on Figure 5A and weathered shale well locations and contours are shown on Figure 5B.

In general the overall groundwater flow is to the southeast. Groundwater flow in the till is more south-southeast and groundwater flow in the weathered shale is more east-southeast. Note that due to the lack of well elevation data in the area of the runways, the groundwater contours have not been connected between the former DBF area in the northwest and the ANG base and landfill areas in the southeast. However, the contours in the area of the former DBF also suggest flow to the southeast.

It should also be noted that the Town Landfill wells located furthest southeast were presumed to be glacial till wells based on well depths. The contours near MW-6S indicate that the groundwater may bend to the north-northeast in this area.

Lake Washington ceased to be used as a drinking water supply on May 1, 2016.

Based on a hydrograph of Lake Washington provided by NYSDEC (Figure 6), the water level of the Lake rose approximately six ft between this time and approximately mid-August 2016. In September 2016, NYSDEC began to draw the Lake level down by pumping through a treatment system; however, the lake level remained high in early October 2016. The high level of the Lake may have influenced apparent groundwater flow (to the north-northeast) in this area. Additional elevation data in this area including that of Lake Washington would provide a clearer picture of whether or not groundwater is truly discharging to the Lake or migrating more to the north-northeast.

If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

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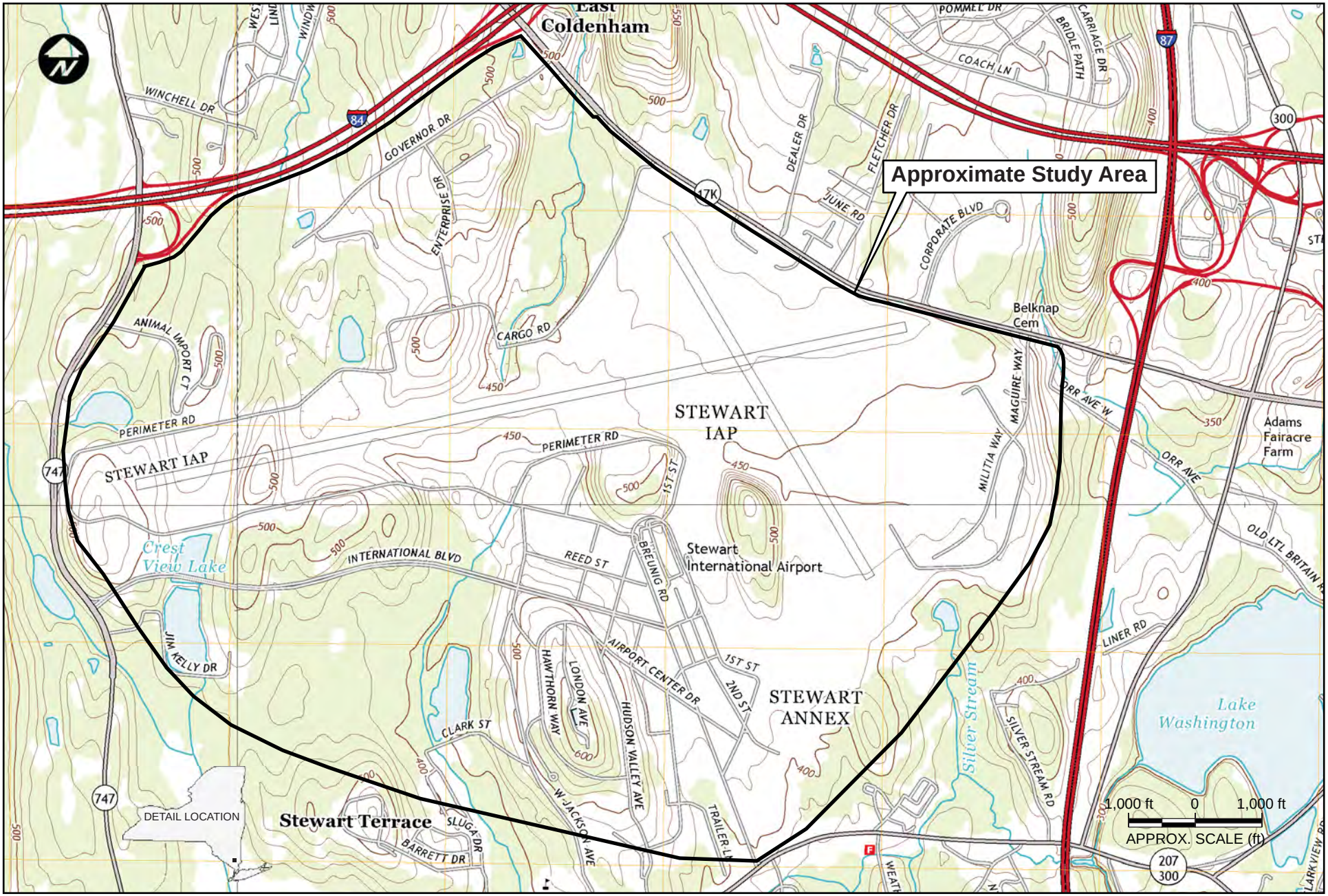
Melissa E. LaMacchia
Associate | Project Manager

cc: J. Bass, NYSDOT

Attachments

FIGURES



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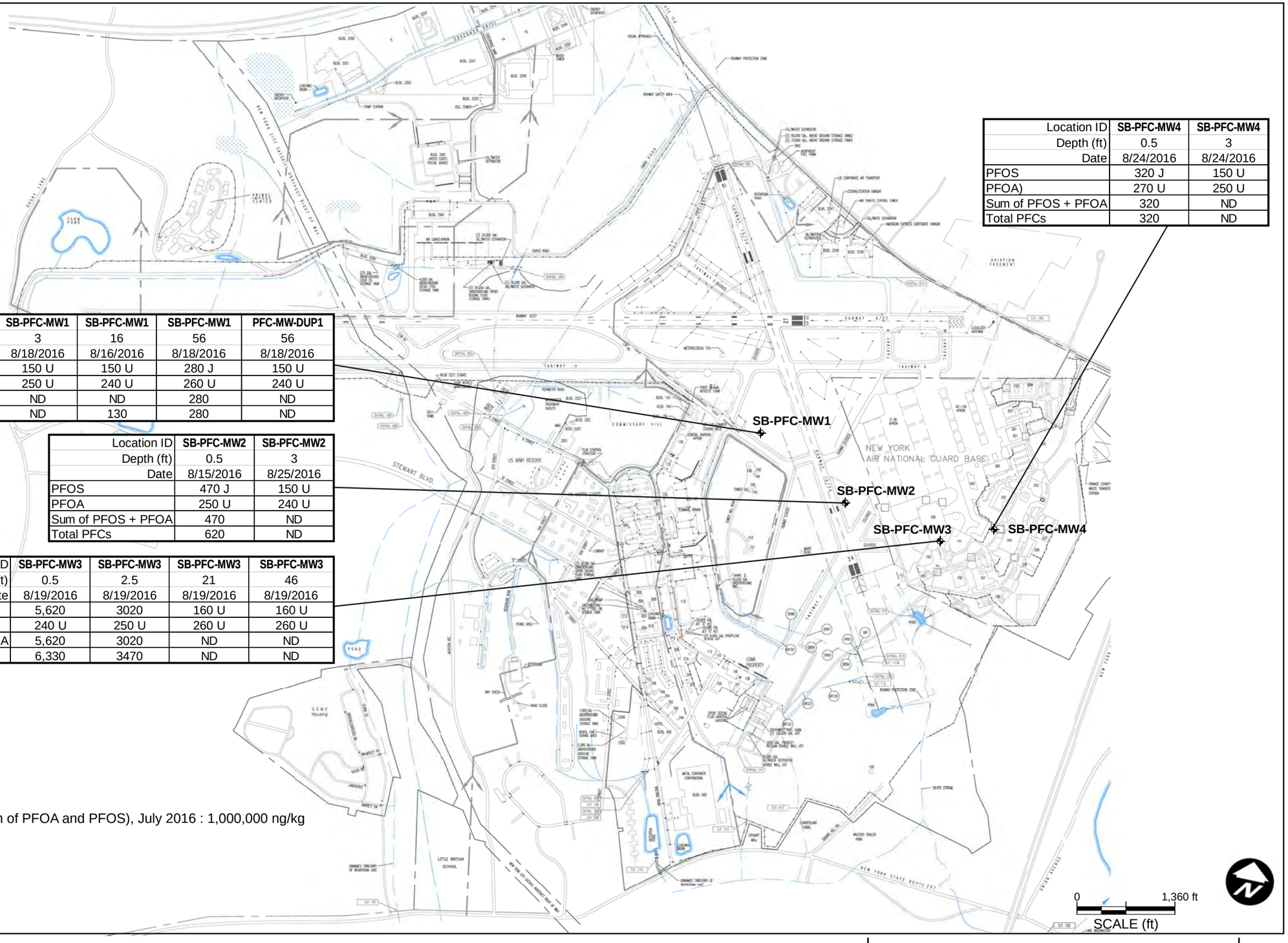
Mahwah, NJ 07495

Map source: USGS 7.5-min. Quadrangle Series: Cornwall-on-Hudson, NY, 2013; Maybrook, NY, 2013; Newburgh, NY, 2013; Walden, NY, 2013.

Approximate Study Area Location

Stewart International Airport - New York Air National Guard
Newburgh, NY

Figure 1



Location ID	SB-PFC-MW1	SB-PFC-MW1	SB-PFC-MW1	SB-PFC-MW1	PFC-MW-DUP1
Depth (ft)	0.5	3	16	56	56
Date	8/15/2016	8/18/2016	8/16/2016	8/18/2016	8/18/2016
PFOS	2260	150 U	150 U	280 J	150 U
PFOA	300 J	250 U	240 U	260 U	240 U
Sum of PFOS + PFOA	2,560	ND	ND	280	ND
Total PFCs	3,420	ND	130	280	ND

Location ID	SB-PFC-MW2	SB-PFC-MW2
Depth (ft)	0.5	3
Date	8/15/2016	8/25/2016
PFOS	470 J	150 U
PFOA	250 U	240 U
Sum of PFOS + PFOA	470	ND
Total PFCs	620	ND

Location ID	SB-PFC-MW3	SB-PFC-MW3	SB-PFC-MW3	SB-PFC-MW3
Depth (ft)	0.5	2.5	21	46
Date	8/19/2016	8/19/2016	8/19/2016	8/19/2016
PFOS	5,620	3020	160 U	160 U
PFOA	240 U	250 U	260 U	260 U
Sum of PFOS + PFOA	5,620	3020	ND	ND
Total PFCs	6,330	3470	ND	ND

Location ID	SB-PFC-MW4	SB-PFC-MW4
Depth (ft)	0.5	3
Date	8/24/2016	8/24/2016
PFOS	320 J	150 U
PFOA)	270 U	250 U
Sum of PFOS + PFOA	320	ND
Total PFCs	320	ND

Legend

⌖ Monitoring Well Location

PFOS Perfluorooctane Sulfonic Acid
PFOA Perfluorooctanoic Acid
PFCs Perfluorinated Chemicals

Note:
EPA Region 2 Regional Screening Level (Sum of PFOA and PFOS), July 2016 : 1,000,000 ng/kg

All results are in ng/kg

U Not Detected
J Estimated
ND Not Detected

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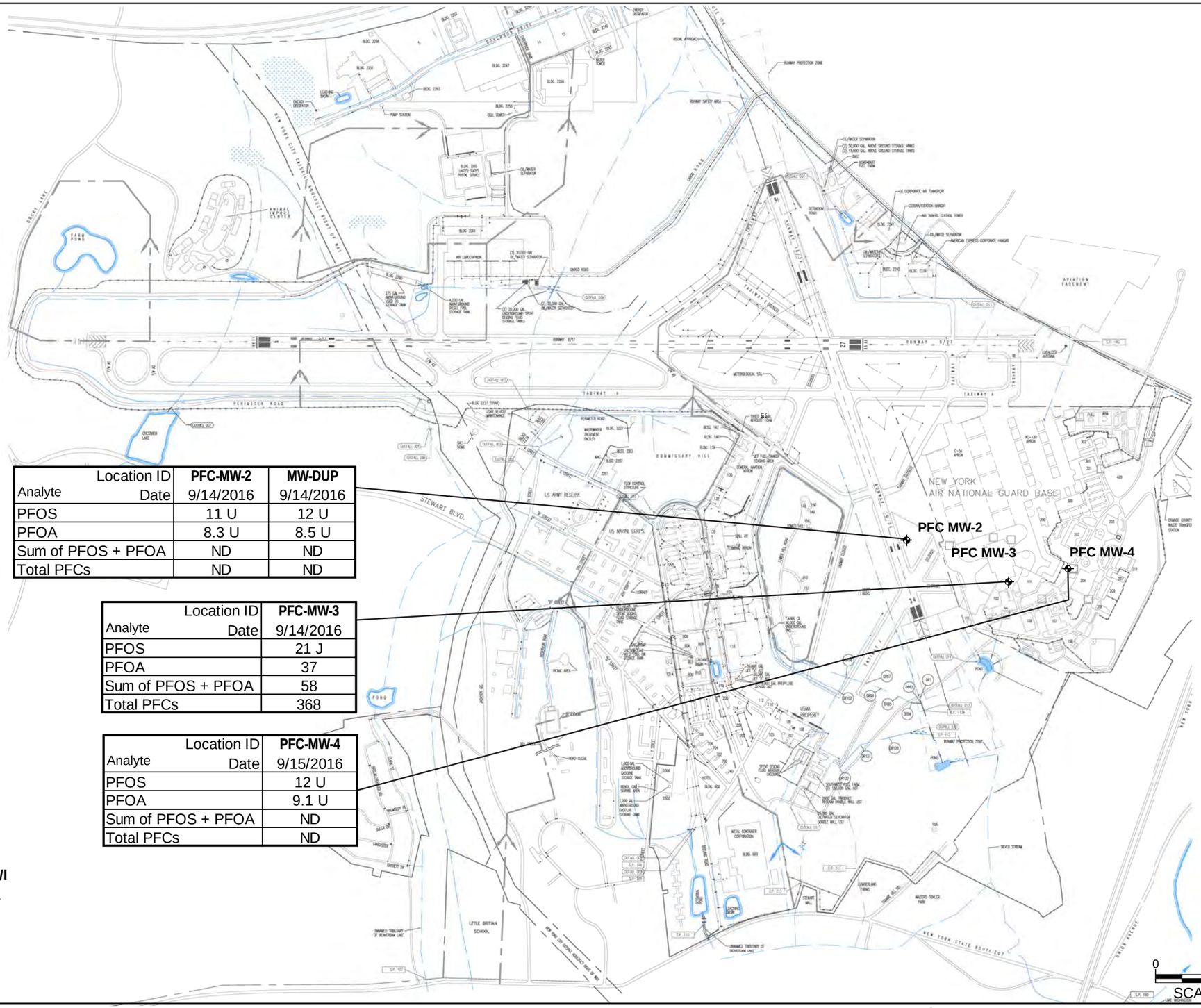
Soil Sampling Results

Stewart International Airport - Air National Guard Base
Newburgh, NY

Figure
2



Analyte / Location ID	PFC-MW-2
Date	9/14/2016
PFOS	11 U
PFOA	8.3 U
Sum of PFOS + PFOA	ND
Total PFCs	ND

Analyte / Location ID	PFC-MW-3
Date	9/14/2016
PFOS	21 J
PFOA	37
Sum of PFOS + PFOA	58
Total PFCs	368

Analyte / Location ID	PFC-MW-4
Date	9/15/2016
PFOS	12 U
PFOA	9.1 U
Sum of PFOS + PFOA	ND
Total PFCs	ND

Legend

⌖ Monitoring Well Location

PFOS Perfluorooctane Sulfonic Acid
PFOA Perfluorooctanoic Acid
PFCs Perfluorinated Chemicals

Note:
EPA Health Advisory (PFOA + PFOS): **70 ng/l**

Results in **BOLD** exceed EPA Health Advisory
All results are in ng/kg

U Not Detected
J Estimated
ND Not Detected

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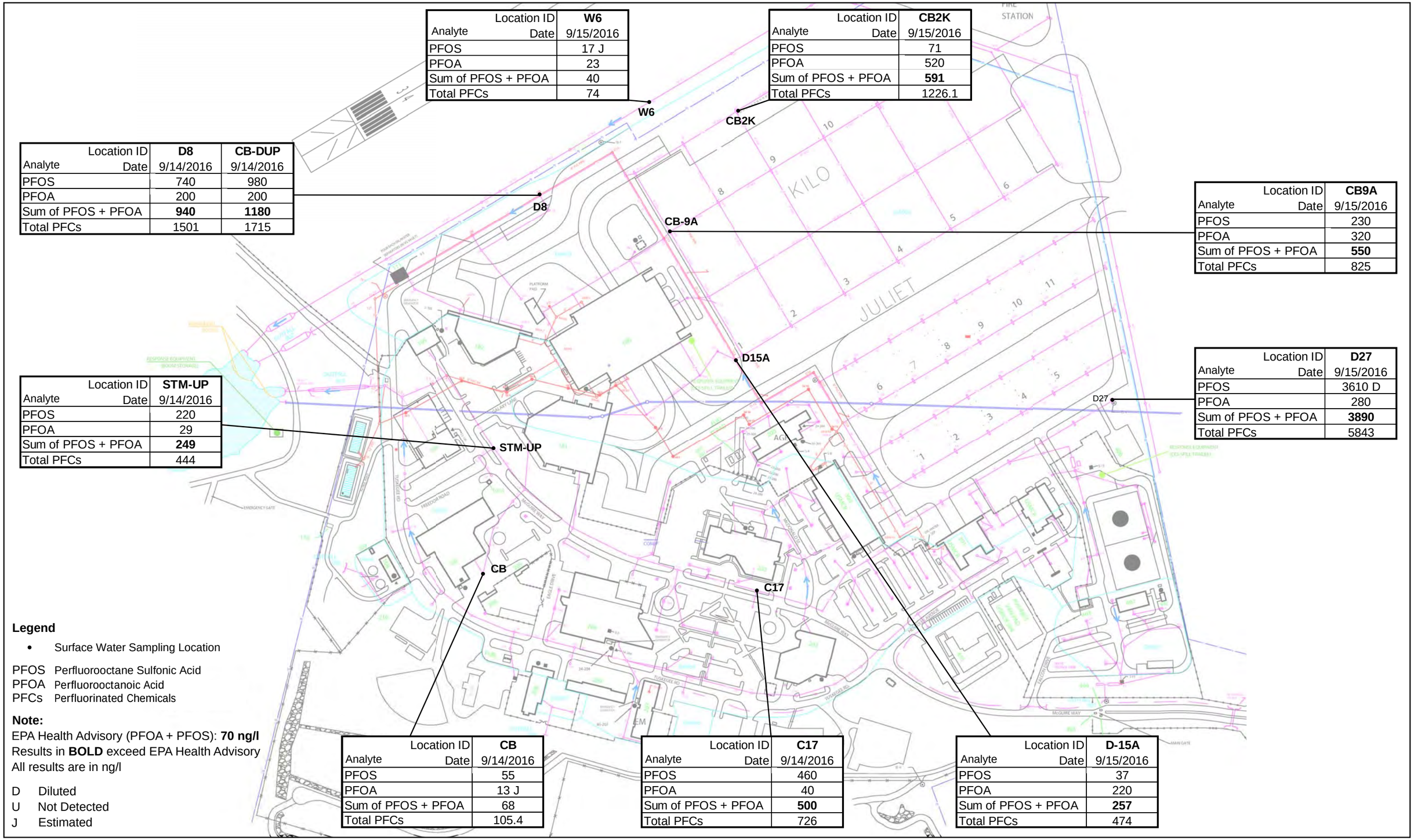
Groundwater Sampling Results

Stewart International Airport - Air National Guard Base
Newburgh, NY

Figure
3



Location ID / Analyte / Date	W6
	9/15/2016
PFOS	17 J
PFOA	23
Sum of PFOS + PFOA	40
Total PFCs	74

Location ID / Analyte / Date	CB2K
	9/15/2016
PFOS	71
PFOA	520
Sum of PFOS + PFOA	**591**
Total PFCs	1226.1

Location ID / Analyte / Date	D8	CB-DUP
	9/14/2016	9/14/2016
PFOS	740	980
PFOA	200	200
Sum of PFOS + PFOA	**940**	**1180**
Total PFCs	1501	1715

Location ID / Analyte / Date	CB9A
	9/15/2016
PFOS	230
PFOA	320
Sum of PFOS + PFOA	**550**
Total PFCs	825

Location ID / Analyte / Date	D27
	9/15/2016
PFOS	3610 D
PFOA	280
Sum of PFOS + PFOA	**3890**
Total PFCs	5843

Location ID / Analyte / Date	STM-UP
	9/14/2016
PFOS	220
PFOA	29
Sum of PFOS + PFOA	**249**
Total PFCs	444

Location ID / Analyte / Date	CB
	9/14/2016
PFOS	55
PFOA	13 J
Sum of PFOS + PFOA	68
Total PFCs	105.4

Location ID / Analyte / Date	C17
	9/14/2016
PFOS	460
PFOA	40
Sum of PFOS + PFOA	**500**
Total PFCs	726

Location ID / Analyte / Date	D-15A
	9/15/2016
PFOS	37
PFOA	220
Sum of PFOS + PFOA	**257**
Total PFCs	474

Legend

- Surface Water Sampling Location

PFOS Perfluorooctane Sulfonic Acid
PFOA Perfluorooctanoic Acid
PFCs Perfluorinated Chemicals

Note:
EPA Health Advisory (PFOA + PFOS): **70 ng/l**
Results in **BOLD** exceed EPA Health Advisory
All results are in ng/l

D Diluted
U Not Detected
J Estimated

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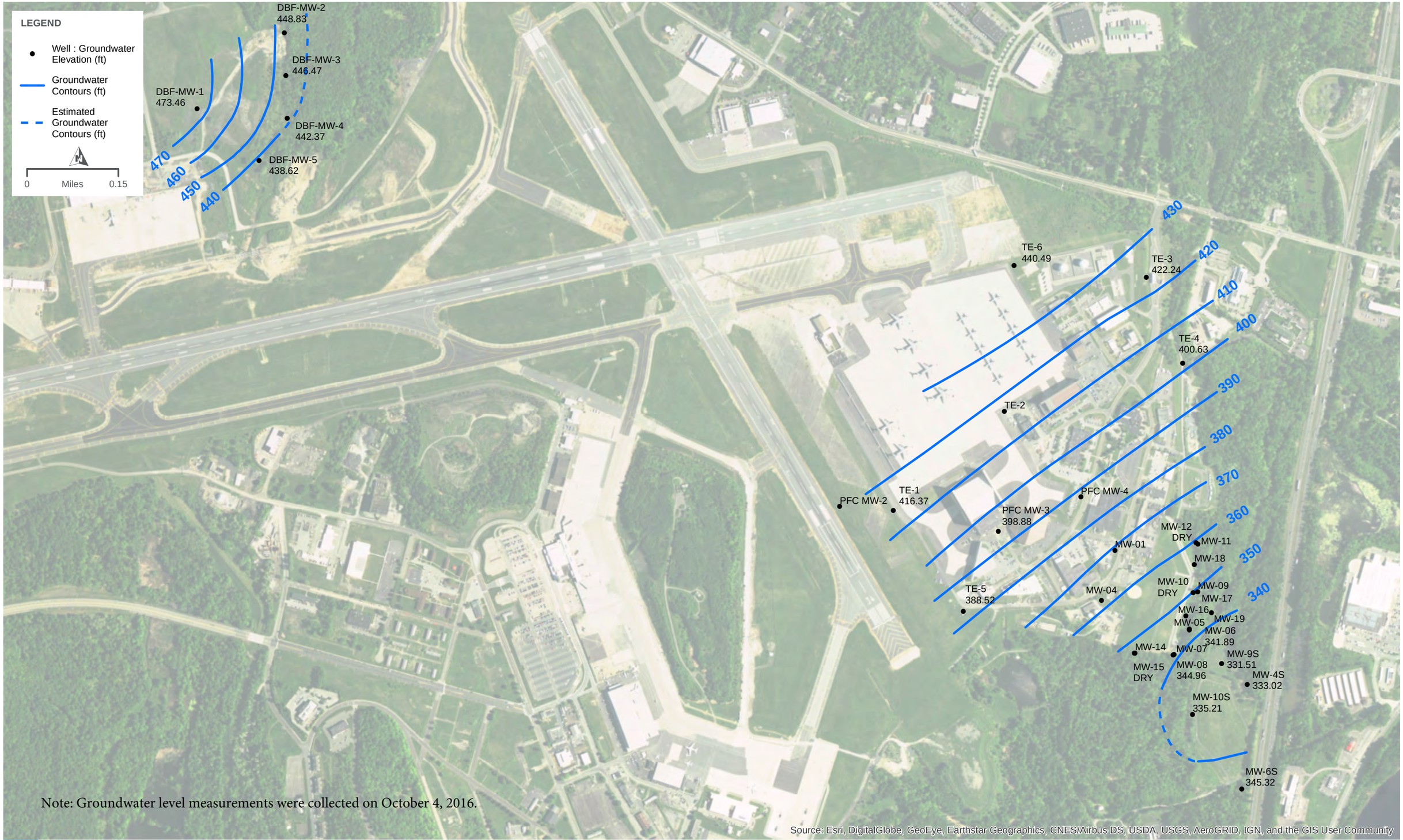
Surface Water Sampling Results

Stewart International Airport - Air National Guard Base
Newburgh, NY

Figure 4



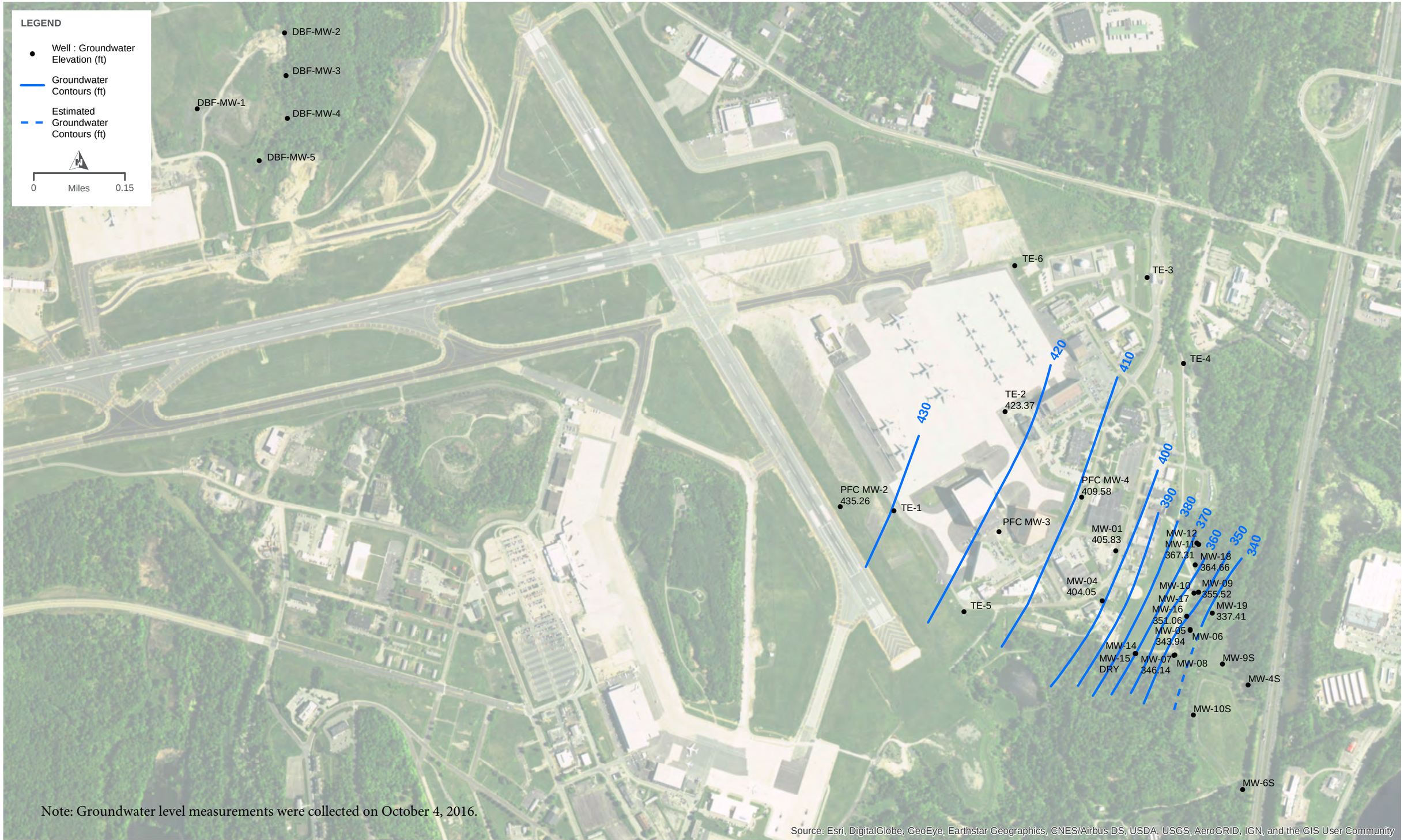
Note: Groundwater level measurements were collected on October 4, 2016.

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

GLACIAL TILL WELL LOCATIONS AND GROUNDWATER CONTOURS

NEW YORK AIR NATIONAL GUARD, STEWART INTERNATIONAL AIRPORT - NEWBURGH, NY

FIGURE 5A



Note: Groundwater level measurements were collected on October 4, 2016.

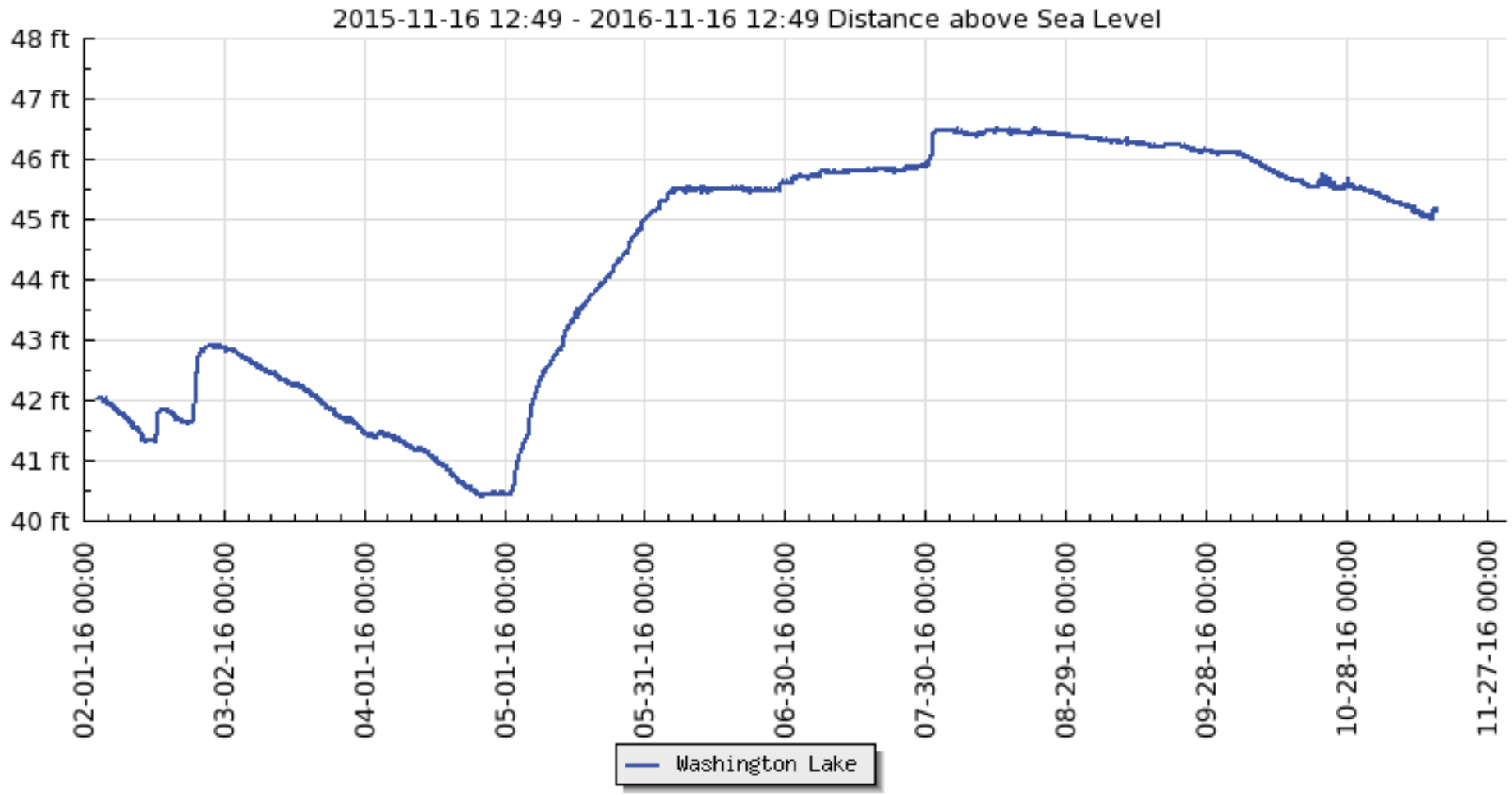
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WEATHERED SHALE WELL LOCATIONS AND GROUNDWATER CONTOURS

NEW YORK AIR NATIONAL GUARD, STEWART INTERNATIONAL AIRPORT - NEWBURGH, NY

FIGURE 5B

PATH: Y:\WASTE MGMT & INDUSTRIAL\EDMT\EDMT_PROJECTS\STEWART\WEATHERED SHALE WELL LOCATIONS.MXD - USER: CWEAVER - DATE: 11/7/2016



HDR Engineering, Inc.
1 International Blvd.
Mahwah, NJ 07495

Source:
SmartCover Monitoring System – City of Newburgh
City Hall c/o NYSDEC, November 16, 2016.

Hydrograph of Lake Washington

Stewart International Airport - New York Air National Guard Base

Newburgh, NY

Figure 6

TABLES

TABLE 1 - PFCs IN SOIL
STEWART INTERNATIONAL AIRPORT - AIR NATIONAL GUARD SOIL BORINGS

Location ID Date Depth (ft) Unit	EPA R2 Screening Level, July 2016 (ng/kg)	SB-PFC-MW1 0.5 8/15/2016 ng/kg	SB-PFC-MW1 3 8/18/2016 ng/kg	SB-PFC-MW1 16 8/16/2016 ng/kg	SB-PFC-MW1 56 8/18/2016 ng/kg	PFC-MW-DUP1 56 8/18/2016 ng/kg	SB-PFC-MW2 0.5 8/15/2016 ng/kg	SB-PFC-MW2 3 8/25/2016 ng/kg
Analyte								
Perfluorobutane Sulfonate (PFBS)	NS	170 U	150 U	150 U	160 U	150 U	150 U	150 U
Perfluoroheptanoic Acid (PFHpA)	NS	140 U	130 U	130 J	130 U	130 U	150 J	130 U
Perfluorohexane Sulfonate (PFHxS)	NS	860 J	300 U	300 U	310 U	300 U	310 U	290 U
Perfluorononanoic Acid (PFNA)	NS	260 U	240 U	230 U	250 U	230 U	240 U	230 U
Perfluorooctane Sulfonic Acid (PFOS)	NS	2260	150 U	150 U	280 J	150 U	470 J	150 U
Perfluorooctanoic acid (PFOA)	NS	300 J	250 U	240 U	260 U	240 U	250 U	240 U
Sum of PFOS and PFOA	1,000,000	5260	ND	ND	280	ND	470	ND

General Notes:

ng/kg - nanograms per kilogram

NS - no applicable standard

Qualifier Notes:

U -- Not detected at the detection limit.

J -- Estimated Concentration

ND --Not detected

Comparison Criteria:

NS - No applicable standard for this parameter

TABLE 1 - PFCs IN SOIL
STEWART INTERNATIONAL AIRPORT - AIR NATIONAL GUARD SOIL BORINGS

Location ID Date Depth (ft) Unit	EPA R2 Screening Level, July 2016 (ng/kg)	SB-PFC-MW3 0.5 8/19/2016 ng/kg	SB-PFC-MW3 2.5 8/19/2016 ng/kg	SB-PFC-MW3 21 8/19/2016 ng/kg	SB-PFC-MW3 46 8/19/2016 ng/kg	SB-PFC-MW4 0.5 8/24/2016 ng/kg	SB-PFC-MW4 3 8/24/2016 ng/kg
Analyte							
Perfluorobutane Sulfonate (PFBS)	NS	140 U	160 U	160 U	160 U	160 U	150 U
Perfluoroheptanoic Acid (PFHpA)	NS	260 J	130 U	140 U	140 U	140 U	130 U
Perfluorohexane Sulfonate (PFHxS)	NS	450 J	450 J	320 U	320 U	330 U	300 U
Perfluorononanoic Acid (PFNA)	NS	230 U	240 U	250 U	250 U	260 U	240 U
Perfluorooctane Sulfonic Acid (PFOS)	NS	5,620	3020	160 U	160 U	320 J	150 U
Perfluorooctanoic acid (PFOA)	NS	240 U	250 U	260 U	260 U	270 U	250 U
Sum of PFOS and PFOA	1,000,000	5,620	3020	ND	ND	320	ND

General Notes:

ng/kg - nanograms per kilogram

NS - no applicable standard

Qualifier Notes:

U -- Not detected at the detection limit.

J -- Estimated Concentration

ND --Not detected

Comparison Criteria:

NS - No applicable standard for this parameter

TABLE 2 - PFCs IN GROUNDWATER
STEWART INTERNATIONAL AIRPORT - AIR NATIONAL GUARD NEWLY INSTALLED MONITORING WELLS

	Location ID	EPA Health Advisory (ng/l)	PFC-MW-2	MW-DUP	PFC-MW-3	PFC-MW-4
	Date		9/14/2016	9/14/2016	9/14/2016	9/15/2016
	Unit		ng/l	ng/l	ng/l	ng/l
Analyte	**CAS_RN**					
Perfluorobutane Sulfonate (PFBS)	29420-43-3	NS	7 U	7.1 U	100	7.7 U
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	11 U	11 U	60	12 U
Perfluorohexane Sulfonate (PFHxS)	108427-53-8	NS	5.9 U	6 U	150	6.5 U
Perfluorononanoic Acid (PFNA)	375-95-1	NS	15 U	15 U	17 U	16 U
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	NS	11 U	12 U	21 J	12 U
Perfluorooctanoic acid (PFOA)	335-67-1	NS	8.3 U	8.5 U	37	9.1 U
Sum of PFOS + PFOA		70	ND	ND	58	ND

General Notes:

ng/l - nanograms per liter

NS - no applicable standard

Qualifier Notes:

U -- Not detected at the detection limit.

J -- Estimated Concentration

ND -- Not detected

Comparison Criteria:

NS - No applicable standard for this parameter

bold - indicates exceedance of EPA Drinking Water Health Advisory for PFOA and PFOS

TABLE 3 - PFCs IN SURFACE WATER
STEWART AIR NATIONAL GUARD BASE ADDITIONAL CATCH BASIN SAMPLING

	Location ID	EPA Health Advisory (ng/l)	CB2K	CB9A	W6	D27	D15-A	STM-UP
	Date		9/15/2016	9/15/2016	9/15/2016	9/15/2016	9/15/2016	9/15/2016
	Unit		ng/l	ng/l	ng/l	ng/l	ng/l	ng/l
Analyte	**CAS_RN**							
Perfluorobutane Sulfonate (PFBS)	29420-43-3	NS	9.1 J	8.1 U	7.7 U	150	7.6 U	22
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	510	190	14 J	560	150	33
Perfluorohexane Sulfonate (PFHxS)	108427-53-8	NS	64	54	20 J	1220	51	140
Perfluorononanoic Acid (PFNA)	375-95-1	NS	52	31 J	16 U	23 J	16 J	16 U
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	NS	71	230	17 J	3610 D	37	220
Perfluorooctanoic acid (PFOA)	335-67-1	NS	520	320	23	280	220	29
Sum of PFOS + PFOA		70	**591**	**550**	40	**3890**	**257**	**249**

General Notes:

ng/l - nanograms per liter

NS - no applicable standard

Qualifier Notes:

U -- Not detected at the detection limit.

J -- Estimated Concentration

D -- Diluted sample

Comparison Criteria:

NS - No applicable standard for this parameter

bold - indicates exceedance of EPA Drinking Water Health Advisory for PFOA and PFOS

TABLE 3 - PFCs IN SURFACE WATER
STEWART AIR NATIONAL GUARD BASE ADDITIONAL CATCH BASIN SAMPLING

	Location ID	EPA Health Advisory (ng/l)	CB	C17	D8	CB-DUP
	Date		9/14/2016	9/14/2016	9/14/2016	9/14/2016
	Unit		ng/l	ng/l	ng/l	ng/l
Analyte	**CAS_RN**					
Perfluorobutane Sulfonate (PFBS)	29420-43-3	NS	8.4 J	23	45	44
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	12 U	43	160	160
Perfluorohexane Sulfonate (PFHxS)	108427-53-8	NS	29	160	330	300
Perfluorononanoic Acid (PFNA)	375-95-1	NS	16 U	17 U	26 J	31 J
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	NS	55	460	740	980
Perfluorooctanoic acid (PFOA)	335-67-1	NS	13 J	40	200	200
Sum of PFOS + PFOA		70	68	**500**	**940**	**1180**

General Notes:

ng/l - nanograms per liter

NS - no applicable standard

Qualifier Notes:

U -- Not detected at the detection limit.

J -- Estimated Concentration

D -- Diluted sample

Comparison Criteria:

NS - No applicable standard for this parameter

bold - indicates exceedance of EPA Drinking Water Health Advisory for PFOA and PFOS

ATTACHMENT A – FIELD NOTES AND LOGS

Project:	Stewart PFC Supply	Computed:	Date: 8-15-16
Subject:	MW installation & Soil Sampling	Checked:	Date:
Task:		Page:	of:
Job #:		No:	

11:30 Meetup @ Cowes Newburgh
John Iffiovitis (HDR)
Matt Mcaveney (HDR)
Wayne Nielsen (P.W)
Matt Partis (P.W)

Weather - 87°F P.cloudy, breezy

1145 Mobilize to ANG to set up decon pad and drop off drums @ ANG Staging area.

1230 Mobilize to Stewart Airport command site, Check in @ Operations

1310 Vehicle check @ Security, Scout Staging area on Tower Hill
Area will be good for trailer, decon pads and drums

1325 Mobilize to taxiway Bravo w/ Escorts, located flagged location for PFC-MW1

1330 Field decon P.W S.S. Hand auger w/ Alconox & water
rinse w/ Potable (Spring) water and final DI water rinse

1335 PW remove top 4" of soil w/ Shovel

1345 Collect SB-PFC-MW1-0.5 @ 1345

1405 PW has hand cleared to 2.5 Feet

1410 Mobilize to PFC-MW2 adjacent to Runway 34

1415 locate flagged MW location
Field decon P.W SS Hand Auger w/ Alconox, water, rinsewater/ Potable water and DI rinse

1422 Collect SB-PFC-MW2-0.5 @ 1422

1435 Decon SS Auger as per previously described procedures.

1438 Collect equipment field blank w/ lab supplied Blankwater

1439 Pour Water through SS Hand Auger. Collect MW-FB1 @ 1439

1445 Hand Clearing complete to 2.5'

1456 Stage trailer w/ drums and well Supplies @ Tower Hill Staging Area

1505 Check out @ Operations and depart site.

8-15-16

Project:	Stewart PFC Sampling	Computed:	Date: 8-16-16
Subject:	MW Installation & Soil Sampling	Checked:	Date:
Task:		Page:	of:
Job #:		No:	

0740 Meetup @ operations office
John Fflowers (HDR)
Matt Keaveney (HDR)
Wayne Nielsen (P-W)
Matt Partis (P-W)
Weather P-Cloudy, 74°F, 7mph wind from the East
Thunder Showers/storms predicted for 1300
Hi 5 Tailgate meeting - Hydrate, thunder storm protocol (i.e., stand down for lightning)
0748 Check in w/ Operations
0800 Security check @ gate and Mobilize under escort to Tenaska Bravo to begin Auger Drilling and SS Samples for Lithology and Sample collection @ PFC-MW1

All lithology and Soil samples will be recorded on Separate boring log field forms.

0830 Begin Auger Drilling @ PFC-MW1

0945 Call from Melissa LaMacchia (HDR) about orange & white mast flag discussion confirm w/ Operations, OK to not have one today, will need for tomorrow

1000 Collect Drilling water Supply Blank Sample Directly from valve of New HDPE tank
Note: brass/SS Valve w/ teflon pipe thread.
MW-WB1 @ 1000

1005 Collect Laboratory blank from decon'd Split Spoon, decon w/ Alconox and Potable/DI Water
MW-FB2 @ 1005

1047 Collect Soil Sample SB-PFC-MW1-16.0 @ 1047 from FB Split Spoon
1155 Will Hackett (P-W) on site
Auger rate ~ 5''/hour +/-
1530 Augers @ 30' secure site to turn over Tenaska Bravo by 1600
Drum 1 Soil 0-15
Drum 2 Soil 15-30
1555 Secure PFC MW1 w/ Auger 4" above grade, return Drums and Equipment to Staging
1610 Check out @ Operations, Depart site HDR & P-W Safe

8-16-16

Project:	Stewart PFC Supply	Computed:	Date: 8-17-16
Subject:	MW installation and Soil Sply	Checked:	Date:
Task:		Page:	of:
Job #:		No:	

0745 meet up @ operations parking lot
John Fillouite (HDR)
Matt Keaveney (HDR)
Wayne Nielsen (P-W)
Matt Parks (P-W)
Weather - 67°F, mostly cloudy, strong breeze ~15 mph NW

0835 Check in w/ vehicle inspection and escort, Jill
mobalize to Staging area on tower Hill to pick up trailer and well building supplies

0848 Mobilize to Taxiway Bravo PFC-MW1 location to continue drilling and well install
0910 P-W pulls Auger plug from 30', plug dry, check borehole w/ water level indicator, dry no sign of water @ 30'
0915 Call into Melissa LaMarche to discuss situation of no water, yet will keep augers to 35' to collect next SS @ 35-37' and evaluate from there.

1115 Collect Split Spoon Sample 35-37' - (See log) mostly silt (till) light low moisture today
Send Information to Melissa Lavarche
1130 Continue Auger Drilling from 35'

1330 Auger meet refusal @ 37'
P-W will retool their IR Rig w/ Air and rotary/hammer tools to continue. Collect SS 37-39' before pulling augers from borehole.

37-39' SS slightly moist, mostly dry hard cohesive silt (till) See log

1400 P-W pulling off of PFC MW1 to drop trailer and rise @ staging area on tower hill
P-W will meet up w/ shop courier to retool w/ rotary and down hole hammer capabilities to continue @ PFC-MW1 tomorrow.

1430 HDR & PW leave site and check out w/ Security
NO Samples collected today
Weather 85°, Strong breeze,

8-17-16

Project:	Steward PFC Sampling	Computed:	Date: 8-15-16
Subject:	MW installation & Soil Sampling	Checked:	Date:
Task:		Page:	of:
Job #:		No:	

0725 Arrive @ operations office parking lot, Matt K, on site/pickup lot
John Iffland (HDR)
Matt Keaveney (HDR)

Weather 68° PCloudy, Breezy, rain overnight
P.W picking up air compressor @ rental facility for new down hole hammer rotary testing

0750 P.W arrives on site w/ air compressor and to bkg/downhole air hammer testing.
Wayne Nielsen (P.W)
Matt Porter (P.W)

0800 Check in w/ operations and Security

0825 Mobilize to PFC-MW1 on Bravo Taxiway w/ brief Stop @ Staging Area on Tower Hill

0850 Set up for tricone roller drilling w/ Air and side discharge to capped tub to collect cuttings

0915 Continue borehole advancement from 37' w/ tricone roller bit.

1040 Collect Split spoon Sample, 45-47', Dry, slight moisture, full recovery, light silt (Till)
Call into Melissa LaMacchia, per Melissa, continue advancing borehole, looking for water to set well
Melissa will discuss w/ next station/conditions w/ DOT & DEC.

1130 Collect Split spoon Sample, 55-57', Dry, more clay than silt, Till
discuss w/ Melissa LaMacchia "DEC/DOT wants ~~sample~~ ED Sample for 2-4'
not collected at beginning of borehole. ~~Collect 2 Spoons next to PFC MW1~~
to obtain 2-4' Spoon for Sample Collect SB-PFC-MW1-56.0 @ 1157

1205 collect Soil Sample SB-PFC-MW1-3.0 @ 1205
collect Rinsate blank from cleaned decon Split spoon w/ potable and DI water

1210 collect ~~grab~~ Rinsate field blank Sample ~~MW-FB3 @ 1215~~ MW-FB3 @ 1210

Note Duplicate Sample of SB-PFC-MW1-56.0 collected PFC-MW-DUP1
No well install as per Melissa LaMacchia and conference w/ DOT & DEC @ "0900"
EOBC 57' BGS 1455 Borehole tested out borehole grouted. Move to decon tools

1410 Grout borehole to surface

1500 Decon drilling tools @ Staging area decon pad

1600 Depart site check out w/ Security, Photos (JL) 1700- Samples Shipment dropped off @ FedEx 8/16/16

Project:	Stewart PFC Sampling	Computed:	Date: 8/19/16
Subject:	MW installation & Soil Sampling	Checked:	Date:
Task:		Page:	of:
Job #:		No:	

0630 John Kellouts & Matt Heavener of HDR meet @ Lowes
0640 Lexi Sawers of DEC meets up @ Lowes
0650 P.W. Wayne Nielsen & Matt Perkins @ Lowes
0705 Check in @ entrance gate to ANG meet up w/ escort Mike Ottinger (ANG)
0715 P.W drops off compressor @ SB-PFC-MW3, and heads back out of ANG to retrieve Supply trailer and Rig fm SWF side
0805 P.W uses auger shoe to cut pavement.
0810 collect SS's to 4' to begin sampling, Split spoons were cleaned @ SWF on 8/18/16 via Alconox, potable water, DI rinse.
0813 Collect SB-PFC-MW3-0.5 @ 0813
0830 collect SB-PFC-MW3-3.5 @ 0830
0846 collect rinsate field blank fm field cleaned split spoon, cleaned w/ Alconox potable water, close DI rinse.
MW-FB4 @ 0846

0905 Discuss PFC-MW-4 location w/ Lexy of DEC; Lexy communicates to office
0915 DEC gives go ahead to drill cleared location adjacent to CB sampled for surface water i.e., alternate location fm DEC mapped location.
0920 P.W advances augers to 10' bgs, switches over to air rotary bit (3⅞")
1010 P.W Reports soft wet conditions @ ~15' bgs, switches back to augers.
Note: PFC MW4 location is adjacent to a water main/ water main repair reportedly (Mike O) repaired within the last year. blacktop patch is much newer than surrounding pavement.
1038 collect SB-PFC-MW3-21.0 @ 1038
1208 collect SB-PFC-MW3-46.0 @ 1208

Groundwater encountered @ approx 45' bgs
PW wants to leave 10' of auger drilling for recovery so the augers do not become stuck @ depth (i.e., 60' bgs)
Target depth 60' Screened 50-60' bgs to be completed mon 8/22
1255 Secure site and depart for weekend
PW/DEC/HDR - off site

8/19/16

Project:	Stewart	Computed:	Date: Aug 22, 20
Subject:		Checked:	Date:
Task:		Page:	of:
Job #:		No:	

1020: Arrive at Lowe's. Matt and Wayne from Parrett are present. Lexy Servis from NYS DEC present.
1030: Scott from HDR has arrived, drillers are purchasing ice.
1040: Arrived at ANG
1115: MW3 - 38.70ft
1150: Awaiting decision of where to place well from DEC. Idle.
1427: Drilled to 55ft bgs but had a problem setting the well. In an attempt to rectify the problem, some plastic used to clean out the bottom of the hole broke and is now stuck in the well. The drillers are removing the well and are going to attempt to remove the plastic.
1500: HDR off site. drillers are going to buy some supplies to retrieve plastic. We expect to finish well tomorrow.

Project:	Computed:	Date: 8/23/16
Subject:	Checked:	Date:
Task:	Page:	of:
Job #:	No:	

0800: MTK of HDR, Wayne and Matt of Parratt Wolff, and MO of ANG on site. Plan today is to finish MW-3 and begin MW-4. Safety topic today included Sun Protection. Scott Engler is expected on site around 9:00-9:30. Levy Serise of NYSDEC will not be with HDR today. Weather is sunny, 75°F.

0815: Parratt Wolff (PW) was able to remove the PVC cutting using hook. Resuming the installation of MW-3. PW will redrill the bottom of the ~~well~~ hole to install at 55 feet bgs. Water level is a 19.36ft bgs. Shallow water table may be due to the use of water during drilling.

0145: Scott E of HDR is on site.

1344: PW completed drilling the well. They still need to add the grout and clean up the area. 16 bags of sand were used.

1400: Well is grouted. PW is cleaning up

1500: PW is decon'ing equipment. Plan tomorrow is to install MW4.

1515: HDR and PW offsite.

Project:	Computed:	Date: Aug 24, 2016
Subject:	Checked:	Date:
Task:	Page:	of:
Job #:	No:	

0730: Matthew T Keaveney (HDR)
Scott England (HDR)
Lexy Servise (NYSPEC)
Mike Ottinger (Stewart ANG)
Wayne (Parratt Wolff Inc)
Matt (Parratt Wolff Inc)

— All on site. Parratt Wolff (PW) finishing auger decon.

0806: ~~Beginning MW4~~ Drillers are setting up on MW4.
0820: Sampled SB-PFC-MW4-0.5 at 0.5ft bgs
0845: Sampled SB-PFC-MW4-3.0. Took MS/MSD sample. Sample a 3.0ft bgs
0930: Silt is very tight, drillers are switching to air rotary
1330: 12 feet of shale between 38ft and 50ft. Contacting Melissa LaMacchia
1400: Installing a well a 50ft. 10ft screen
1440: Collected rinse blank, ~~FB~~ MW-FBS
1530: HDR and PW off site

Project: SWF/ANG PFCs		Computed:	Date: Aug 8, 2016
Subject: New MW Installation		Checked:	Date:
Task:		Page:	of:
Job #:		No:	

0730: Matthew T Keaveney (HDR) — Onsite. Weather is partly cloudy, 70°F
Wayne (PW)
Matt (PW)
Mike Ottenger (ANG)

0735: PFC-MW4 ~~PFC~~ was gauged, water level at ~28ft bgs. The plan today is to finish constructing ~~MW~~ PFC-MW4 and develop PFC-MW3, then install PFC-MW2.

0830: PW finished constructing the well pad at PFC-MW4. Moving to PFC-MW3.

0900: PW finished constructing the well pad at PFC-MW3.

0914: PFC-MW3 @ 37.78ft

1023: Pump is not working. ~~Well~~ No development will be able to take place until we get a new pump. Drillers are decontaminating Augers.

1345: At the commercial side. ~~Labled~~ Labled all drums on ANG side before noon. We've begun drilling SB-PFC-MW2. Collected SB-PFC-MW2-3.0 at 1325. The wind has picked up and the forecast is now showing thunderstorms. We are checking the weather every half hour, but as of right now, we anticipate a storm at 1700.

1353: Drillers have switched to air rotary.

1652: We've encountered bedrock, however water is present. Setting the well at 36ft bgs. We are planning to return tomorrow to construct the well pad.

1705: ~~Well~~ MW-FBG collected

SGE discuss development plan w/ MEL - going to check w/ DEC about developing PFC-mw-2 before 24 hrs. after construction has elapsed

SGE + MK sorting thru samples, completing CoC, and packaging up shipment — MK to drop on way home

Drillers ended up completing Flush mount/manhole here
Well specs reviewed w/ Wayne (P-W):
TD = 36' bgs
Screen - stainless steel 10 slot 26-36'
#0 sand filter pack 24-36'
#00 choker sand seal above filter pack 22.5' - 24'
grouted to within a ft of surface 1' - 22.5'

1835 Escorted out from SWF - HDR and P-W off-site after securing equipment and prepping for development tomorrow (P-W to receive a replacement pump in morning @ hotel)

HDR

Project: NYSDOT SWF/ANG PFCs	Computed:	Date: Aug 26 20
Subject: New MW Installation	Checked:	Date: Friday
Task: (well development)	Page:	of:
Job #:	No: Warm sunny humid 80s	

0800 HDR on-site (SGE) @ ANGB for development of wells w/ P-W Developing PFC-MW-3 and -MW-4 via pump and surge w/ submersible pump; P-W had to get replacement pump after first one failed yesterday

Also going to contact DEC about possibly developing PFC-MW-2 on SWF property - will be before recommended 24 hr period to let well sit after construction if we tried to complete today

0900 After getting new pump P-W sets up to develop PFC-MW-3. Anticipate silty water since completed in overburden and was difficult to manage running sand/silt here during drilling

1100 Progress thru several cycles of pump on + off for approx. 2 hrs. - slowly decreasing turbidity over time but gets very turbid again each time after surging

Reach time constraint of allotted time to spend on MW-3 and decide we can revisit later or next week if feasible; decon pump after removal and mobe to PFC-MW-4; anticipate that early afternoon we need to mobe to SWF side to pump PFC-MW-2 if DEC gives us go ahead to develop P-W also needs to load up equip. from staging area @ SWF side; anticipate that PFC-MW-4 will develop quickly since rock well and not expecting significant yield from this well

1130 Set up and start development @ PFC-MW-4
Shooting to pump and de-mobe here in time to get to SWF OPS @ 1230
Check w/ Mike O. and he says OK to discharge development water to ground if low quantity / low turbidity

1150 Working on PFC-MW-4 but after initial purge of water column the well is only recharging very slowly - dry after only a few gallons

Project: NYSDOT SWF/ANG PFCs	Computed:	Date: Aug 26 201
Subject: New MW Installation	Checked:	Date: Fri.
Task: (well development)	Page:	of:
Job #:	No:	

1210 Discuss options for afternoon w/ MEL

- if DEC ok w/ us developing PFC-MW-2 then HDR could sit w/ pump and oversee development while P-W loads up @ SWF staging area so they can de-mobe from site by mid-afternoon

- if DEC wants us to hold off on MW-2 development HDR will hold onto P-W rental pump and P-W will go alone to SWF staging area, pick up equipment, and de-mobe from site while HDR returns to PFC-MW-3 to continue development there

1220 Learn that DEC doesn't want MW-2 developed yet so 2nd option above will be conducted

1240 After a few more attempts @ pumping MW-4 w/ minimal yield - HDR suspends work and may come back @ later date to attempt further development

P-W pulls pump and decons in preparation for HDR to re-mobe to PFC-MW-3 for further pump and surge there

1300 HDR re-mobe to MW-3 and P-W off-site from ANG to go over to SWF to check in w/ OPS and pick up equip. @ Staging area in preparation for final de-mobe from site

1400 Continue pump & surge @ MW-3 - working on filling 2nd 55 gal drum now - water is clearing up fairly quickly now after surge

1440 Finish filling 2nd drum w/ development water from MW-3 total of 100-110 gal pumped out now

Mike O. to move drums to staging area w/ forklift HDR load up equipment and finish up for the week

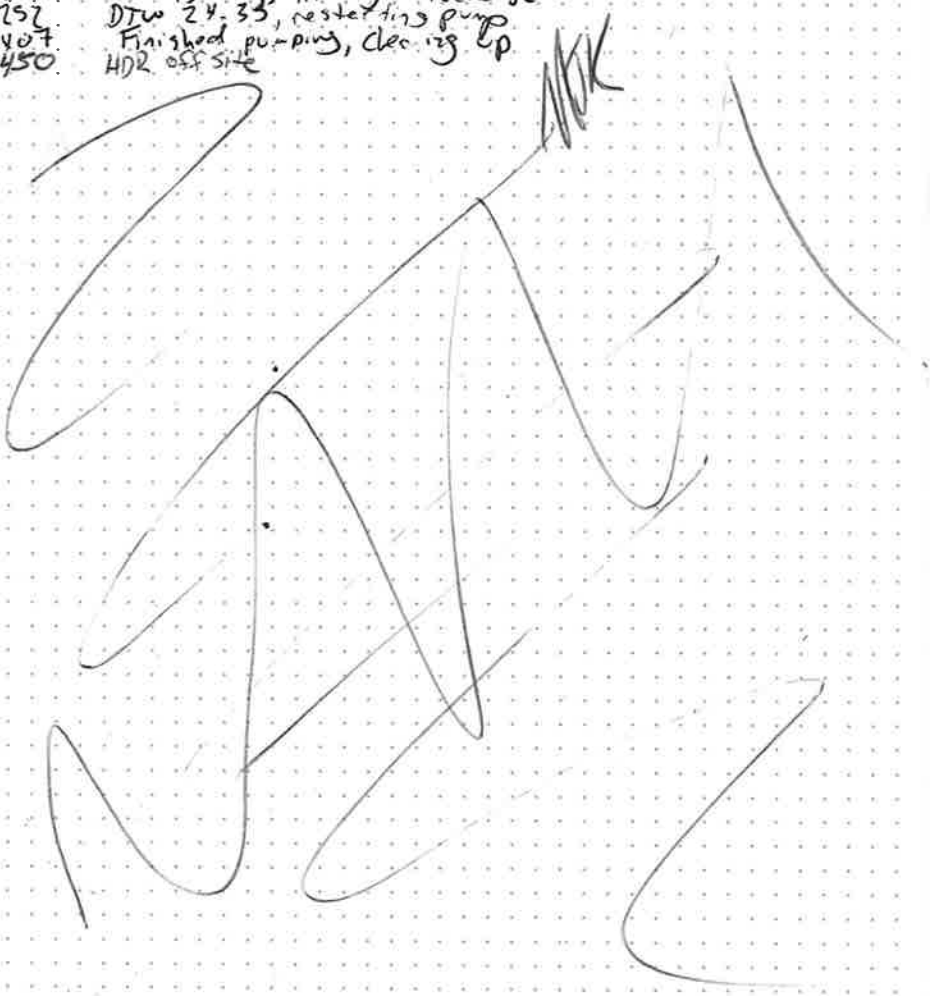
1515 SGE off-site

9/7/2016

Stewart Airport PFC Investigation
Job # 10017559-39
Weather Clear, 75° F

Today's plan includes well development of PFC-MW2.
H&S topic to focus on includes tick bites.
Matthew Keeney (HDR) on site

10:00 Arrive at Stewart Airport Operations and Check in
10:15 Escort to well PFC-MW2
10:30 Begin setting up well for development Well is in Good condition
DTW 6.25 ft; DTB 35.10 ft
11:10 Begin development
12:00 Well is dry, DTW ~22 ft
12:15 Well is recharging DTW ~ 26.9 ft
12:16 Restarting pump, setting faster to distribute sediment
12:29 well is dry, allowing to recharge
12:52 DTW 24.33, restarting pump
14:07 Finished pumping, cleaning up
14:50 HDR off site



Project:	Stewart/ANG	Computed:	Date: 9/14/16
Subject:	PFC Sampling	Checked:	Date:
Task:		Page:	of:
Job #:		No:	

0730 - 0745 Check in on ANG base - meet Mike O. for escort around site

Sampling catch basin C17 in front of Bldg. 202

0830 collect 2 bottles Sample ID: C17

0840 check catch basin CB - not sampleable
No flow

Note problem w/ map

0857 Sample catch basin CB
also collect MS/MSD here

Check CB ID'd STM very low flow
but can't remove grate - Mike O. to try
to remove w/ Bobcat

0930 Collect Sample catch basin DB-8 time 0930

also collect sample - field duplicate CB-DUP time 1000

1000 Mobe to SWF to Sample
MW-2 and drums

MW-2 DTW = 6.80'

Set up to pump w/ peri-pump

Project: SWF Sampling		Computed:	Date: 9/14/16
Subject:		Checked:	Date:
Task:		Page:	of:
Job #:		No:	

1045 Start pumping

1052 Start logging WQ parameters for purge stabilization

	Temp	pH	ORP	cond.	turb.	DO (mg/L)
1100	16.35	5.91	+451	0.553	5.8	10.58
1105	16.28	5.99	+447	0.555	6.1	9.82
1110						
1115	16.51	6.03	446	0.555	7.1	8.79
1120	16.59	6.06	446	0.553	7.9	7.47
1125	16.44	6.04	445	0.552	7.4	6.84
1130	17.03	6.04	444	0.555	7.1	6.28
	decrease flow rate from 0.4 L/min. to ~ 0.25 L/min.					
1145	18.36	6.15	433	0.564	6.9	0.36 (?)
1150	18.51	6.18	430	0.562	8.6	0.25
1155	18.61	6.19	428	0.561	9.9	0.21
1200	18.70	6.20	427	0.559	11.1	0.17

Stable - will sample @ 1205 PFC MW-2 @ 1205
MW-DUP duplicate @ 1230

post sample DTW 18.23 ft

1300 Sample drums - liquids and soil @ SWF

1330 HDR/DEC off-site from SWF

1400 Back to ANG to sample wells

1423 Start pumping @ PFC MW-3

Project:	Computed:	Date: 9-14-16
Subject:	Checked:	Date:
Task:	Page:	of:
Job #:	No:	

Purge chems after purging for ~ 30 minutes

	Temp	pH	ORP	Cond	turb	DO
1437	24.4	6.94	364	0.757	0.6	6.84
1442	21.5	7.26	334	0.767	0.0	2.60
1447	20.9	7.22	315	0.736	0.0	1.78
1452	21.4	7.20	296	0.757	0.0	0.99
1457	21.0	7.21	279	0.749	0.0	8.05
1502	20.6	7.20	268	0.738	0.0	7.35
1507	20.7	7.19	244	0.730	0.0	6.28
1512	20.3	7.18	233	0.729	0.0	5.67
1517	20.1	7.17	228	0.730	0.0	5.20
1522	20.4	7.16	225	0.728	0.0	4.55
1527	Flushed system					
1532	19.99	7.11	237	0.736	0.0	0.17
1542	19.52	7.06	220	0.738	0.0	0.0
1552	19.30	7.05	214	0.734	-	-
1602	19.26	7.04	208	0.734	-	-
1612	19.19	7.03	206	0.736	-	-
1622	19.15	7.02	205	0.736	-	-

Sampled 1625 post sample DTW 39.29 ft

Collect - field blank CB-FB-091416 @ 1650

Collect CB rinsate blank CB-EB-091416 @ 1655

Secure area - Finish up paperwork and stowing equipment
~ 1710 HDR and DEC off-site

Project:	Computed:	Date: 9-15-16
Subject:	Checked:	Date:
Task:	Page:	of:
Job #:	No:	

0730 HDR & DEC on-site with Hager-Richter (Alexis Martinez) to conduct downhole geophysics and finish CB and well sampling at ANG base

Decon dip buckets used yesterday to prep for CB sampling today

Alexis setting up on TE-4 to conduct EM and Gamma logging

EM to characterize fine scale lithology/sediment differences high conductivity zones = finer grained (sand vs. silt/clay)

Gamma logging to delineate clay layers - high gamma readings = higher clay content / less sand zones

0930 Complete TE-4 geophysics

SGE/Lexy (DEC)/Adam W. (USAF) to PFC MW-4 to sample

1035 Start pumping PFC MW-4 with Waterra Pump pumping @ 250 mL/min.

	temp	pH	ORP	cond. mS/cm	turbidity	DO	
1050	18.45	8.58	311	0.575	33.7	5.18	
1055	17.85	8.55	310	0.584	26.6	4.20	
1100	17.11	8.70	308	0.586	30.6	4.04	~ 2 gal
1105	17.29	8.71	307	0.585	30.5	3.54	
1110	17.23	8.70	305	0.589	33.5	3.12	
1125	18.40	8.81	305	0.606	87.8	5.91	
1130	19.14	8.78	308	0.601	84.5	4.69	
1135	19.49	8.77	309	0.601	92.9	4.63	
1140	19.87	8.76	310	0.602	117	4.70	
1145	20.24	8.74	311	0.608	129	4.63	
1150	20.09	8.72	314	0.623	130	6.60	
1200	20.32	8.70	316	0.629	138	7.70	
1205	20.66	8.67	317	0.630	147	7.61	
1210	20.92	8.65	319	0.633	145	7.28	

Project: NYSDOT SWF/ANG PFCs		Computed:	Date: 9-15-16
Subject:		Checked:	Date:
Task:		Page:	of:
Job #:		No:	

Collect sample PFC MW-4 @ 1215

1340 Collect sample CB-2 w/ peri pump

1405 Collect sample CB-9A w/ pump

1435 Collect sample W-6 w/ peri pump

1445 Collect ANG-CB-EB-091516

1515 Collect D-27 catch basin w/ peri pump

1600 Collect D-15A catch basin w/ peri pump

9-16-16 Friday
pg 1 of 3

Project: NYSDOT SWF/ANG PFCs	Computed:	Date: 9/16/16
Subject: CB and MW Sampling	Checked:	Date: Friday
Task:	Page:	of:
Job #:	No: Warm + Sunny 80°	

0800 HDR (SGE) and DEC (Lexy S.) on-site @ ANGB - meet with Mike O. from Enviro. and Don Stedge (Surveyor)

At ANGB going to survey locations/elevations of two new monitoring wells (PFC-MW-3 and PFC-MW-4) and the older TE- series wells TE-1 thru TE-6

HDR gets surveyor started on wells MW-3 and MW-4 - survey flush mount wells (ground surface and top of stainless steel riser)

HDR/DEC to IDW drums staged at ANGB to collect waste classification/disposal characterization samples

0900 Collect soil sample from drums
SGE ~~SWF~~ → ANG-SOIL-IDW

0905 Collect water sample from drums
ANG-GW-IDW

Place samples on ice in cooler for preservation

HDR and DEC review remaining sampling objectives while surveyor finishes with new wells and a couple of the TE series wells

HDR to accompany surveyor to commercial side of airport (SWF) to get escorted out onto taxiways/runways to survey boring location where PFC-MW-1 would have been installed and the new well PFC-MW-2 near Runway 34/16

0950 off-site w/ surveyors to check in @ ops for access to SWF

1010 Check in @ ops and escorted thru gate after cars inspected currently in holding pattern pending plane taxiway traffic

Project: NYSDoT SWF/ANG PFCs	Computed:	Date: 9/16/16
Subject: CB and MW Sampling	Checked:	Date: Fri.
Task: (MW surveying)	Page:	of:
Job #:	No: Warm + Sunny 80°	

1100 Receive clearance thru escort to mobe to PFC-MW-1/-2 locations for surveying

A lot of plane traffic today due to UN meeting apparently and problems with Army Football Team charter plane

Survey locations @ SWF - to get good elevation data they have to remain on location ~ 30 min.

1210 Finished up @ SWF - check out @ OPS and back over to ANGB

1225 Check back in @ ANGB - Surveyors go w/ Mike O. to pick up remaining TE well locations and tie in various wells

HDR and DEC to catch Basin STM - Mike O. earlier had removed lid partially for better access - we look at map again and determine that the basin we are looking at isn't actually STM as shown on map but one upstream - flow here is very low and access is difficult but will try to sample w/ peri pump

1300 to distinguish between STM location shown on map and one we are going to try to sample - we'll call this one STM-UP

Peri pump not working initially to draw water - finally rig to weight end with SS nuts and hose clamps and attach small length of more pliable silicon tubing to end of HDPE tubing

With this set up finally able to collect sample from very low flow conditions; Sample STM-UP collected @ 1350 also collect WQ as requested by DEC pH 8.34
sp. cond. 1.44 MS/cm

HDR

Project:	SWF / ANG WLs	Computed:	Date: 10-4-16
Subject:	Synoptic Water Levels	Checked:	Date:
Task:		Page:	of:
Job #:		No:	

Haley (862) 400 0680

Brian (845) 642 8681

MW-2 DTW = 7.59' @ 1032

drum count @ SWF
Soil 111
liquid 11

DBF MW-4 TOR DTW = 11.22' @ 1208
TOC DTW = 11.58' 1208

DBF MW-5 TOR DTW = 16.54' @ 1218
TOC DTW = 17.00 1218

DBF MW-2 TOR DTW = 19.18 @ 1232
TOC DTW = 19.23

DBF MW-3 TOR DTW = 13.43 @ 1216
TOC DTW = 14.02

DBF MW-1 TOR DTW = 12.80 @ 1255
TOC DTW = 13.62

DBF MW-6 Dry @ 24.75 ft bgs @ 1305
(28.00 ft below TOC)

Well Gauging Log

Project Name: Stewart Commercial Airport, the ANG base and landfill, and the Town of New Windsor Landfill.
Client: NYSDEC
Project Number
Inspector: 10/4/16 CZ

Well ID A	Depth to Product (DTP)	Depth to Water (DTW)	Depth to Bottom (DTB)	Product Thickness	Comments
	---			---	
	---			---	
	---			---	
	---			---	
	INNER	OUTER	TIME		
TE6	16.82	17.02	1034		
TE2	19.84	20.15	1043		
TE1	23.78	24.05	1050		
TE5	43.90	44.15	1056		
PFCMW03	39.45	39.83	1106		
PFCMW04	27.51	27.88	1148		
TE3	13.16	13.45	1158		
MW06	10.64	10.8	1135		

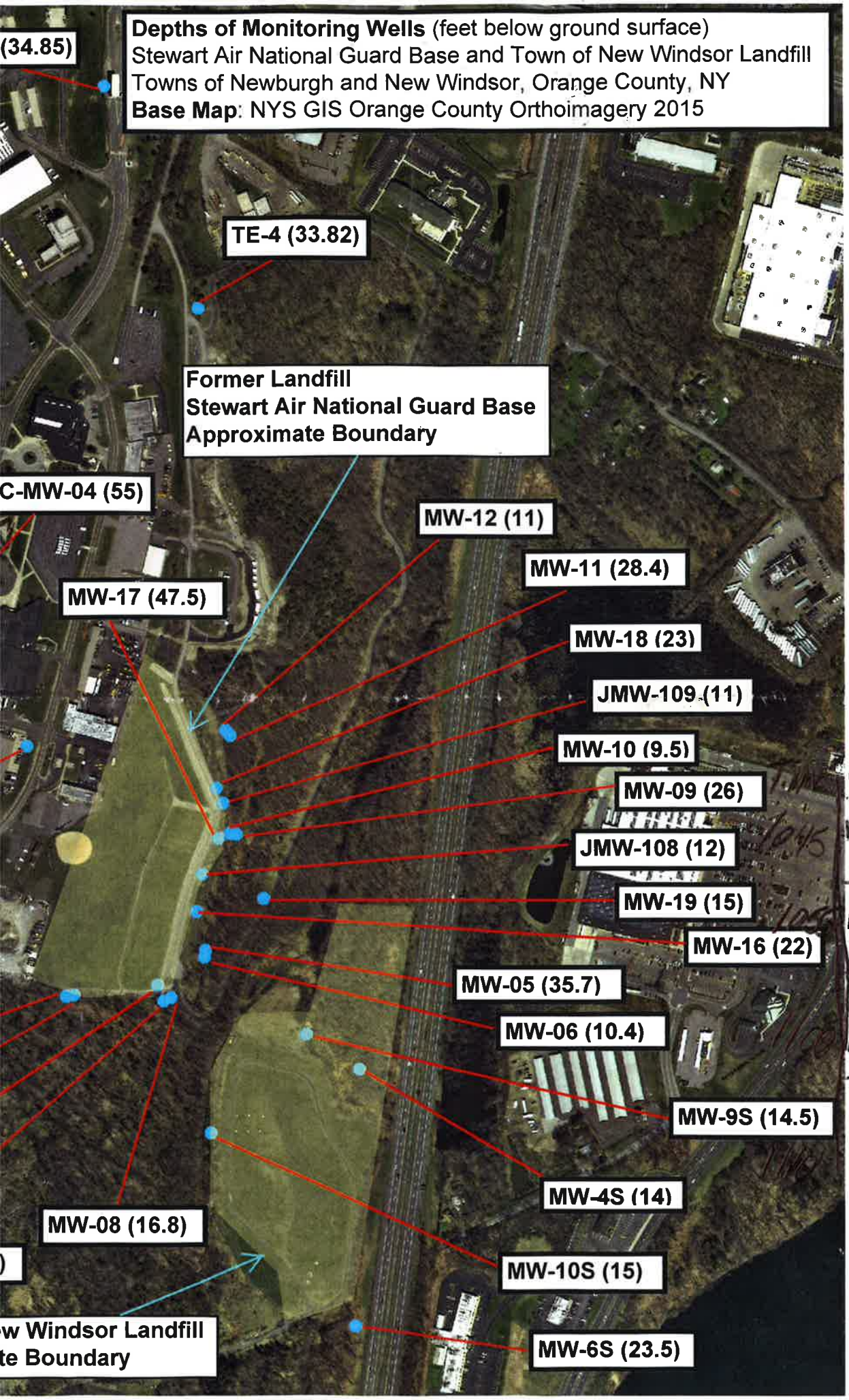
Well Gauging Log

Project Name: Stewart Commercial Airport, the ANG base and landfill, and the Town of New Windsor Landfill.
Client: NYSDEC
Project Number
Inspector:

Well ID	Depth to Product (DTP)	Inner Casing Depth to Water (DTW)	Outer Casing Depth to Bottom (DTB)	Product Thickness	Comments Time of Reading
MW-04	---	32.24	32.48	---	10:32
MW-01	---	32.66	33.25	---	10:36
TE-4	---	24.82	25.15	---	10:41
MW-08	---	17.18	17.76	---	10:47
MW-07		16.63	17.02		10:50
MW-14		32.75	33.14		10:54
MW-15	Dry	~15 ft to bottom	~15.6		10:56
MW-19		7.82	7.96		11:05
MW-16		14.6	15.29		11:13
MW-107	couldn't find				
MW-05		8.34	8.65		11:32
MW-17		*	11.91		11:46

MW-15 by on map labeled MW-16 on map (wrong) eastern one, by MW-19 (actually MW-16)

* inner casing was 2.38 ft lower than upper casing - couldn't see to measure DTW



well	DTW I	DTW O
MW4S	4.69	4.64
MW9S	7.78	8.06
MW10S	4.59	9.90
MW6S	11.88	11.83

Steward Airport — 10/03/16

~~TIME DTW (IC) DTW (OC)~~

TIME	WELL ID	DTW (IC)	DTW (OC)
1030	MW-12	DRY (TD=12.81)	DRY
1135	MW-11	21.38	21.79
1140	MW-18	15.76	16.35
1146	MW-10	DRY (TD=11.89)	DRY
1149	MW-09	13.29	13.87

ENGINEERS FIELD BORING LOG

Boring No. SB-PFC-MW1
SURFACE ELEV
DATUM
SHEET 1 OF 2

PROJECT NAME Stewart
SITE LOCATION Stewart DATE Aug 16 2016
DRILLING EQUIPMENT DRILLER NAME / COMPANY Parratt Wolff Inc
MONITORING INSTRUMENTATION HDR FIELD INSPECTOR Matthew Keaveny

Depth (ft.)	Sample No.	Sample Depth (ft)	Sample Recov. (in.)	Sample PID (ppm)	Sample Description	Remarks	~~Blows~~ Pen Time
0	—	—	—	—	0.0ft-0.5ft: SILT with SAND. Mostly SILT. ~~Few SAND~~. Few roots. Few subrounded SAND. Dry. Olive Gray. ML. organic matter. ~~0.5ft-2.5ft: SILTY GRAVEL~~	0827	~~0-2.18~~ S
	—	—	1.75	—	2.5ft - 4.5ft: ~~SILTY GRAVEL~~. Light Gray. GRAVELLY SILT with SAND. LITTLE fine GRAVEL. Mostly SILT. Few fine SAND. Dry. Silt is platy. ML. Dense, SILT clumped like of Gravel. Subangular SAND	0853	2.5-4.5: 85
	—	—	2	—	10ft-12ft: GRAVELLY SILT. mostly light olive gray, SILT. Little light gray platey fine GRAVEL. Few light gray coarse GRAVEL. Dry. Stiff.	0956	10-12: 165
12	SB-PFC-MW1 -16.0	16	2	—	15ft-17ft: GRAVELLY SILT. Mostly light olive gray stiff SILT. Little/some fine bluish gray ~~gray~~ GRAVEL. Slightly moist. ML	1047	15-17: 195
	—	—	2	—	20ft-22ft: GRAVELLY SILT. mostly olive Gray stiff SILT, high plasticity, cohesive. Some fine ~~Grave~~ bluish gray GRAVEL. Moist. ML	1205	20-22: 265
	—	—	2	—	35ft-37ft: SILT. Mostly hard greenish gray SILT. Few light gray GRAVEL. dry. ML.	1115 (Aug 17)	35-37: 415
	—	—	2	—	37ft-39ft: ~~SILT. Most~~ SILT with GRAVEL. Mostly hard greenish gray SILT. Few little bluish gray fine ~~GRAVEL~~. DRY. ML.	1352 (Aug 17)	37-39: 465

WOR - Weight of Rods
WOH - Weight of Hammer
50 BOH - Bottom of Hole
NS - No Split Spoon Sample
S-__ - Split Spoon Sample
U-__ - Undisturbed Sample

Proportions
And - Equal
Sandy - 31 - 49%
Some - 13 - 30%
Trace - 1 - 12%

Blows per 1' Compaction
0 - 4 - V. Loose
5 - 10 - Loose
11 - 30 - Med. Dense
31 - 50 - Dense
> 50 - V. Denset
50/6" - Refusal

Pocket Pen. (Clays only)
< 2 - V. Soft
2 - 4 - Soft
4 - 8 - Medium Stiff
8 - 15 - Stiff
15 - 30 - Very Stiff
> 30 - Hard

Strata Descriptions
F - Fill
O - Organic Deposits
S - Predominantly Sand
M - Predominantly Silt
C - Predominantly Clay

Strata Descriptions (con't)
V - Varved Silt and Clay Deposits
T - Glacial Till Deposits
D - Decomposed Rock
R - Rock

Sample 15-17 ← X-16
Silt from every 5ft

ENGINEERS FIELD BORING LOG

Boring No. SB-PFC-MW1
SURFACE ELEV
DATUM
SHEET 2 OF 2

PROJECT NAME Stewart
SITE LOCATION Stewart DATE Aug 18 2016
DRILLING EQUIPMENT
MONITORING INSTRUMENTATION
DRILLER NAME / COMPANY
HDR FIELD INSPECTOR

Depth (ft.)	Sample No.	Sample Depth (ft)	Sample Recov. (in.)	Sample PID (ppm)	Sample Description	Remarks	~~Blows~~ Run Time
	-	-	24	-	45ft-47ft: SILT. Mostly Olive gray ~~and~~ hard SILT. Few very fine & bluish grey & GRAVEL. dry. ML	1021 (Aug 18)	~~33~~ 45-47 3335 55-57: 30s
	SB-PFC-MW1-56.0	56	20	-	55ft-57ft: ~~FAT CLAY WITH GRAVEL~~. Mostly olive gray FAT CLAY Very stiff. Little fine GRAVEL. Some SILT. ~~&~~ CH	1137 (Aug 18)	
							30s
							21
	SB-PFC-MW1-3.0	3	20	-	2ft-4ft: GRAVELLY SILT. Mostly light gray platey SILT. Some fine bluish grey GRAVEL. Dry. Slightly moist.	1205 (Aug 18)	2ft-4ft: 21s

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S-___ - Split Spoon Sample
U-___ - Undisturbed Sample

Proportions
And - Equal
Sandy - 31 - 49%
Some - 13 - 30%
Trace - 1 - 12%

Blows per 1' Compaction
0 - 4 - V. Loose
5 - 10 - Loose
11 - 30 - Med. Dense
31 - 50 - Dense
> 50 - V. Denset
50/6" - Refusal

Pocket Pen. (Clays only)
< 2 - V. Soft
2 - 4 - Soft
4 - 8 - Medium Stiff
8 - 15 - Stiff
15 - 30 - Very Stiff
> 30 - Hard

Strata Descriptions
F - Fill
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Strata Descriptions (con't)
V - Varved Silt and Clay Deposits
T - Glacial Till Deposits
D - Decomposed Rock
R - Rock

50

ENGINEERS FIELD BORING LOG

Boring No. SB-PFC-MW3
SURFACE ELEV
DATUM
SHEET 1 OF 1

PROJECT NAME Stewart LNG
SITE LOCATION Newburgh NY
DATE Aug ~~Feb~~ 23, 2016
DRILLING EQUIPMENT
DRILLER NAME / COMPANY Parratt Wolff
MONITORING INSTRUMENTATION n/a
HDR FIELD INSPECTOR Matthew T Keaveney

Depth (ft.)	Sample No.	Sample Depth (ft)	Sample Recov. (in.)	Sample PID (ppm)	Sample Description	Remarks	Blows
	SB-PFC-MW-3.0	.....	24in	n/a	0ft-~~2~~3ft: ORGANIC SOIL. OH. Mostly SILT. Few fine Bluish gray GRAVEL Olive gray. dry. hard. 3ft-~~4~~4ft: GRAVELLY SILT. Mostly greenish gray SILT, platey. Some GRAVEL, bluish gray, fine and coarse Soft-firm. dry. ML.	1325 Photo identifying interval as 0ft-2ft.	~~0ft-4ft~~ 22 sec
	—	—	24in	n/a	10ft-12ft: SILT. Mostly SILT, platey, olive gray. Little fine GRAVEL, bluish gray. Dry. Hard.	1407	10-12ft: 14sec
	—	—	24in	n/a	15ft-17ft: GRAVELLY SILT. Mostly olive grey platey SILT. Some fine bluish gray GRAVEL. Stiff. Slightly moist.	1417	15-17ft: ~~20ft~~ 18sec
	—	—	24in	n/a	20ft-22ft: SILT with SAND. Mostly SILT. Little very fine SAND and few coarse SAND. Little very fine GRAVEL. Olive gray, hard, Slightly moist	1434	20ft-25ft 16sec
	—	—	—	—	Refusal	1456	25-27ft. 7sec

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S:___ - Split Spoon Sample
U:___ - Undisturbed Sample

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Sandy - 31 - 49%
Some - 13 - 30%
Trace - 1 - 12%

Blows per 1' Compaction
0 - 4 - V. Loose
5 - 10 - Loose
11 - 30 - Med. Dense
31 - 50 - Dense
> 50 - V. Dense
50/6" - Refusal

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Strata Descriptions
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C - Predominantly Clay

Strata Descriptions (cont'd)
V - Varved Silt and Clay Deposits
T - Glacial Till Deposits
D - Decomposed Rock
R - Rock

50

ENGINEERS FIELD BORING LOG

Boring No. ~~PFC-MW-3~~
SURFACE ELEV
DATUM
SHEET 1 OF 3

PROJECT NAME Stewart
SITE LOCATION Stewart AMC DATE Aug 19 2016
DRILLING EQUIPMENT
MONITORING INSTRUMENTATION n/s
DRILLER NAME / COMPANY Parratt Wolff Inc
HDR FIELD INSPECTOR Matthew T Keavney

Depth (ft.)	Sample No.	Sample Depth (ft)	Sample Recov. (in.)	Sample PID (ppm)	Sample Description	Remarks	Blows
-	-	-	-	-	0.0-0.5: Asphalt ~~0.5ft-2.5ft:~~	0810	~~2ft~~ 0.5ft-2.5ft: 21 sec.
	SB-PFC-MW3-0.5	~~NA~~ 0.5ft	2ft	-	0.5ft-1.0ft: Asphalt and GRAVELLY SAND. Mostly fine SAND, sub angular to poorly graded, dark olive gray. Some fine GRAVEL, light bluish gray. 1.0ft-2.5ft: GRAVELLY POORLY GRADED SAND. Mostly brown, rounded poorly graded, SAND, feldspars. Some fine GRAVEL, light bluish gray. dry. ~~SAT~~. loose. SP	0813	
	SB-PFC-MW3-2.5	2.5ft	6in	-	~~2.5ft-3ft:~~ 2.5ft-2.75ft: POORLY GRADED SAND WITH GRAVEL. Mostly brown, rounded, poorly graded SAND; feldspar, quartz, hematite. Little fine GRAVEL, light bluish gray. ~~&~~ slightly moist. ~~to~~ soft. 2.75ft-3ft: SILT. Mostly light gray SILT, platey. Few fine GRAVEL, bluish gray. dry. hard. SP	0830	2.5ft-3ft: 18 sec.
-	-	-	12in	-	10ft-12ft: SILT WITH GRAVEL. Mostly ~~&~~ olive gray platey SILT. Little bluish gray fine GRAVEL. Trace bluish gray coarse GRAVEL. Soft. Slightly moist.	0922 No photo taken	10ft-12ft: ~~11~~ sec
	SB-PFC-MW3-21.0	21ft	12in	-	20ft-22ft: FAT CLAY. Mostly high plasticity, cohesive, ~~SAT~~ FAT CLAY, Olive ~~green~~ gray. Trace very fine bluish gray GRAVEL. Medium stiff. Slightly moist.	1038	20-22ft: 8sec

WOR - Weight of Rods
WOH - Weight of Hammer
BOH - Bottom of Hole
NS - No Split Spoon Sample
SS-___ - Split Spoon Sample
U-___ - Undisturbed Sample

Proportions
And - Equal
Sandy - 31 - 49%
Some - 13 - 30%
Trace - 1 - 12%

Blows per 1' Compaction
0 - 4 - V. Loose
5 - 10 - Loose
11 - 30 - Med. Dense
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Strata Descriptions (con't)
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T - Glacial Till Deposits
D - Decomposed Rock
R - Rock

ENGINEERS FIELD BORING LOG

Boring No. SB-PFC-MW-3
SURFACE ELEV
DATUM
SHEET 2 OF 3

PROJECT NAME Stewart
SITE LOCATION Stewart AVE DATE Aug 19 2016
DRILLING EQUIPMENT
MONITORING INSTRUMENTATION n/a
DRILLER NAME / COMPANY Parratt Wolff Inc
HDR FIELD INSPECTOR Matthew J. Keaveney

Depth (ft.)	Sample No.	Sample Depth (ft)	Sample Recov. (in.)	Sample PID (ppm)	Sample Description	Remarks	Blows
	n/a	n/a	16in	n/a	~~30ft-32ft: FAT CLAY. Greenish gra~~ Mostly Greenish gray and ~~brown, high plasticity, cohesive, FAT CLAY. Few SAND. Moist.~~ 30ft-31ft: ~~SANDY~~ POORLY SORTED SAND WITH CLAY. Mostly brown very fine SAND ~~poorly~~ sorted, sub rounded, Few ~~FAT~~ CLAY, high plasticity, cohesive. Trace GRAVEL. SILT. 31ft-32ft. ~~FAT CLAY. LEAN CLAY.~~ Mostly ~~LEAN CLAY,~~ SILT ~~medium~~ LOW plasticity, no cohesiveness. Few fine GRAVEL. Olive grey.	1110	~~8~~ 15 30ft-32ft: 8sec
	n/a	n/a	12in	n/a	32ft-37ft: FAT CLAY WITH SAND Mostly FAT CLAY, medium plasticity, cohesive, olive grey. Little SAND subrounded. wet. Few fine and coarse GRAVEL. soft.	1130	35-37ft: 11sec
	n/a	n/a	24in	n/a	40ft-42ft: SANDY FAT CLAY. Mostly ~~FAT~~ CLAY, greenish grey, cohesive, medium plasticity. SOME SAND, brown, sub rounded ~~fine~~ Very fine SAND, moist. Stiff.	1145	40-42ft: 12sec
	SB-PFC-MW3-46ft	46ft	20in	n/a	45-47ft: CLAYEY SAND. Mostly fine SAND, poorly graded, brown. Some ~~FAT~~ CLAY. WET. soft.	1206	45-47: 8sec
	n/a	n/a	20in	n/a	50ft-52ft: ~~POORLY GRADED~~ SILTY SAND WITH GRAVEL. Mostly brown SILTY SAND, subrounded little GRAVEL, gray GRAVEL. Soft to medium stiff. Wet.	1223	50-52: 8sec

50

WOR - Weight of Rods
WOH - Weight of Hammer
BOH - Bottom of Hole
NS - No Split Spoon Sample
iS-___ - Split Spoon Sample
U-___ - Undisturbed Sample

Proportions
And - Equal
Sandy - 31 - 49%
Some - 13 - 30%
Trace - 1 - 12%

Blows per 1' Compaction
0 - 4 - V. Loose
5 - 10 - Loose
11 - 30 - Med. Dense
31 - 50 - Dense
> 50 - V. Denset
50/6" - Refusal

Pocket Pen. (Clays only)
< 2 - V. Soft
2 - 4 - Soft
4 - 8 - Medium Stiff
8 - 15 - Stiff
15 - 30 - Very Stiff
> 30 - Hard

Strata Descriptions
F - Fill
O - Organic Deposits
S - Predominantly Sand
M - Predominantly Silt
C - Predominantly Clay

Strata Descriptions (con't)
V - Varved Silt and Clay Deposits
T - Glacial Till Deposits
D - Decomposed Rock
R - Rock

ENGINEERS FIELD BORING LOG

Boring No. SB-PEC-MW3
SURFACE ELEV
DATUM
SHEET 3 OF 3

PROJECT NAME Stewart ANG
SITE LOCATION Newburgh NY DATE Aug 22, 2016
DRILLING EQUIPMENT
MONITORING INSTRUMENTATION n/a
DRILLER NAME / COMPANY Parratt Wolff Inc
HDR FIELD INSPECTOR Matthew T. Reavey

Depth (ft.)	Sample No.	Sample Depth (ft)	Sample Recov. (in.)	Sample PID (ppm)	Sample Description	Remarks	Blows
	n/a	n/a	8in	n/a	55ft-57ft: ~~CLAYEY~~ SILTY SAND. Mostly fine, poorly graded, sub rounded SAND. ~~Little Clay.~~ Little SILT. Few fine GRAVEL. Trace coarse GRAVEL. brown. wet. Soft.	1302 Aug 22, 2016	~~13sec~~ 55ft-57ft 13sec

WOR - Weight of Rods
WOH - Weight of Hammer
BOH - Bottom of Hole
NS - No Split Spoon Sample
S-___ - Split Spoon Sample
U-___ - Undisturbed Sample

Proportions
And - Equal
Sandy - 31 - 49%
Some - 13 - 30%
Trace - 1 - 12%

Blows per 1' Compaction
0 - 4 - V. Loose
5 - 10 - Loose
11 - 30 - Med. Dense
31 - 50 - Dense
> 50 - V. Denset
50/6" - Refusal

Pocket Pen. (Clays only)
< 2 - V. Soft
2 - 4 - Soft
4 - 8 - Medium Stiff
8 - 15 - Stiff
15 - 30 - Very Stiff
> 30 - Hard

Strata Descriptions
F - Fill
O - Organic Deposits
S - Predominantly Sand
M - Predominantly Silt
C - Predominantly Clay

Strata Descriptions (con't)
V - Varved Silt and Clay Deposits
T - Glacial Till Deposits
D - Decomposed Rock
R - Rock

ENGINEERS FIELD BORING LOG

Boring No. SB-PFC-MW4
SURFACE ELEV —
DATUM —
SHEET 1 OF 1

PROJECT NAME Stewart ANG
SITE LOCATION Newburgh, NY DATE Aug 24, 2016
DRILLING EQUIPMENT Air rotary w/ external compressor DRILLER NAME / COMPANY Parratt Wolff
MONITORING INSTRUMENTATION — HDR FIELD INSPECTOR Matthew T. Kearney

Depth (ft.)	Sample No.	Sample Depth (ft)	Sample Recov. (in.)	Sample PID (ppm)	Sample Description	Remarks	Blows
	SB-PFC-MW4 -0.5	0.5ft	24in	—	0ft-0.5ft ~~ORGANIC SOIL~~. SANDY ORGANIC SOIL. OH. Mostly very fine SAND, Subrounded, poorly graded, brown. little SILT. little plant matter including roots. few fine GRAVEL. bluish gray. dry. St. ff. 0.5ft-2ft: SILT. Mostly SILT. Few Coarse SAND, ~~few fine GRAVEL~~, Subangular. light gray. hard. dry. few coarse GRAVEL.	0820	0ft-2ft: 25sec ~~2.5ft-4ft~~ ~~4.2sec~~
	SB-PFC-MW4 -3.0	3.0ft	24in	—	2ft-4.5ft: SILT WITH GRAVEL. Mostly SILT. Little Coarse GRAVEL, bluish gray. light gray. Stiff. dry.	0845	2ft-4.5ft 42sec
	—	—	11in	—	10ft-12ft: SILT with GRAVEL. Mostly SILT, light gray, platey. Little Fine GRAVEL weathering to coarse SAND. bluish gray. dry. Slightly stiff.	0909	10ft-12ft ~~37sec~~ 23sec 40sec 3 pushes
	—	—	24in	—	20ft-22ft: SILT. Mostly SILT, light gray. hard. Few fine GRAVEL, bluish gray. dry.	1054	20-22ft: 27sec
	—	—	24in	—	30ft-31ft. SILT. Mostly SILT, gray, hard. dry. ML. Slightly platey. Trace coarse GRAVEL, bluish gray. Beyond 31 ft realize that cuttings are coming back as rock chips (blue-grey shale) - likely encountered transition zone of weathered rock that prevented sampling below 31 ft bedrock became more competent below ~38 ft to final depth of boring @ ~50 ft bgs	1132	30-31ft 2" sec

WOR - Weight of Rods
WOH - Weight of Hammer
BOH - Bottom of Hole
NS - No Split Spoon Sample
S-___ - Split Spoon Sample
U-___ - Undisturbed Sample

Proportions
And - Equal
Sandy - 31 - 49%
Some - 13 - 30%
Trace - 1 - 12%

Blows per 1' Compaction
0 - 4 - V. Loose
5 - 10 - Loose
11 - 30 - Med. Dense
31 - 50 - Dense
> 50 - V. Dense
50/6" - Refusal

Pocket Pen. (Clays only)
< 2 - V. Soft
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Strata Descriptions
F - Fill
O - Organic Deposits
S - Predominantly Sand
M - Predominantly Silt
C - Predominantly Clay

Strata Descriptions (cont'd)
V - Varved Silt and Clay Deposits
T - Glacial Till Deposits
D - Decomposed Rock
R - Rock

MONITORING WELL COMPLETION LOG

PROJECT NUMBER:

PROJECT NAME: Stewart SWF

WELL No.: PFC-MW-2

CLIENT: NYSDOT

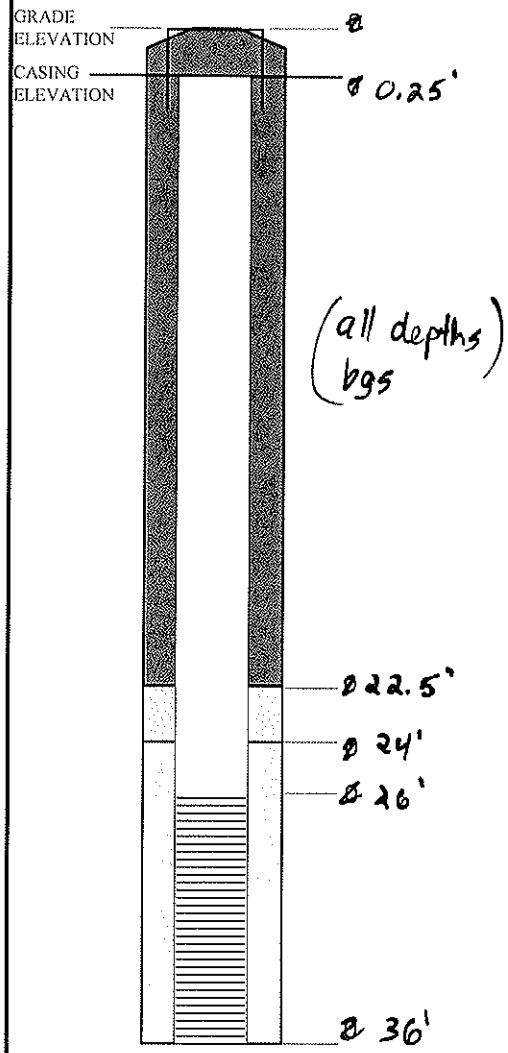
LOCATION: Stewart Airport - SWF (Runway 17/34 area)

DATE DRILLED: Aug 25, 2016

DATE DEVELOPED:

CONSTRUCTION COMPLETED: Aug 25, 2016

DEVELOPING METHOD:



NOT TO SCALE

INSPECTOR: MK/SGE

DRILLING CONTRACTOR: Parratt - Wolff, Inc.

TYPE OF WELL: Stainless steel

STATIC WATER LEVEL: DATE:

MEASURING POINT: top of SS riser

TOTAL DEPTH OF WELL: 36 ft. TOTAL DEPTH OF BORING: 36 ft.

DRILLING METHOD TYPE: HSA / air rotary

DIAMETER: 4.25-in ID CASING: None (augers)

SAMPLING METHOD TYPE: split spoon in OB above bedrock

DIAMETER: 2-in. WEIGHT: 120 #

FALL: 24" INTERVAL: See notes / logs

RISER PIPE LEFT IN PLACE MATERIAL: Stainless steel

DIAMETER: 2-in. LENGTH: 26 ft. JOINT TYPE: flush threaded

SCREEN MATERIAL: Stainless steel

INTERVAL: 26-36' DIAMETER: 2-in.

STRATIGRAPHIC UNITS SCREENED: Shale SLOT SIZE: 10

FILTER PACK GRADE:

SAND: #0 filter pack 24-36' bgs GRAVEL: NATURAL:

AMOUNT: INTERVAL:

#00 choker sand 22.5-24' bgs (as seal)

SEAL(s)

Portland Cement	INTERVAL: 1.0-22.5'	AMOUNT:
Bentonite Slurry	INTERVAL:	AMOUNT:
~~Bentonite Pellets~~	INTERVAL: 22.5-24'	AMOUNT: #00 chokes. Sand
Other:	INTERVAL:	AMOUNT:

LOCKING CASING: ☐ YES ☒ NO KEY NO:

NOTES:

Completed as rock well after encountering bedrock btwn 20-25' bgs

Originally scoped as an overburden well

MONITORING WELL COMPLETION LOG

PROJECT NUMBER:

PROJECT NAME: Stewart ANG

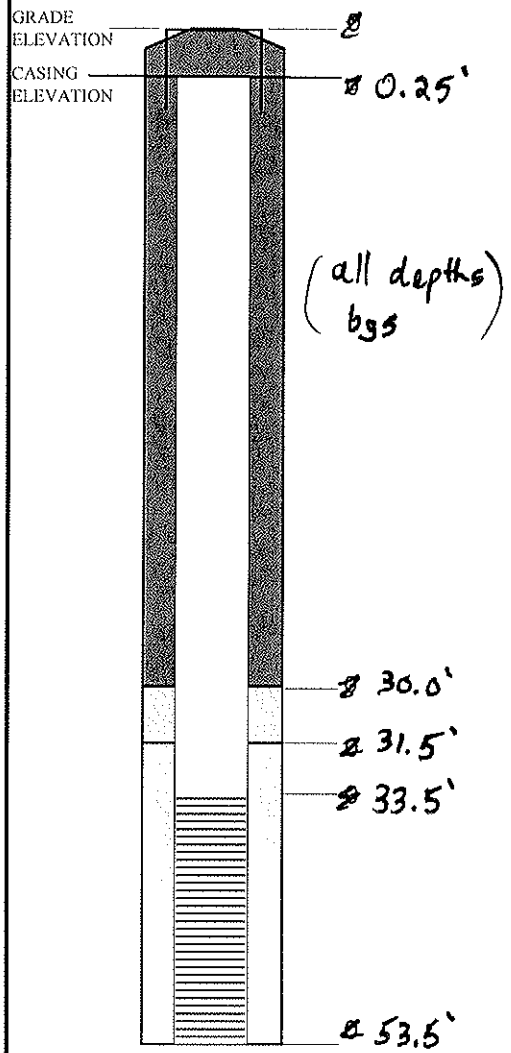
WELL No.: PFC-MW-3

CLIENT: NYSDOT

LOCATION: Stewart ANG Base - Newburgh, NY

DATE DRILLED:	DATE DEVELOPED:	CONSTRUCTION COMPLETED:
Aug 19-23, 2016	Aug 26, 2016	Aug 23, 2016

DEVELOPING METHOD: Submersible - pump + surge



NOT TO SCALE

INSPECTOR: MK/SGE

DRILLING CONTRACTOR: Parratt-Wolff, Inc.

TYPE OF WELL: stainless steel

STATIC WATER LEVEL: 37.78 ft. DATE: 8-25-16

MEASURING POINT: top of SS riser

TOTAL DEPTH OF WELL: 53.7' (measured) TOTAL DEPTH OF BORING: ~ 55 ft

DRILLING METHOD TYPE: HSA

DIAMETER: 4.25-in ID CASING: NONE (augers)

SAMPLING METHOD TYPE: Spl.t spoon

DIAMETER: 2-in. WEIGHT: 120 #

FALL: 24" INTERVAL: See notes/logs

RISER PIPE LEFT IN PLACE MATERIAL: Stainless steel

DIAMETER: 2-in. LENGTH: 33.5 ft. JOINT TYPE: flush threaded

SCREEN MATERIAL: stainless steel

INTERVAL: 33.5 - 53.5' DIAMETER: 2-in.

STRATIGRAPHIC UNITS SCREENED: Overburden SLOT SIZE: 10

FILTER PACK GRADE:

SAND: #0 filter pack GRAVEL: 31.5-53.5' bgs NATURAL:

AMOUNT: #00 choker sand INTERVAL: 30.0 - 31.5' bgs (as seal)

SEAL(s)

NOTES: difficult drilling and constructing this well due to running sands/silt

Portland Cement	INTERVAL: 1.0-30.0'	AMOUNT:
Bentonite Slurry	INTERVAL:	AMOUNT:
~~Bentonite Pellets~~	INTERVAL: 30.0-31.5'	AMOUNT: #00 choker sand
Other:	INTERVAL:	AMOUNT:

LOCKING CASING: ☐ YES ☒ NO KEY NO:

MONITORING WELL COMPLETION LOG

PROJECT NUMBER:

PROJECT NAME: Stewart ANG

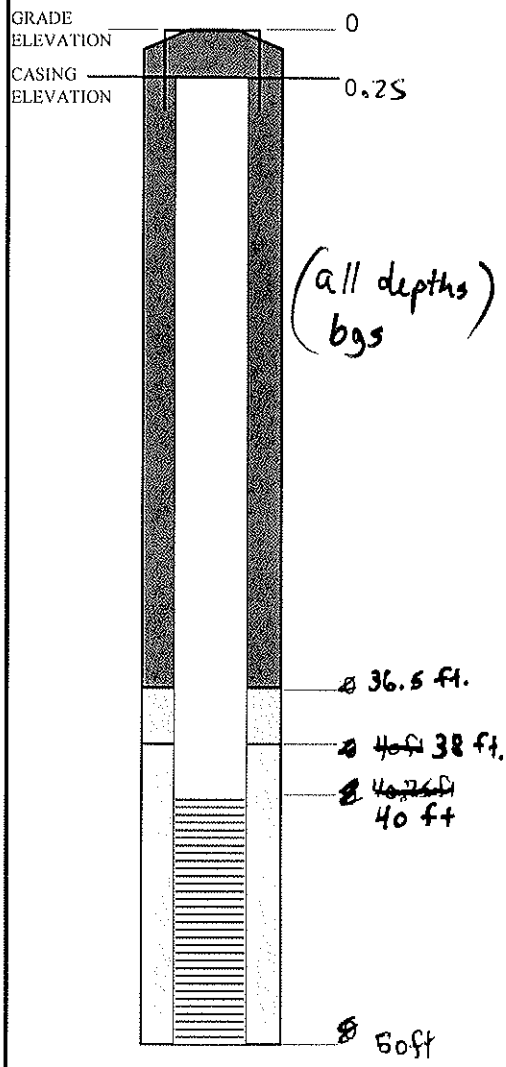
WELL No.: PFC-MW4

CLIENT: NYSDOT

LOCATION: Stewart ANG Base, Newburgh, NY

DATE DRILLED:	DATE DEVELOPED:	CONSTRUCTION COMPLETED:
Aug 24, 2016	Aug 26, 2016	Aug 24, 2016

DEVELOPING METHOD: Submersible - pump + surge



NOT TO SCALE

INSPECTOR: Matthew T. Keavency

DRILLING CONTRACTOR: Parratt and Wolff

TYPE OF WELL: Stainless Steel

STATIC WATER LEVEL: 28.10 DATE: Aug 25, 2016

MEASURING POINT: top SS riser

TOTAL DEPTH OF WELL: 50 ft TOTAL DEPTH OF BORING: 50ft

DRILLING METHOD TYPE: Hollow stem auger and or rotary

DIAMETER: 2-inch CASING: Stainless steel

SAMPLING METHOD TYPE: Split spoon (direct push)

DIAMETER: 2-inch WEIGHT: n/a

FALL: n/a INTERVAL: 0.5ft, 3.0ft

RISER PIPE LEFT IN PLACE MATERIAL: Stainless steel

DIAMETER: 2-inch LENGTH: 40ft JOINT TYPE: threaded

SCREEN MATERIAL: Stainless steel

INTERVAL: 40ft - 50ft DIAMETER: 2-inch

STRATIGRAPHIC UNITS SCREENED: Shale SLOT SIZE: 10

FILTER PACK GRADE:

SAND: #0 filter pack GRAVEL: 38-50' bgs NATURAL:

AMOUNT: #00 choker sand INTERVAL: 36.5 - 38' bgs (as seal in place of bentonite)

SEAL(s)

Portland Cement	INTERVAL: 1.0 - 36.5' bgs	AMOUNT:
Bentonite Slurry	INTERVAL: None	AMOUNT:
~~Bentonite Pellets~~	INTERVAL: 36.5 - 38'	AMOUNT: #00 choker sand
Other:	INTERVAL:	AMOUNT:

LOCKING CASING: ☐ YES ☒ NO KEY NO: n/a

NOTES:

Rock well - originally scoped as overburden well but competent shale bedrock encountered ~ 38 ft bgs

Well Development Log

Site: Stewart
Well #: ~~MW~~ PFC - MW-2
Date Started: Sep 7, 2016
Date Finished: Sep 7, 2016

DTB: 35.10
Start SWL: 6.25
Finish SWL: 29.02

Developed By: MTK
Method: Purge

Meters
pH: YSI Pro DSS
Conductivity: YSI Pro DSS
Temp: YSI Pro DSS
Turb.: YSI Pro DSS

Time	pH	Temp	S. Conductivity	Turb.	Est. Purged Vol.	Comments
1110	7.56	15.7	~~951~~	922	1.5991	DTW 14.85
1115	7.49	16.4	596	678	2.5	
1120	7.47	16.4	587	632	4	DO 1.35
1130	7.45	14.5	580	303	5	DTW 20.25 DO: 0.76
1135	7.44	14.8	579	304	7.5	DTW 26.35 DO: 1.54
1140	7.46	15.1	581	503	9	DTW 28.25 DO: 2.05
1150	7.52	14.8	622	925	11	DTW 30.70 DO: 1.58
1155	7.49	14.7	615	1496	12	DTW 32.50 DO: 1.47
1205	7.52	18.0	612	2340	12	DTW ~26.9 DO: 3.00 restarted pump after recharge
1220	7.51	13.7	571	400	13	DTW ~30.7 DO: 2.06
1245	7.51	13.2	567	257	15	DTW ~28.40 DO: 3.02
1300	7.44	13.5	569	250	16.5	DTW ~32.75 DO: 3.55
1320	7.52	14.2	577	473	17	DTW ~27.5 DO 6.06
1325	7.52	17.8	579	500	17	DTW ~27.4 DO 5.47
1330	7.49	17.1	563	254	17.5	DTW ~27.35 DO 3.24
1335	7.47	18.0	563	124	18	DTW 27.10 DO 2.87
1340	7.46	18.0	562	~~77~~	18.25	DTW 27.0 DO 1.99
1345	7.46	15.6	556	50	19	DTW 27.47 DO 1.73
1350	7.45	18.7	561	40	20	DTW 27.15 DO 1.86
1355	7.45	16.4	560	29.7	20.75	DTW 27.6 DO 1.83
1400	7.44	16.3	558	26.0	21	DTW 27.7 DO 1.84
1405	7.43	16.3	562	30.5	22	DTW 27.4 DO 1.86
1410	7.44	15.3	559	19.4	23	DTW 29.0 DO 1.73

Note:
Temperature is measured in Celsius
Turbidity is measured in NTU
Volume is measured in gallons

PFC-MW-3

Well Development Log

Site: SWF ANG
Well #: MW-3
Date Started: 8-26-16
Date Finished: 8-26-16

DTB: 53.7' (all measurements below top of riser)
Start SWL: 39.3'
Finish SWL: 47.4'

Developed By: Parratt-Wolff
Method: pump & surge SS submersible MiNi-MONSOON

Meters
pH: YSI DSS Conductivity: YSI DSS
Temp: YSI DSS Turb.: YSI DSS

Time	pH	Temp	S. Conductivity	Turb.	Est. Purged Vol.	Comments
0905						Very silty water
0910						dry after a couple gal pull pump to clean out silt - well recharges
0918						reinstall pump and restart pumping
						pump dry again let sit for a few minutes
0935	6.66	19.6	798 mS/cm	6000+	~20 gal	
1010	6.66	19.2	382	2000+	~ 25 gal	cycling pump on & off
1020	6.61	18.2	794	1075	~ 30 gal	
~~1100~~ 1050	6.70	18.8	772	192	~ 40 gal	surge and pump several cycles
1110	6.69	19.2	400	1700	~ ~~55~~ gal 55	surged and pumped
						Shut down pump to move on to next well
						return after purging MW-4
1300						restart pumping @ MW-3 very silty (brown) when surged
1325	6.53	18.5	749	560	~ 65	pre-surge
1333	6.53	18.4	744	6400	~ ~~80~~ 75	post-surge
1347	6.59	19.1	768	504	~ 85	
1400	6.64	17.9	758	233	~ 90	Clearing up quickly after surging now
1420	6.63	18.2	758	256	~ 100	
1440	6.55	18.3	754	103	~ 110	2nd drum full

Note:
Temperature is measured in Celsius
Turbidity is measured in NTU
Volume is measured in gallons

+Disk No.: C:\CHUCK\Logs.xls Development 1/21/99 13:28:24+

Well Development Log

PFC-MW-4

Site: SWF ANG
Well #: MW-4
Date Started: 8-26-16
Date Finished: 8-26-16

DTB: 50.3'
Start SWL: 27.4'
Finish SWL: ~dry
depths below top of riser

Developed By: Parratt Wolff
Method: pump & surge
mini monsoon 12V
SS submersible pump

Meters
pH: YSI DSS
Temp: YSI DSS
Conductivity: YSI DSS
Turb.: YSI DSS

Time	pH	Temp	S. Conductivity	Turb.	Est. Purged Vol.	Comments
1135	7.87	17.2	920	300	0	start purge - grey rock flour suspended in water to start
						dry after a few gallons and slow recharge
1240						de-mob come back next week to let recharge

~ 23' water column
~ 23 gal well volume

Note:
Temperature is measured in Celsius
Turbidity is measured in NTU
Volume is measured in gallons

ATTACHMENT B – CATEGORY B FINAL LABORATORY DATA PACKAGES

ANALYTICAL REPORT

Job Number: 280-87134-1

Job Description: Stewart International Airport (PFAS)

For:
HDR Inc
1 International Blvd, 10th Floor
Mahwah, NJ 07495

Attention: Ms. Melissa LaMacchia

Approved for release.
Sapna Nayyar
Project Manager I
9/14/2016 12:51 PM

Sapna Nayyar, Project Manager I
777 New Durham Road, Edison, NJ, 08817
sapna.nayyar@testamericainc.com
09/14/2016

Job Number: 280-87134-1

Job Description: Stewart International Airport (PFAS)

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed within the body of this report. Release of the data contained in this sample data package and in the electronic data deliverable has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Approved for release.
Sapna Nayyar
Project Manager I
9/14/2016 12:51 PM

Sapna Nayyar

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CASE NARRATIVE

Client: HDR Inc

Project: Stewart International Airport (PFAS)

Report Number: 280-87134-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

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

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

RECEIPT
The samples were received on 08/19/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.4 C.

Container labels for sample SB-PFC-MW1-56.0 show a sample time of 12:05, this was logged as 11:57 per the COC.

Container labels for sample PFC-MW-dup1 show a sample time of 12:05, this was logged as 09:00 per the COC.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

PERFLUORINATED HYDROCARBONS (PFC)
Samples MW-FB1 (280-87134-3), MW-WB1 (280-87134-4), MW-FB2 (280-87134-5) and MW-FB3 (280-87134-9) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with DV-LC-0012. The samples were prepared on 08/25/2016, 08/29/2016 and 09/01/2016 and analyzed on 09/01/2016 and 09/02/2016.

HPLC methanol was used instead of LCMS methanol because the company is no longer supplying LCMS methanol. Batch: 339617Prep Method: 3535 Analytical Method: PFC

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with Batch: 339617 prep method: 3535 analytical method: PFC

HPLC methanol was used instead of LCMS methanol because the company is no longer supplying LCMS methanol. Batch: 340007 prep Method: 3535 Analytical Method: PFC

The following sample: MW-WB1 (280-87134-4) was decanted prior to preparation. Solvent rinse on the original container was not able to be performed. Batch: 340007 prep method: 3535 analytical method: PFC

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with Batch: 340007 prep method: 3535 analytical method: PFC

HPLC methanol was used instead of LCMS methanol because the company is no longer supplying LCMS methanol. Batch: 340544 Prep Method: 3535 Analytical Method: PFC
MW-FB3 (280-87134-9).

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with Batch: 340544 prep method: 3535 analytical method: PFC

No other difficulties were encountered during the PFC analysis.

All quality control parameters were within the acceptance limits.

PERCENT SOLIDS/PERCENT MOISTURE

Samples SB-PFC-MW1-0.5 (280-87134-1), SB-PFC-MW2-0.5 (280-87134-2), SB-PFC-MW1-16.0 (280-87134-6), SB-PFC-MW1-56.0 (280-87134-7), SB-PFC-MW1-3.0 (280-87134-8) and PFC-MW-DUP1 (280-87134-10) were analyzed for percent solids/percent moisture in accordance with EPA Method CLPISM01.2 (Exhibit D) Modified. The samples were analyzed on 08/24/2016.

No difficulties were encountered during the %solids/moisture analysis.

All quality control parameters were within the acceptance limits.

PERFLUORINATED HYDROCARBONS (PFC)

Samples SB-PFC-MW1-0.5 (280-87134-1), SB-PFC-MW2-0.5 (280-87134-2), SB-PFC-MW1-16.0 (280-87134-6), SB-PFC-MW1-56.0 (280-87134-7), SB-PFC-MW1-3.0 (280-87134-8) and PFC-MW-DUP1 (280-87134-10) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with DV-LC-0012. The samples were prepared on 08/25/2016 and analyzed on 09/01/2016 and 09/02/2016.

The surrogate recovery for the LCS (132%) associated with preparation batch 280-339617 and analytical batch 280-339905 was outside the upper control limits (45-130%). The associated sample surrogate %R are in control. PFC

Internal standard responses were outside of acceptance limits for the following sample: SB-PFC-MW1-0.5 (280-87134-1). The sample shows evidence of matrix interference.preparation batch 280-339633 and analytical batch 280-340412 PFC

Internal standard responses were outside of acceptance limits for the following sample: MW-FB3 (280-87134-9). The sample(s) shows evidence of matrix interference.

No other difficulties were encountered during the PFC analysis.

All quality control parameters were within the acceptance limits.

Sample Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-87134-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-87134-1	SB-PFC-MW1-0.5	Solid	08/15/16 13:45	08/19/16 09:30
280-87134-2	SB-PFC-MW2-0.5	Solid	08/15/16 14:22	08/19/16 09:30
280-87134-3	MW-FB1	Water	08/15/16 14:38	08/19/16 09:30
280-87134-4	MW-WB1	Water	08/16/16 10:00	08/19/16 09:30
280-87134-5	MW-FB2	Water	08/16/16 10:05	08/19/16 09:30
280-87134-6	SB-PFC-MW1-16.0	Solid	08/16/16 10:47	08/19/16 09:30
280-87134-7	SB-PFC-MW1-56.0	Solid	08/18/16 11:57	08/19/16 09:30
280-87134-8	SB-PFC-MW1-3.0	Solid	08/18/16 12:05	08/19/16 09:30
280-87134-9	MW-FB3	Water	08/18/16 12:10	08/19/16 09:30
280-87134-10	PFC-MW-DUP1	Solid	08/18/16 09:00	08/19/16 09:30

Detection Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-87134-1

Client Sample ID: SB-PFC-MW1-0.5 — Lab Sample ID: 280-87134-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexane Sulfonate (PFHxS)	0.86	J	0.94	0.33	ug/Kg	1	☼	DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.26		0.94	0.17	ug/Kg	1	☼	DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.30	J	0.94	0.27	ug/Kg	1	☼	DV-LC-0012	Total/NA

Client Sample ID: SB-PFC-MW2-0.5 — Lab Sample ID: 280-87134-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.15	J	0.88	0.13	ug/Kg	1	☼	DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.47	J	0.88	0.15	ug/Kg	1	☼	DV-LC-0012	Total/NA

Client Sample ID: MW-FB1 — Lab Sample ID: 280-87134-3

No Detections.

Client Sample ID: MW-WB1 — Lab Sample ID: 280-87134-4

No Detections.

Client Sample ID: MW-FB2 — Lab Sample ID: 280-87134-5

No Detections.

Client Sample ID: SB-PFC-MW1-16.0 — Lab Sample ID: 280-87134-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.13	J	0.85	0.13	ug/Kg	1	☼	DV-LC-0012	Total/NA

Client Sample ID: SB-PFC-MW1-56.0 — Lab Sample ID: 280-87134-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.28	J	0.90	0.16	ug/Kg	1	☼	DV-LC-0012	Total/NA

Client Sample ID: SB-PFC-MW1-3.0 — Lab Sample ID: 280-87134-8

No Detections.

Client Sample ID: MW-FB3 — Lab Sample ID: 280-87134-9

No Detections.

Client Sample ID: PFC-MW-DUP1 — Lab Sample ID: 280-87134-10

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-87134-1

Method	Method Description	Protocol	Laboratory
DV-LC-0012	Perfluorinated Hydrocarbons	TAL-DEN	TAL DEN
Moisture	Percent Moisture	EPA	TAL DEN

Protocol References:

EPA = US Environmental Protection Agency

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Client Sample ID: SB-PFC-MW1-0.5

Lab Sample ID: 280-87134-1
Date Collected: 08/15/16 13:45
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 84.7

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.17	U	0.94	0.17	ug/Kg	☼	08/25/16 16:20	09/01/16 23:01	1
Perfluoroheptanoic acid (PFHpA)	0.14	U	0.94	0.14	ug/Kg	☼	08/25/16 16:20	09/01/16 23:01	1
Perfluorohexane Sulfonate (PFHxS)	**0.86**	**J**	0.94	0.33	ug/Kg	☼	08/25/16 16:20	09/01/16 23:01	1
Perfluorononanoic acid (PFNA)	0.26	U	0.94	0.26	ug/Kg	☼	08/25/16 16:20	09/01/16 23:01	1
Perfluorooctanesulfonic acid (PFOS)	**2.26**		0.94	0.17	ug/Kg	☼	08/25/16 16:20	09/01/16 23:01	1
Perfluorooctanoic acid (PFOA)	**0.30**	**J**	0.94	0.27	ug/Kg	☼	08/25/16 16:20	09/01/16 23:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*123*		*57 - 153*	*08/25/16 16:20*	*09/01/16 23:01*	*1*
13C8 PFOS	*102*		*70 - 130*	*08/25/16 16:20*	*09/01/16 23:01*	*1*

Client Sample ID: SB-PFC-MW2-0.5

Lab Sample ID: 280-87134-2
Date Collected: 08/15/16 14:22
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 91.3

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.15	U	0.88	0.15	ug/Kg	☼	08/25/16 16:20	09/01/16 23:14	1
Perfluoroheptanoic acid (PFHpA)	**0.15**	**J**	0.88	0.13	ug/Kg	☼	08/25/16 16:20	09/01/16 23:14	1
Perfluorohexane Sulfonate (PFHxS)	0.31	U	0.88	0.31	ug/Kg	☼	08/25/16 16:20	09/01/16 23:14	1
Perfluorononanoic acid (PFNA)	0.24	U	0.88	0.24	ug/Kg	☼	08/25/16 16:20	09/01/16 23:14	1
Perfluorooctanesulfonic acid (PFOS)	**0.47**	**J**	0.88	0.15	ug/Kg	☼	08/25/16 16:20	09/01/16 23:14	1
Perfluorooctanoic acid (PFOA)	0.25	U	0.88	0.25	ug/Kg	☼	08/25/16 16:20	09/01/16 23:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*121*		*57 - 153*	*08/25/16 16:20*	*09/01/16 23:14*	*1*
13C8 PFOS	*104*		*70 - 130*	*08/25/16 16:20*	*09/01/16 23:14*	*1*

Client Sample ID: MW-FB1

Lab Sample ID: 280-87134-3
Date Collected: 08/15/16 14:38
Matrix: Water
Date Received: 08/19/16 09:30

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0083	U	0.020	0.0083	ug/L		08/25/16 20:40	09/01/16 16:40	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		08/25/16 20:40	09/01/16 16:40	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		08/25/16 20:40	09/01/16 16:40	1
Perfluorononanoic acid (PFNA)	0.018	U	0.040	0.018	ug/L		08/25/16 20:40	09/01/16 16:40	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		08/25/16 20:40	09/01/16 16:40	1
Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099	ug/L		08/25/16 20:40	09/01/16 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*126*		*60 - 155*	*08/25/16 20:40*	*09/01/16 16:40*	*1*
13C8 PFOS	*105*		*45 - 130*	*08/25/16 20:40*	*09/01/16 16:40*	*1*

Client Sample ID: MW-WB1

Lab Sample ID: 280-87134-4
Date Collected: 08/16/16 10:00
Matrix: Water
Date Received: 08/19/16 09:30

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0084	U	0.020	0.0084	ug/L		08/29/16 19:57	09/02/16 07:27	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		08/29/16 19:57	09/02/16 07:27	1
Perfluorohexane Sulfonate (PFHxS)	0.0071	U	0.030	0.0071	ug/L		08/29/16 19:57	09/02/16 07:27	1
Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018	ug/L		08/29/16 19:57	09/02/16 07:27	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		08/29/16 19:57	09/02/16 07:27	1
Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099	ug/L		08/29/16 19:57	09/02/16 07:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*123*		*60 - 155*	*08/29/16 19:57*	*09/02/16 07:27*	*1*
13C8 PFOS	*107*		*45 - 130*	*08/29/16 19:57*	*09/02/16 07:27*	*1*

Client Sample ID: MW-FB2

Lab Sample ID: 280-87134-5
Date Collected: 08/16/16 10:05
Matrix: Water
Date Received: 08/19/16 09:30

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		08/29/16 19:57	09/02/16 07:39	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		08/29/16 19:57	09/02/16 07:39	1
Perfluorohexane Sulfonate (PFHxS)	0.0069	U	0.030	0.0069	ug/L		08/29/16 19:57	09/02/16 07:39	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		08/29/16 19:57	09/02/16 07:39	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		08/29/16 19:57	09/02/16 07:39	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		08/29/16 19:57	09/02/16 07:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*118*		*60 - 155*	*08/29/16 19:57*	*09/02/16 07:39*	*1*
13C8 PFOS	*98*		*45 - 130*	*08/29/16 19:57*	*09/02/16 07:39*	*1*

Client Sample ID: SB-PFC-MW1-16.0

Lab Sample ID: 280-87134-6
Date Collected: 08/16/16 10:47
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 91.1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.15	U	0.85	0.15	ug/Kg	☼	08/25/16 16:20	09/01/16 23:26	1
Perfluoroheptanoic acid (PFHpA)	**0.13**	**J**	0.85	0.13	ug/Kg	☼	08/25/16 16:20	09/01/16 23:26	1
Perfluorohexane Sulfonate (PFHxS)	0.30	U	0.85	0.30	ug/Kg	☼	08/25/16 16:20	09/01/16 23:26	1
Perfluorononanoic acid (PFNA)	0.23	U	0.85	0.23	ug/Kg	☼	08/25/16 16:20	09/01/16 23:26	1
Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.85	0.15	ug/Kg	☼	08/25/16 16:20	09/01/16 23:26	1
Perfluorooctanoic acid (PFOA)	0.24	U	0.85	0.24	ug/Kg	☼	08/25/16 16:20	09/01/16 23:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*122*		*57 - 153*	*08/25/16 16:20*	*09/01/16 23:26*	*1*
13C8 PFOS	*106*		*70 - 130*	*08/25/16 16:20*	*09/01/16 23:26*	*1*

Client Sample ID: SB-PFC-MW1-56.0
Lab Sample ID: 280-87134-7
Date Collected: 08/18/16 11:57
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 88.7

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.16	U	0.90	0.16	ug/Kg	☼	08/25/16 16:20	09/01/16 23:38	1
Perfluoroheptanoic acid (PFHpA)	0.13	U	0.90	0.13	ug/Kg	☼	08/25/16 16:20	09/01/16 23:38	1
Perfluorohexane Sulfonate (PFHxS)	0.31	U	0.90	0.31	ug/Kg	☼	08/25/16 16:20	09/01/16 23:38	1
Perfluorononanoic acid (PFNA)	0.25	U	0.90	0.25	ug/Kg	☼	08/25/16 16:20	09/01/16 23:38	1
Perfluorooctanesulfonic acid (PFOS)	**0.28**	**J**	0.90	0.16	ug/Kg	☼	08/25/16 16:20	09/01/16 23:38	1
Perfluorooctanoic acid (PFOA)	0.26	U	0.90	0.26	ug/Kg	☼	08/25/16 16:20	09/01/16 23:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*127*		*57 - 153*	*08/25/16 16:20*	*09/01/16 23:38*	*1*
13C8 PFOS	*100*		*70 - 130*	*08/25/16 16:20*	*09/01/16 23:38*	*1*

Client Sample ID: SB-PFC-MW1-3.0
Lab Sample ID: 280-87134-8
Date Collected: 08/18/16 12:05
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 91.8

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.15	U	0.87	0.15	ug/Kg	☼	08/25/16 16:20	09/01/16 23:51	1
Perfluoroheptanoic acid (PFHpA)	0.13	U	0.87	0.13	ug/Kg	☼	08/25/16 16:20	09/01/16 23:51	1
Perfluorohexane Sulfonate (PFHxS)	0.30	U	0.87	0.30	ug/Kg	☼	08/25/16 16:20	09/01/16 23:51	1
Perfluorononanoic acid (PFNA)	0.24	U	0.87	0.24	ug/Kg	☼	08/25/16 16:20	09/01/16 23:51	1
Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.87	0.15	ug/Kg	☼	08/25/16 16:20	09/01/16 23:51	1
Perfluorooctanoic acid (PFOA)	0.25	U	0.87	0.25	ug/Kg	☼	08/25/16 16:20	09/01/16 23:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*129*		*57 - 153*	*08/25/16 16:20*	*09/01/16 23:51*	*1*
13C8 PFOS	*105*		*70 - 130*	*08/25/16 16:20*	*09/01/16 23:51*	*1*

Client Sample ID: MW-FB3
Lab Sample ID: 280-87134-9
Date Collected: 08/18/16 12:10
Matrix: Water
Date Received: 08/19/16 09:30

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0085	U	0.021	0.0085	ug/L		09/01/16 19:29	09/02/16 14:23	1
Perfluoroheptanoic acid (PFHpA)	0.014	U	0.031	0.014	ug/L		09/01/16 19:29	09/02/16 14:23	1
Perfluorohexane Sulfonate (PFHxS)	0.0072	U	0.031	0.0072	ug/L		09/01/16 19:29	09/02/16 14:23	1
Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018	ug/L		09/01/16 19:29	09/02/16 14:23	1
Perfluorooctanesulfonic acid (PFOS)	0.014	U	0.031	0.014	ug/L		09/01/16 19:29	09/02/16 14:23	1
Perfluorooctanoic acid (PFOA)	0.010	U	0.021	0.010	ug/L		09/01/16 19:29	09/02/16 14:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*125*		*60 - 155*	*09/01/16 19:29*	*09/02/16 14:23*	*1*
13C8 PFOS	*106*		*45 - 130*	*09/01/16 19:29*	*09/02/16 14:23*	*1*

Client Sample ID: PFC-MW-DUP1
Lab Sample ID: 280-87134-10

Date Collected: 08/18/16 09:00
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 90.3

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.15	U	0.85	0.15	ug/Kg	☼	08/25/16 16:20	09/02/16 00:03	1
Perfluoroheptanoic acid (PFHpA)	0.13	U	0.85	0.13	ug/Kg	☼	08/25/16 16:20	09/02/16 00:03	1
Perfluorohexane Sulfonate (PFHxS)	0.30	U	0.85	0.30	ug/Kg	☼	08/25/16 16:20	09/02/16 00:03	1
Perfluorononanoic acid (PFNA)	0.23	U	0.85	0.23	ug/Kg	☼	08/25/16 16:20	09/02/16 00:03	1
Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.85	0.15	ug/Kg	☼	08/25/16 16:20	09/02/16 00:03	1
Perfluorooctanoic acid (PFOA)	0.24	U	0.85	0.24	ug/Kg	☼	08/25/16 16:20	09/02/16 00:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*122*		*57 - 153*	*08/25/16 16:20*	*09/02/16 00:03*	*1*
13C8 PFOS	*105*		*70 - 130*	*08/25/16 16:20*	*09/02/16 00:03*	*1*

Surrogate Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-87134-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

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

		Percent Surrogate Recovery (Acceptance Limits)	
		3C8 PFO/	3C8 PFOS
Lab Sample ID	Client Sample ID	(57-153)	(70-130)
280-87134-1	SB-PFC-MW1-0.5	123	102
280-87134-2	SB-PFC-MW2-0.5	121	104
280-87134-6	SB-PFC-MW1-16.0	122	106
280-87134-7	SB-PFC-MW1-56.0	127	100
280-87134-8	SB-PFC-MW1-3.0	129	105
280-87134-10	PFC-MW-DUP1	122	105
280-87134-10 MS	PFC-MW-DUP1	111	103
280-87134-10 MSD	PFC-MW-DUP1	118	103
LCS 280-339633/2-A	Lab Control Sample	129	110
MB 280-339633/1-A	Method Blank	124	104

Surrogate Legend

13C8 PFOA = 13C8 PFOA
13C8 PFOS = 13C8 PFOS

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

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

		Percent Surrogate Recovery (Acceptance Limits)	
		3C8 PFO/	3C8 PFOS
Lab Sample ID	Client Sample ID	(60-155)	(45-130)
280-87134-3	MW-FB1	126	105
280-87134-4	MW-WB1	123	107
280-87134-5	MW-FB2	118	98
280-87134-9	MW-FB3	125	106
DLCK 280-340408/14	Lab Control Sample	75	107
LCS 280-339617/2-A	Lab Control Sample	124	97
LCS 280-340007/2-A	Lab Control Sample	124	114
LCS 280-340544/2-A	Lab Control Sample	125	103
LCSD 280-339617/3-A	Lab Control Sample Dup	120	97
LCSD 280-340007/3-A	Lab Control Sample Dup	123	100
LCSD 280-340544/3-A	Lab Control Sample Dup	125	102
MB 280-339617/1-A	Method Blank	120	111
MB 280-340007/1-A	Method Blank	119	103
MB 280-340544/1-A	Method Blank	113	103

Surrogate Legend

13C8 PFOA = 13C8 PFOA
13C8 PFOS = 13C8 PFOS

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 280-339617/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 340408 — **Prep Batch: 339617**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		08/25/16 20:40	09/01/16 13:23	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		08/25/16 20:40	09/01/16 13:23	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		08/25/16 20:40	09/01/16 13:23	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		08/25/16 20:40	09/01/16 13:23	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		08/25/16 20:40	09/01/16 13:23	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		08/25/16 20:40	09/01/16 13:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*120*		*60 - 155*	*08/25/16 20:40*	*09/01/16 13:23*	*1*
13C8 PFOS	*111*		*45 - 130*	*08/25/16 20:40*	*09/01/16 13:23*	*1*

Lab Sample ID: LCS 280-339617/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 340408 — **Prep Batch: 339617**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.163		ug/L		92	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.218		ug/L		109	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.183		ug/L		97	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.193		ug/L		97	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.195		ug/L		102	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.207		ug/L		104	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 PFOA	*124*		*60 - 155*
13C8 PFOS	*97*		*45 - 130*

Lab Sample ID: LCSD 280-339617/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 340408 — **Prep Batch: 339617**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.177	0.169		ug/L		96	70 - 134	4	30
Perfluoroheptanoic acid (PFHpA)	0.200	0.207		ug/L		103	70 - 135	6	30
Perfluorohexane Sulfonate (PFHxS)	0.189	0.170		ug/L		90	70 - 132	8	30
Perfluorononanoic acid (PFNA)	0.200	0.190		ug/L		95	69 - 143	2	30
Perfluorooctanesulfonic acid (PFOS)	0.191	0.182		ug/L		95	70 - 130	7	20
Perfluorooctanoic acid (PFOA)	0.200	0.198		ug/L		99	70 - 130	5	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C8 PFOA	*120*		*60 - 155*
13C8 PFOS	*97*		*45 - 130*

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: MB 280-339633/1-A
Matrix: Solid
Analysis Batch: 340412

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 339633

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.14	U	0.80	0.14	ug/Kg		08/25/16 16:20	09/01/16 22:37	1
Perfluoroheptanoic acid (PFHpA)	0.12	U	0.80	0.12	ug/Kg		08/25/16 16:20	09/01/16 22:37	1
Perfluorohexane Sulfonate (PFHxS)	0.28	U	0.80	0.28	ug/Kg		08/25/16 16:20	09/01/16 22:37	1
Perfluorononanoic acid (PFNA)	0.22	U	0.80	0.22	ug/Kg		08/25/16 16:20	09/01/16 22:37	1
Perfluorooctanesulfonic acid (PFOS)	0.14	U	0.80	0.14	ug/Kg		08/25/16 16:20	09/01/16 22:37	1
Perfluorooctanoic acid (PFOA)	0.23	U	0.80	0.23	ug/Kg		08/25/16 16:20	09/01/16 22:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*124*		*57 - 153*	*08/25/16 16:20*	*09/01/16 22:37*	*1*
13C8 PFOS	*104*		*70 - 130*	*08/25/16 16:20*	*09/01/16 22:37*	*1*

Lab Sample ID: LCS 280-339633/2-A
Matrix: Solid
Analysis Batch: 340412

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 339633

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	17.7	16.29		ug/Kg		92	68 - 130
Perfluoroheptanoic acid (PFHpA)	20.0	20.97		ug/Kg		105	70 - 130
Perfluorohexane Sulfonate (PFHxS)	18.9	17.15		ug/Kg		91	70 - 135
Perfluorononanoic acid (PFNA)	20.0	18.89		ug/Kg		94	64 - 138
Perfluorooctanesulfonic acid (PFOS)	19.1	19.19		ug/Kg		100	70 - 130
Perfluorooctanoic acid (PFOA)	20.0	20.97		ug/Kg		105	70 - 131

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 PFOA	*129*		*57 - 153*
13C8 PFOS	*110*		*70 - 130*

Lab Sample ID: 280-87134-10 MS
Matrix: Solid
Analysis Batch: 340412

Client Sample ID: PFC-MW-DUP1
Prep Type: Total/NA
Prep Batch: 339633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.15	U	19.6	16.42		ug/Kg	☼	84	68 - 130
Perfluoroheptanoic acid (PFHpA)	0.13	U	22.1	21.70		ug/Kg	☼	98	70 - 130
Perfluorohexane Sulfonate (PFHxS)	0.30	U	20.9	19.51		ug/Kg	☼	93	70 - 135
Perfluorononanoic acid (PFNA)	0.23	U	22.1	20.76		ug/Kg	☼	94	64 - 138
Perfluorooctanesulfonic acid (PFOS)	0.15	U	21.1	20.67		ug/Kg	☼	98	70 - 130
Perfluorooctanoic acid (PFOA)	0.24	U	22.1	22.08		ug/Kg	☼	100	70 - 131

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
13C8 PFOA	*111*		*57 - 153*
13C8 PFOS	*103*		*70 - 130*

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: 280-87134-10 MSD
Matrix: Solid
Analysis Batch: 340412

Client Sample ID: PFC-MW-DUP1
Prep Type: Total/NA
Prep Batch: 339633

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.15	U	19.6	16.87		ug/Kg	☼	86	68 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	0.13	U	22.1	23.29		ug/Kg	☼	105	70 - 130	7	30
Perfluorohexane Sulfonate (PFHxS)	0.30	U	20.9	20.16		ug/Kg	☼	96	70 - 135	3	30
Perfluorononanoic acid (PFNA)	0.23	U	22.1	19.28		ug/Kg	☼	87	64 - 138	7	30
Perfluorooctanesulfonic acid (PFOS)	0.15	U	21.1	21.80		ug/Kg	☼	103	70 - 130	5	30
Perfluorooctanoic acid (PFOA)	0.24	U	22.1	23.46		ug/Kg	☼	106	70 - 131	6	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C8 PFOA	*118*		*57 - 153*
13C8 PFOS	*103*		*70 - 130*

Lab Sample ID: MB 280-340007/1-A
Matrix: Water
Analysis Batch: 340694

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 340007

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		08/29/16 19:57	09/02/16 05:23	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		08/29/16 19:57	09/02/16 05:23	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		08/29/16 19:57	09/02/16 05:23	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		08/29/16 19:57	09/02/16 05:23	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		08/29/16 19:57	09/02/16 05:23	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		08/29/16 19:57	09/02/16 05:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*119*		*60 - 155*	*08/29/16 19:57*	*09/02/16 05:23*	*1*
13C8 PFOS	*103*		*45 - 130*	*08/29/16 19:57*	*09/02/16 05:23*	*1*

Lab Sample ID: LCS 280-340007/2-A
Matrix: Water
Analysis Batch: 340694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 340007

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.151		ug/L		86	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.213		ug/L		106	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.177		ug/L		94	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.180		ug/L		90	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.182		ug/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.206		ug/L		103	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 PFOA	*124*		*60 - 155*
13C8 PFOS	*114*		*45 - 130*

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 280-340007/3-A
Matrix: Water
Analysis Batch: 340694

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 340007

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)			0.177	0.159		ug/L		90	70 - 134	5	30
Perfluoroheptanoic acid (PFHpA)			0.200	0.210		ug/L		105	70 - 135	1	30
Perfluorohexane Sulfonate (PFHxS)			0.189	0.184		ug/L		97	70 - 132	4	30
Perfluorononanoic acid (PFNA)			0.200	0.190		ug/L		95	69 - 143	6	30
Perfluorooctanesulfonic acid (PFOS)			0.191	0.181		ug/L		95	70 - 130	1	20
Perfluorooctanoic acid (PFOA)			0.200	0.213		ug/L		106	70 - 130	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C8 PFOA	*123*		*60 - 155*
13C8 PFOS	*100*		*45 - 130*

Lab Sample ID: DLCK 280-340408/14
Matrix: Water
Analysis Batch: 340408

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

Analyte			Spike Added	DLCK Result	DLCK Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutane Sulfonate (PFBS)			0.443	0.546		ug/L		123	70 - 130		
Perfluoroheptanoic acid (PFHpA)			0.500	0.527		ug/L		105	70 - 130		
Perfluorohexane Sulfonate (PFHxS)			0.473	0.586		ug/L		124	70 - 130		
Perfluorononanoic acid (PFNA)			0.500	0.486		ug/L		97	70 - 130		
Perfluorooctanesulfonic acid (PFOS)			0.478	0.583		ug/L		122	70 - 130		
Perfluorooctanoic acid (PFOA)			0.500	0.467		ug/L		93	70 - 130		

Surrogate	*DLCK %Recovery*	*DLCK Qualifier*	*Limits*
13C8 PFOA	*75*		*60 - 155*
13C8 PFOS	*107*		*45 - 130*

Lab Sample ID: MB 280-340544/1-A
Matrix: Water
Analysis Batch: 340829

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 340544

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		09/01/16 19:29	09/02/16 13:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*113*		*60 - 155*	*09/01/16 19:29*	*09/02/16 13:22*	*1*
13C8 PFOS	*103*		*45 - 130*	*09/01/16 19:29*	*09/02/16 13:22*	*1*

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 280-340544/2-A
Matrix: Water
Analysis Batch: 340829

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 340544

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutane Sulfonate (PFBS)			0.177	0.167		ug/L		94	70 - 134		
Perfluoroheptanoic acid (PFHpA)			0.200	0.186		ug/L		93	70 - 135		
Perfluorohexane Sulfonate (PFHxS)			0.189	0.170		ug/L		90	70 - 132		
Perfluorononanoic acid (PFNA)			0.200	0.172		ug/L		86	69 - 143		
Perfluorooctanesulfonic acid (PFOS)			0.191	0.170		ug/L		89	70 - 130		
Perfluorooctanoic acid (PFOA)			0.200	0.182		ug/L		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 PFOA	*125*		*60 - 155*
13C8 PFOS	*103*		*45 - 130*

Lab Sample ID: LCSD 280-340544/3-A
Matrix: Water
Analysis Batch: 340829

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 340544

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)			0.177	0.148		ug/L		83	70 - 134	12	30
Perfluoroheptanoic acid (PFHpA)			0.200	0.193		ug/L		96	70 - 135	3	30
Perfluorohexane Sulfonate (PFHxS)			0.189	0.155		ug/L		82	70 - 132	9	30
Perfluorononanoic acid (PFNA)			0.200	0.178		ug/L		89	69 - 143	4	30
Perfluorooctanesulfonic acid (PFOS)			0.191	0.172		ug/L		90	70 - 130	1	20
Perfluorooctanoic acid (PFOA)			0.200	0.176		ug/L		88	70 - 130	4	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C8 PFOA	*125*		*60 - 155*
13C8 PFOS	*102*		*45 - 130*

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

LCMS

Prep Batch: 339617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87134-3	MW-FB1	Total/NA	Water	3535	
MB 280-339617/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-339617/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-339617/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 339633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87134-1	SB-PFC-MW1-0.5	Total/NA	Solid	PFC leach	
280-87134-2	SB-PFC-MW2-0.5	Total/NA	Solid	PFC leach	
280-87134-6	SB-PFC-MW1-16.0	Total/NA	Solid	PFC leach	
280-87134-7	SB-PFC-MW1-56.0	Total/NA	Solid	PFC leach	
280-87134-8	SB-PFC-MW1-3.0	Total/NA	Solid	PFC leach	
280-87134-10	PFC-MW-DUP1	Total/NA	Solid	PFC leach	
MB 280-339633/1-A	Method Blank	Total/NA	Solid	PFC leach	
LCS 280-339633/2-A	Lab Control Sample	Total/NA	Solid	PFC leach	
280-87134-10 MS	PFC-MW-DUP1	Total/NA	Solid	PFC leach	
280-87134-10 MSD	PFC-MW-DUP1	Total/NA	Solid	PFC leach	

Prep Batch: 340007

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87134-4	MW-WB1	Total/NA	Water	3535	
280-87134-5	MW-FB2	Total/NA	Water	3535	
MB 280-340007/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-340007/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-340007/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 340408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87134-3	MW-FB1	Total/NA	Water	DV-LC-0012	339617
MB 280-339617/1-A	Method Blank	Total/NA	Water	DV-LC-0012	339617
DLCK 280-340408/14	Lab Control Sample	Total/NA	Water	DV-LC-0012	
LCS 280-339617/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	339617
LCSD 280-339617/3-A	Lab Control Sample Dup	Total/NA	Water	DV-LC-0012	339617

Analysis Batch: 340412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87134-1	SB-PFC-MW1-0.5	Total/NA	Solid	DV-LC-0012	339633
280-87134-2	SB-PFC-MW2-0.5	Total/NA	Solid	DV-LC-0012	339633
280-87134-6	SB-PFC-MW1-16.0	Total/NA	Solid	DV-LC-0012	339633
280-87134-7	SB-PFC-MW1-56.0	Total/NA	Solid	DV-LC-0012	339633
280-87134-8	SB-PFC-MW1-3.0	Total/NA	Solid	DV-LC-0012	339633
280-87134-10	PFC-MW-DUP1	Total/NA	Solid	DV-LC-0012	339633
MB 280-339633/1-A	Method Blank	Total/NA	Solid	DV-LC-0012	339633
LCS 280-339633/2-A	Lab Control Sample	Total/NA	Solid	DV-LC-0012	339633
280-87134-10 MS	PFC-MW-DUP1	Total/NA	Solid	DV-LC-0012	339633
280-87134-10 MSD	PFC-MW-DUP1	Total/NA	Solid	DV-LC-0012	339633

Prep Batch: 340544

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87134-9	MW-FB3	Total/NA	Water	3535	
MB 280-340544/1-A	Method Blank	Total/NA	Water	3535	

LCMS (Continued)

Prep Batch: 340544 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 280-340544/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-340544/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 340694

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87134-4	MW-WB1	Total/NA	Water	DV-LC-0012	340007
280-87134-5	MW-FB2	Total/NA	Water	DV-LC-0012	340007
MB 280-340007/1-A	Method Blank	Total/NA	Water	DV-LC-0012	340007
LCS 280-340007/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	340007
LCSD 280-340007/3-A	Lab Control Sample Dup	Total/NA	Water	DV-LC-0012	340007

Analysis Batch: 340829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87134-9	MW-FB3	Total/NA	Water	DV-LC-0012	340544
MB 280-340544/1-A	Method Blank	Total/NA	Water	DV-LC-0012	340544
LCS 280-340544/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	340544
LCSD 280-340544/3-A	Lab Control Sample Dup	Total/NA	Water	DV-LC-0012	340544

General Chemistry

Analysis Batch: 339291

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87134-1	SB-PFC-MW1-0.5	Total/NA	Solid	Moisture	
280-87134-2	SB-PFC-MW2-0.5	Total/NA	Solid	Moisture	
280-87134-6	SB-PFC-MW1-16.0	Total/NA	Solid	Moisture	
280-87134-7	SB-PFC-MW1-56.0	Total/NA	Solid	Moisture	
280-87134-8	SB-PFC-MW1-3.0	Total/NA	Solid	Moisture	
280-87134-10	PFC-MW-DUP1	Total/NA	Solid	Moisture	
280-87130-A-14 DU	Duplicate	Total/NA	Solid	Moisture	

Client Sample ID: SB-PFC-MW1-0.5
Lab Sample ID: 280-87134-1
Date Collected: 08/15/16 13:45
Matrix: Solid
Date Received: 08/19/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			339291	08/24/16 09:30	IEU	TAL DEN

Client Sample ID: SB-PFC-MW1-0.5
Lab Sample ID: 280-87134-1
Date Collected: 08/15/16 13:45
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 84.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.00 g	20 mL	339633	08/25/16 16:20	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340412	09/01/16 23:01	AGCM	TAL DEN

Client Sample ID: SB-PFC-MW2-0.5
Lab Sample ID: 280-87134-2
Date Collected: 08/15/16 14:22
Matrix: Solid
Date Received: 08/19/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			339291	08/24/16 09:30	IEU	TAL DEN

Client Sample ID: SB-PFC-MW2-0.5
Lab Sample ID: 280-87134-2
Date Collected: 08/15/16 14:22
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 91.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.00 g	20 mL	339633	08/25/16 16:20	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340412	09/01/16 23:14	AGCM	TAL DEN

Client Sample ID: MW-FB1
Lab Sample ID: 280-87134-3
Date Collected: 08/15/16 14:38
Matrix: Water
Date Received: 08/19/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			248.1 mL	5 mL	339617	08/25/16 20:40	YJC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340408	09/01/16 16:40	AGCM	TAL DEN

Client Sample ID: MW-WB1
Lab Sample ID: 280-87134-4
Date Collected: 08/16/16 10:00
Matrix: Water
Date Received: 08/19/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246.6 mL	5 mL	340007	08/29/16 19:57	YJC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340694	09/02/16 07:27	AGCM	TAL DEN

Client Sample ID: MW-FB2
Date Collected: 08/16/16 10:05
Date Received: 08/19/16 09:30

Lab Sample ID: 280-87134-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			251 mL	5 mL	340007	08/29/16 19:57	YJC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340694	09/02/16 07:39	AGCM	TAL DEN

Client Sample ID: SB-PFC-MW1-16.0
Date Collected: 08/16/16 10:47
Date Received: 08/19/16 09:30

Lab Sample ID: 280-87134-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			339291	08/24/16 09:30	IEU	TAL DEN

Client Sample ID: SB-PFC-MW1-16.0
Date Collected: 08/16/16 10:47
Date Received: 08/19/16 09:30

Lab Sample ID: 280-87134-6
Matrix: Solid
Percent Solids: 91.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.34 g	20 mL	339633	08/25/16 16:20	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340412	09/01/16 23:26	AGCM	TAL DEN

Client Sample ID: SB-PFC-MW1-56.0
Date Collected: 08/18/16 11:57
Date Received: 08/19/16 09:30

Lab Sample ID: 280-87134-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			339291	08/24/16 09:30	IEU	TAL DEN

Client Sample ID: SB-PFC-MW1-56.0
Date Collected: 08/18/16 11:57
Date Received: 08/19/16 09:30

Lab Sample ID: 280-87134-7
Matrix: Solid
Percent Solids: 88.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.07 g	20 mL	339633	08/25/16 16:20	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340412	09/01/16 23:38	AGCM	TAL DEN

Client Sample ID: SB-PFC-MW1-3.0
Date Collected: 08/18/16 12:05
Date Received: 08/19/16 09:30

Lab Sample ID: 280-87134-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			339291	08/24/16 09:30	IEU	TAL DEN

Client Sample ID: SB-PFC-MW1-3.0

Lab Sample ID: 280-87134-8
Date Collected: 08/18/16 12:05
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 91.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.00 g	20 mL	339633	08/25/16 16:20	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340412	09/01/16 23:51	AGCM	TAL DEN

Client Sample ID: MW-FB3

Lab Sample ID: 280-87134-9
Date Collected: 08/18/16 12:10
Matrix: Water
Date Received: 08/19/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			241.9 mL	5 mL	340544	09/01/16 19:29	YJC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340829	09/02/16 14:23	AGCM	TAL DEN

Client Sample ID: PFC-MW-DUP1

Lab Sample ID: 280-87134-10
Date Collected: 08/18/16 09:00
Matrix: Solid
Date Received: 08/19/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			339291	08/24/16 09:30	IEU	TAL DEN

Client Sample ID: PFC-MW-DUP1

Lab Sample ID: 280-87134-10
Date Collected: 08/18/16 09:00
Matrix: Solid
Date Received: 08/19/16 09:30
Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.42 g	20 mL	339633	08/25/16 16:20	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340412	09/02/16 00:03	AGCM	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-87134-1
Project/Site: Stewart International Airport (PFAS)

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	11964	04-01-17

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

Analysis Method	Prep Method	Matrix	Analyte
DV-LC-0012	3535	Water	Perfluorobutane Sulfonate (PFBS)
DV-LC-0012	3535	Water	Perfluoroheptanoic acid (PFHpA)
DV-LC-0012	3535	Water	Perfluorohexane Sulfonate (PFHxS)
DV-LC-0012	3535	Water	Perfluorononanoic acid (PFNA)
DV-LC-0012	3535	Water	Perfluorooctanesulfonic acid (PFOS)
DV-LC-0012	3535	Water	Perfluorooctanoic acid (PFOA)
DV-LC-0012	PFC leach	Solid	Perfluorobutane Sulfonate (PFBS)
DV-LC-0012	PFC leach	Solid	Perfluoroheptanoic acid (PFHpA)
DV-LC-0012	PFC leach	Solid	Perfluorohexane Sulfonate (PFHxS)
DV-LC-0012	PFC leach	Solid	Perfluorononanoic acid (PFNA)
DV-LC-0012	PFC leach	Solid	Perfluorooctanesulfonic acid (PFOS)
DV-LC-0012	PFC leach	Solid	Perfluorooctanoic acid (PFOA)
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	4025	01-09-17

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

Analysis Method	Prep Method	Matrix	Analyte
DV-LC-0012	PFC leach	Solid	Perfluoroheptanoic acid (PFHpA)
DV-LC-0012	PFC leach	Solid	Perfluorohexane Sulfonate (PFHxS)
DV-LC-0012	PFC leach	Solid	Perfluorononanoic acid (PFNA)
DV-LC-0012	PFC leach	Solid	Perfluorooctanesulfonic acid (PFOS)
DV-LC-0012	PFC leach	Solid	Perfluorooctanoic acid (PFOA)
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	4040	01-29-17

Method PFC

Perfluronated Hydrocarbons (LC/MS) by Method PFC

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Solid Level: Low

GC Column (1): Gemini-NX ID:

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
SB-PFC-MW1-0.5	280-87134-1	123	102
SB-PFC-MW2-0.5	280-87134-2	121	104
SB-PFC-MW1-16.0	280-87134-6	122	106
SB-PFC-MW1-56.0	280-87134-7	127	100
SB-PFC-MW1-3.0	280-87134-8	129	105
PFC-MW-DUP1	280-87134-10	122	105
	MB 280-339633/1-A	124	104
	LCS 280-339633/2-A	129	110
PFC-MW-DUP1 MS	280-87134-10 MS	111	103
PFC-MW-DUP1 MSD	280-87134-10 MSD	118	103

	QC LIMITS
PFOA = 13C8 PFOA	57-153
PFOS = 13C8 PFOS	70-130

Column to be used to flag recovery values

FORM II DV-LC-0012

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini-NX ID:

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
MW-FB1	280-87134-3	126	105
MW-WB1	280-87134-4	123	107
MW-FB2	280-87134-5	118	98
MW-FB3	280-87134-9	125	106
	MB 280-339617/1-A	120	111
	MB 280-340007/1-A	119	103
	MB 280-340544/1-A	113	103
	LCS 280-339617/2-A	124	97
	LCS 280-340007/2-A	124	114
	LCS 280-340544/2-A	125	103
	LCSD 280-339617/3-A	120	97
	LCSD 280-340007/3-A	123	100
	LCSD 280-340544/3-A	125	102
	DLCK 280-340408/14	75	107

	QC LIMITS
PFOA = 13C8 PFOA	60-155
PFOS = 13C8 PFOS	45-130

Column to be used to flag recovery values

FORM II DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I01029.d

Lab ID: LCS 280-339617/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.163	92	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.218	109	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.183	97	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.193	97	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.195	102	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.207	104	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC516I01074.d

Lab ID: LCS 280-339633/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	17.7	16.29	92	68-130	
Perfluoroheptanoic acid (PFHpA)	20.0	20.97	105	70-130	
Perfluorohexane Sulfonate (PFHxS)	18.9	17.15	91	70-135	
Perfluorononanoic acid (PFNA)	20.0	18.89	94	64-138	
Perfluorooctanesulfonic acid (PFOS)	19.1	19.19	100	70-130	
Perfluorooctanoic acid (PFOA)	20.0	20.97	105	70-131	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I01107.d

Lab ID: LCS 280-340007/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.151	86	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.213	106	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.177	94	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.180	90	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.182	95	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.206	103	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I02017.d

Lab ID: LCS 280-340544/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.167	94	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.186	93	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.170	90	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.172	86	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.170	89	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.182	91	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I01030.d

Lab ID: LCSD 280-339617/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.169	96	4	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.207	103	6	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.170	90	8	30	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.190	95	2	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.182	95	7	20	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.198	99	5	20	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I01108.d

Lab ID: LCSD 280-340007/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutane Sulfonate (PFBS)	0.177	0.159	90	5	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.210	105	1	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.184	97	4	30	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.190	95	6	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.181	95	1	20	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.213	106	3	20	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I02018.d

Lab ID: LCSD 280-340544/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutane Sulfonate (PFBS)	0.177	0.148	83	12	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.193	96	3	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.155	82	9	30	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.178	89	4	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.172	90	1	20	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.176	88	4	20	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC516I01081.d

Lab ID: 280-87134-10 MS Client ID: PFC-MW-DUP1 MS

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	19.6	0.15 U	16.42	84	68-130	
Perfluoroheptanoic acid (PFHpA)	22.1	0.13 U	21.70	98	70-130	
Perfluorohexane Sulfonate (PFHxS)	20.9	0.30 U	19.51	93	70-135	
Perfluorononanoic acid (PFNA)	22.1	0.23 U	20.76	94	64-138	
Perfluorooctanesulfonic acid (PFOS)	21.1	0.15 U	20.67	98	70-130	
Perfluorooctanoic acid (PFOA)	22.1	0.24 U	22.08	100	70-131	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC516I01082.d

Lab ID: 280-87134-10 MSD Client ID: PFC-MW-DUP1 MSD

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	19.6	16.87	86	3	30	68-130	
Perfluoroheptanoic acid (PFHpA)	22.1	23.29	105	7	30	70-130	
Perfluorohexane Sulfonate (PFHxS)	20.9	20.16	96	3	30	70-135	
Perfluorononanoic acid (PFNA)	22.1	19.28	87	7	30	64-138	
Perfluorooctanesulfonic acid (PFOS)	21.1	21.80	103	5	30	70-130	
Perfluorooctanoic acid (PFOA)	22.1	23.46	106	6	30	70-131	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS DETECTION LIMIT CHECK STANDARD RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I01027.d

Lab ID: DLCK 280-340408/14 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	DLCK CONCENTRATION (ug/L)	DLCK % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.443	0.546	123	70-130	
Perfluoroheptanoic acid (PFHpA)	0.500	0.527	105	70-130	
Perfluorohexane Sulfonate (PFHxS)	0.473	0.586	124	70-130	
Perfluorononanoic acid (PFNA)	0.500	0.486	97	70-130	
Perfluorooctanesulfonic acid (PFOS)	0.478	0.583	122	70-130	
Perfluorooctanoic acid (PFOA)	0.500	0.467	93	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab File ID: PC516I01073.d Lab Sample ID: MB 280-339633/1-A

Matrix: Solid Date Extracted: 08/25/2016 16:20

Instrument ID: LC_LCMS5 Date Analyzed: 09/01/2016 22:37

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-339633/2-A	PC516I01074.d	09/01/2016 22:49
SB-PFC-MW1-0.5	280-87134-1	PC516I01075.d	09/01/2016 23:01
SB-PFC-MW2-0.5	280-87134-2	PC516I01076.d	09/01/2016 23:14
SB-PFC-MW1-16.0	280-87134-6	PC516I01077.d	09/01/2016 23:26
SB-PFC-MW1-56.0	280-87134-7	PC516I01078.d	09/01/2016 23:38
SB-PFC-MW1-3.0	280-87134-8	PC516I01079.d	09/01/2016 23:51
PFC-MW-DUP1	280-87134-10	PC516I01080.d	09/02/2016 00:03
PFC-MW-DUP1 MS	280-87134-10 MS	PC516I01081.d	09/02/2016 00:15
PFC-MW-DUP1 MSD	280-87134-10 MSD	PC516I01082.d	09/02/2016 00:28

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab File ID: PC516I01028.d Lab Sample ID: MB 280-339617/1-A

Matrix: Water Date Extracted: 08/25/2016 20:40

Instrument ID: LC_LCMS5 Date Analyzed: 09/01/2016 13:23

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-339617/2-A	PC516I01029.d	09/01/2016 13:35
	LCSD 280-339617/3-A	PC516I01030.d	09/01/2016 13:47
MW-FB1	280-87134-3	PC516I01044.d	09/01/2016 16:40

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab File ID: PC516I01106.d Lab Sample ID: MB 280-340007/1-A

Matrix: Water Date Extracted: 08/29/2016 19:57

Instrument ID: LC_LCMS5 Date Analyzed: 09/02/2016 05:23

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-340007/2-A	PC516I01107.d	09/02/2016 05:36
	LCSD 280-340007/3-A	PC516I01108.d	09/02/2016 05:48
MW-WB1	280-87134-4	PC516I01116.d	09/02/2016 07:27
MW-FB2	280-87134-5	PC516I01117.d	09/02/2016 07:39

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab File ID: PC516I02016.d Lab Sample ID: MB 280-340544/1-A

Matrix: Water Date Extracted: 09/01/2016 19:29

Instrument ID: LC_LCMS5 Date Analyzed: 09/02/2016 13:22

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-340544/2-A	PC516I02017.d	09/02/2016 13:34
	LCSD 280-340544/3-A	PC516I02018.d	09/02/2016 13:46
MW-FB3	280-87134-9	PC516I02021.d	09/02/2016 14:23

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		BA		HXA		HXS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		13464230	4.04	9694930	5.67	1321868	6.11
UPPER LIMIT		20196345	4.54	14542395	6.17	1982802	6.61
LOWER LIMIT		6732115	3.54	4847465	5.17	660934	5.61
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-340408/12		13436888	4.10	9144106	5.71	1345512	6.13
ICV 280-340408/13		13429034	4.06	9552910	5.69	1479176	6.12
DLCK 280-340408/14		13030540	4.09	9393393	5.70	1348439	6.13
MB 280-339617/1-A		14478015	3.96	10335088	5.66	1202623	6.09
LCS 280-339617/2-A		14166591	3.94	10618941	5.68	1322631	6.10
LCSD 280-339617/3-A		13732331	3.93	9995898	5.64	1348907	6.07
CCV 280-340408/25		13646398	3.96	10558954	5.65	1390613	6.09
280-87134-3	MW-FB1	13584850	4.09	9651576	5.80	1246226	6.23
CCV 280-340408/32		12060883	4.15	8358800	5.80	1097050	6.23
CCV 280-340412/59		13518500	4.28	8808726	5.90	1388252	6.34
MB 280-339633/1-A		13141749	4.20	9494244	5.85	1466948	6.27
LCS 280-339633/2-A		12508934	4.15	8986316	5.79	1340660	6.23
280-87134-1	SB-PFC-MW1-0.5	15400485	4.22	14917511*	5.86	1690470	6.29
280-87134-2	SB-PFC-MW2-0.5	12567732	4.09	11932412	5.75	1485738	6.19
280-87134-6	SB-PFC-MW1-16.0	11962768	4.09	8336979	5.74	1177623	6.19
280-87134-7	SB-PFC-MW1-56.0	12077462	4.10	8509422	5.75	1224245	6.19
280-87134-8	SB-PFC-MW1-3.0	11783337	4.06	8440969	5.74	1164088	6.18
280-87134-10	PFC-MW-DUP1	11400163	4.07	8269221	5.73	1137328	6.18
280-87134-10 MS	PFC-MW-DUP1 MS	11459920	4.06	8439391	5.73	1138640	6.17
280-87134-10 MSD	PFC-MW-DUP1 MSD	12068496	4.07	8621901	5.73	1135406	6.18
CCV 280-340412/70		12786274	4.06	8975065	5.72	1222840	6.17
CCV 280-340694/92		12500063	4.02	8890908	5.72	1153316	6.17
MB 280-340007/1-A		15210921	3.96	10581089	5.72	1546850	6.17
LCS 280-340007/2-A		13936644	3.94	9598249	5.69	1439033	6.13
LCSD 280-340007/3-A		14480937	4.02	9866605	5.74	1397280	6.18
CCV 280-340694/99		13992383	4.28	8747576	5.89	1251874	6.31
280-87134-4	MW-WB1	16165915	4.16	9944574	5.84	1453397	6.25
280-87134-5	MW-FB2	14933766	4.06	9642176	5.74	1397318	6.17
CCV 280-340694/105		12731765	4.02	8613480	5.69	1300212	6.12
CCV 280-340829/3		13920328	4.31	8834920	5.92	1205707	6.35

BA = 13C4 PFBA (IS)
HXA = 13C2 PFHxA (IS)
HXS = 18O2 PFHxS (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		BA		HXA		HXS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		13464230	4.04	9694930	5.67	1321868	6.11
UPPER LIMIT		20196345	4.54	14542395	6.17	1982802	6.61
LOWER LIMIT		6732115	3.54	4847465	5.17	660934	5.61
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 280-340544/1-A		21165070*	4.28	12358775	5.89	1939551	6.31
LCS 280-340544/2-A		17606729	4.08	12206841	5.71	1549466	6.14
LCSD 280-340544/3-A		18835182	4.12	12327966	5.79	1754705	6.22
280-87134-9	MW-FB3	19448974	4.12	12315535	5.81	1663566	6.24
CCV 280-340829/10		15995542	4.03	10200810	5.71	1289472	6.16

BA = 13C4 PFBA (IS)
HXA = 13C2 PFHxA (IS)
HXS = 18O2 PFHxS (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		OA		PFOS		NA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		15298098	6.45	4615963	6.72	11257964	6.74
UPPER LIMIT		22947147	6.95	6923945	7.22	16886946	7.24
LOWER LIMIT		7649049	5.95	2307982	6.22	5628982	6.24
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-340408/12		14634188	6.47	4418635	6.75	11184421	6.76
ICV 280-340408/13		15295609	6.46	4679676	6.73	11435309	6.75
DLCK 280-340408/14		15470974	6.46	4522509	6.74	11919948	6.75
MB 280-339617/1-A		14962559	6.42	4649653	6.70	11841621	6.72
LCS 280-339617/2-A		14439053	6.43	4671510	6.71	11704258	6.73
LCSD 280-339617/3-A		14559873	6.40	4797731	6.69	11352380	6.71
CCV 280-340408/25		16831333	6.43	4590937	6.71	11773943	6.73
280-87134-3	MW-FB1	14442375	6.57	4371343	6.83	11196906	6.84
CCV 280-340408/32		12799038	6.57	4104170	6.83	10301856	6.85
CCV 280-340412/59		16225199	6.67	4749891	6.94	11861759	6.96
MB 280-339633/1-A		14000220	6.62	5006172	6.89	11646318	6.91
LCS 280-339633/2-A		13068803	6.58	4472760	6.84	10786103	6.86
280-87134-1	SB-PFC-MW1-0.5	20584222	6.64	6451354	6.89	19010890*	6.92
280-87134-2	SB-PFC-MW2-0.5	15778273	6.54	5580881	6.80	13930860	6.83
280-87134-6	SB-PFC-MW1-16.0	13268355	6.53	4295432	6.80	11090116	6.82
280-87134-7	SB-PFC-MW1-56.0	12406116	6.54	4336204	6.81	10323902	6.83
280-87134-8	SB-PFC-MW1-3.0	12713289	6.52	4243141	6.80	11366481	6.81
280-87134-10	PFC-MW-DUP1	12656304	6.53	4091021	6.80	10433290	6.82
280-87134-10 MS	PFC-MW-DUP1 MS	13297369	6.52	4296660	6.79	10748731	6.81
280-87134-10 MSD	PFC-MW-DUP1 MSD	12586074	6.52	4094651	6.79	10731068	6.81
CCV 280-340412/70		14246689	6.52	4431664	6.79	11308023	6.81
CCV 280-340694/92		14540907	6.51	4849190	6.79	11325936	6.81
MB 280-340007/1-A		16594673	6.51	5360161	6.78	12696415	6.80
LCS 280-340007/2-A		14632057	6.47	4987459	6.74	12906793	6.76
LCSD 280-340007/3-A		14892260	6.51	4943867	6.78	12624549	6.80
CCV 280-340694/99		15169952	6.64	4783548	6.89	11191532	6.91
280-87134-4	MW-WB1	15916521	6.58	5178122	6.85	12763239	6.87
280-87134-5	MW-FB2	14616238	6.51	4885863	6.78	11786144	6.79
CCV 280-340694/105		13980904	6.46	4354184	6.73	10957446	6.75
CCV 280-340829/3		13658780	6.69	4339570	6.96	10246704	6.97

OA = 13C4 PFOA (IS)
PFOS = 13C4 PFOS (IS)
NA = 13C5 PFNA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		OA		PFOS		NA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		15298098	6.45	4615963	6.72	11257964	6.74
UPPER LIMIT		22947147	6.95	6923945	7.22	16886946	7.24
LOWER LIMIT		7649049	5.95	2307982	6.22	5628982	6.24
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 280-340544/1-A		18877147	6.64	6169209	6.90	14488475	6.92
LCS 280-340544/2-A		17060212	6.47	5742336	6.74	13504779	6.76
LCSD 280-340544/3-A		17526288	6.56	6034649	6.82	13389044	6.84
280-87134-9	MW-FB3	18070670	6.58	5835255	6.84	13827048	6.86
CCV 280-340829/10		16279989	6.51	4809420	6.78	12267200	6.79

OA = 13C4 PFOA (IS)
PFOS = 13C4 PFOS (IS)
NA = 13C5 PFNA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		DA		UNA		DOA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		10948088	6.98	6568063	7.19	14160405	7.37
UPPER LIMIT		16422132	7.48	9852095	7.69	21240608	7.87
LOWER LIMIT		5474044	6.48	3284032	6.69	7080203	6.87
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-340408/12		10147410	7.01	5810271	7.22	14209759	7.40
ICV 280-340408/13		11281711	7.00	6290686	7.21	13421168	7.38
DLCK 280-340408/14		10465958	7.00	6264106	7.22	14186021	7.38
MB 280-339617/1-A		11169377	6.96	5721879	7.18	10948559	7.36
LCS 280-339617/2-A		10840747	6.97	5839671	7.19	10074555	7.37
LCSD 280-339617/3-A		10686642	6.95	5770179	7.17	9413820	7.35
CCV 280-340408/25		10948741	6.97	6570851	7.18	14213407	7.36
280-87134-3	MW-FB1	10813779	7.08	6253422	7.28	12639846	7.46
CCV 280-340408/32		8958481	7.08	5087594	7.28	12119065	7.46
CCV 280-340412/59		11177277	7.21	7421220	7.41	16130571	7.58
MB 280-339633/1-A		11491269	7.15	6580815	7.36	15939289	7.54
LCS 280-339633/2-A		10416057	7.11	6483521	7.32	15091783	7.50
280-87134-1	SB-PFC-MW1-0.5	18326379*	7.16	11520541*	7.37	25286937*	7.55
280-87134-2	SB-PFC-MW2-0.5	13745193	7.07	8910659	7.28	18754869	7.46
280-87134-6	SB-PFC-MW1-16.0	10709568	7.07	6551415	7.28	15032346	7.46
280-87134-7	SB-PFC-MW1-56.0	9996783	7.07	6439435	7.28	15129508	7.47
280-87134-8	SB-PFC-MW1-3.0	9972705	7.06	6207937	7.27	14972219	7.45
280-87134-10	PFC-MW-DUP1	9683497	7.06	6335986	7.27	15235903	7.45
280-87134-10 MS	PFC-MW-DUP1 MS	9901206	7.05	6222366	7.27	14358670	7.45
280-87134-10 MSD	PFC-MW-DUP1 MSD	10433998	7.05	6255829	7.27	14127530	7.45
CCV 280-340412/70		10367627	7.05	6544465	7.26	13759096	7.45
CCV 280-340694/92		11679694	7.05	6602767	7.26	15810214	7.44
MB 280-340007/1-A		13023988	7.05	7105138	7.25	12266120	7.43
LCS 280-340007/2-A		11968703	7.01	6805216	7.22	12697876	7.39
LCSD 280-340007/3-A		12345349	7.04	6591075	7.24	12258862	7.42
CCV 280-340694/99		11018774	7.15	6880969	7.36	14544846	7.53
280-87134-4	MW-WB1	11704171	7.10	6029835	7.30	10653897	7.47
280-87134-5	MW-FB2	11395044	7.04	8803786	7.23	20670664	7.41
CCV 280-340694/105		10562149	7.00	6217510	7.21	13807965	7.38
CCV 280-340829/3		9705720	7.21	5455225	7.40	12604409	7.57

DA = 13C2 PFDA (IS)
UNA = 13C2 PFUnA (IS)
DOA = 13C2 PFDoA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		DA		UNA		DOA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		10948088	6.98	6568063	7.19	14160405	7.37
UPPER LIMIT		16422132	7.48	9852095	7.69	21240608	7.87
LOWER LIMIT		5474044	6.48	3284032	6.69	7080203	6.87
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 280-340544/1-A		13609317	7.17	7308110	7.37	13947110	7.53
LCS 280-340544/2-A		12816337	7.01	7402956	7.22	12365149	7.39
LCSD 280-340544/3-A		13616496	7.07	7169778	7.28	13274300	7.46
280-87134-9	MW-FB3	13762194	7.10	10246017*	7.30	21247589*	7.48
CCV 280-340829/10		11207137	7.05	6554617	7.25	14657036	7.43

DA = 13C2 PFDA (IS)
UNA = 13C2 PFUnA (IS)
DOA = 13C2 PFDoA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		FOSA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		16144214	7.52				
UPPER LIMIT		24216321	8.02				
LOWER LIMIT		8072107	7.02				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-340408/12		15871820	7.55				
ICV 280-340408/13		16142109	7.53				
DLCK 280-340408/14		16451357	7.53				
MB 280-339617/1-A		569674*	7.52				
LCS 280-339617/2-A		515046*	7.53				
LCSD 280-339617/3-A		604984*	7.51				
CCV 280-340408/25		16604453	7.53				
280-87134-3	MW-FB1	529912*	7.66				
CCV 280-340408/32		13923978	7.66				
CCV 280-340412/59		15615487	7.67				
MB 280-339633/1-A		17078420	7.61				
LCS 280-339633/2-A		16568427	7.57				
280-87134-1	SB-PFC-MW1-0.5	15683377	7.62				
280-87134-2	SB-PFC-MW2-0.5	16039999	7.54				
280-87134-6	SB-PFC-MW1-16.0	15218612	7.53				
280-87134-7	SB-PFC-MW1-56.0	15833773	7.55				
280-87134-8	SB-PFC-MW1-3.0	16622741	7.54				
280-87134-10	PFC-MW-DUP1	15527618	7.54				
280-87134-10 MS	PFC-MW-DUP1 MS	15514340	7.54				
280-87134-10 MSD	PFC-MW-DUP1 MSD	15143841	7.54				
CCV 280-340412/70		14741305	7.53				
CCV 280-340694/92		14868716	7.53				
MB 280-340007/1-A		498922*	7.56				
LCS 280-340007/2-A		509333*	7.53				
LCSD 280-340007/3-A		511381*	7.57				
CCV 280-340694/99		16459115	7.70				
280-87134-4	MW-WB1	442559*	7.65				
280-87134-5	MW-FB2	668147*	7.60				
CCV 280-340694/105		15554520	7.55				
CCV 280-340829/3		14898802	7.72				

FOSA = 13C8 FOSA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		FOSA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		16144214	7.52				
UPPER LIMIT		24216321	8.02				
LOWER LIMIT		8072107	7.02				
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 280-340544/1-A		888206*	7.68				
LCS 280-340544/2-A		960815*	7.54				
LCSD 280-340544/3-A		675248*	7.62				
280-87134-9	MW-FB3	361653*	7.65				
CCV 280-340829/10		16308479	7.60				

FOSA = 13C8 FOSA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: SB-PFC-MW1-0.5 | Lab Sample ID: 280-87134-1

Matrix: Solid | Lab File ID: PC516I01075.d

Analysis Method: DV-LC-0012 | Date Collected: 08/15/2016 13:45

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.00(g) | Date Analyzed: 09/01/2016 23:01

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 15.3 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.17	U	0.94	0.17
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.14	U	0.94	0.14
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.86	J	0.94	0.33
375-95-1	Perfluorononanoic acid (PFNA)	0.26	U	0.94	0.26
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.26		0.94	0.17
335-67-1	Perfluorooctanoic acid (PFOA)	0.30	J	0.94	0.27

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	123		57-153
STL01054	13C8 PFOS	102		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01075.d
Lims ID: 280-87134-A-1-B Lab Sample ID: 280-87134-1
Client ID: SB-PFC-MW1-0.5
Sample Type: Client
Inject. Date: 01-Sep-2016 23:01:46 ALS Bottle#: 0 Worklist Smp#: 62
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-1-B, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:17:54

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.219	4.276	-0.057		15400485	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.431				ND			
298.9 > 98.9		5.431							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.856	5.904	-0.048		14917511	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.330				ND			
363.0 > 168.9		6.330							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.291	6.338	-0.047		1690470	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.272	6.329	-0.057	0.997	263540	0.3639			R
398.9 > 98.9	6.320	6.329	-0.009	1.005	35323		7.46(1.30-2.41)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.631	6.669	-0.038	0.999	16978211	12.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.641	6.669	-0.028		20584222	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.632	6.669	-0.037	0.999	422144	0.1254			
413.0 > 169.0	6.632	6.669	-0.037	0.999	132511		3.19(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.903	6.941	-0.038	1.001	3668684	9.46			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.894	6.942	-0.048		6451354	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.895	6.942	-0.047	1.000	614356	0.9593			R
498.9 > 98.9	6.895	6.942	-0.047	1.000	217267		2.83(1.31-2.43)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
20 Perfluorononanoic acid									
463.0 > 418.9		6.952				ND			
463.0 > 218.9		6.952							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.924	6.962	-0.038		19010890	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.158	7.206	-0.048		18326379	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.366	7.414	-0.048		11520541	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.545	7.583	-0.038		25286937	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.624	7.671	-0.047		15683377	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

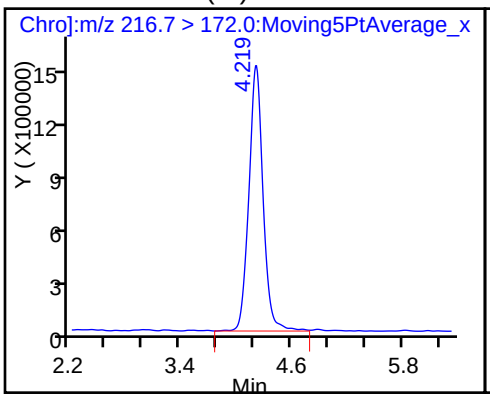
Report Date: 02-Sep-2016 11:55:15 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

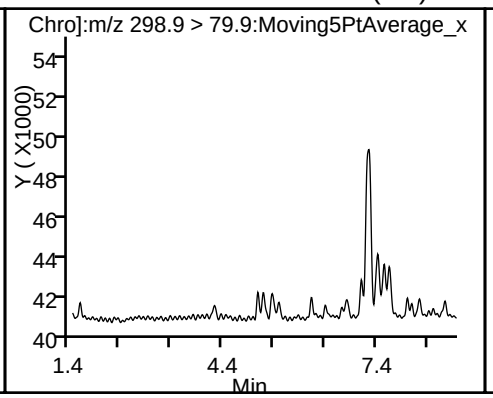
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01075.d

Injection Date:	01-Sep-2016 23:01:46	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-1-B	Lab Sample ID:	280-87134-1		
Client ID:	SB-PFC-MW1-0.5				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	62
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

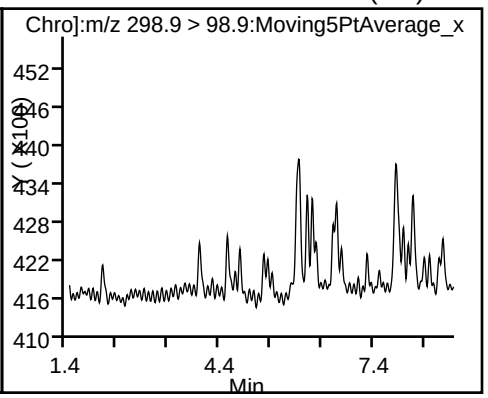
* 1 13C4 PFBA (IS)



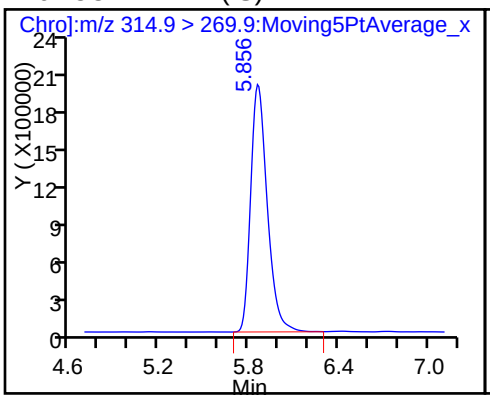
4 Perfluorobutane Sulfonate (ND)



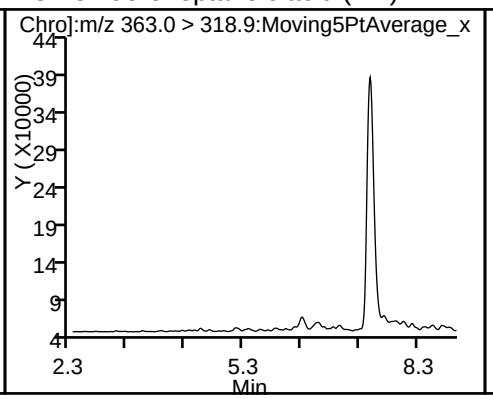
4 Perfluorobutane Sulfonate (ND)



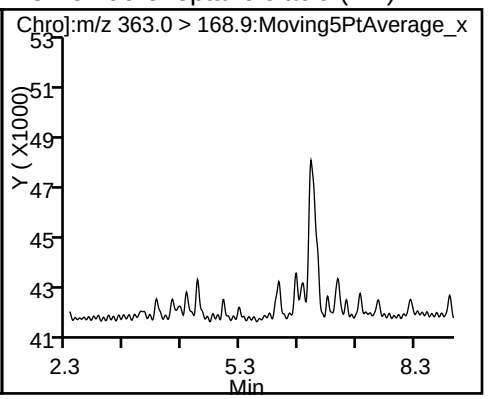
* 6 13C2 PFHxA (IS)



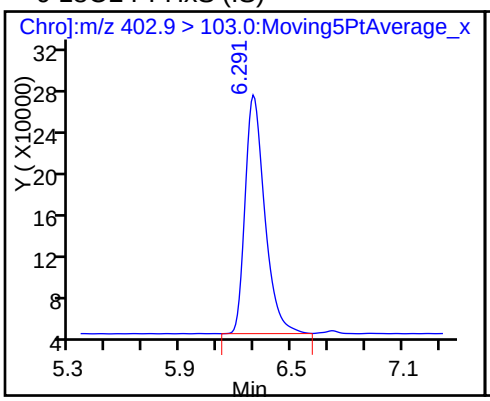
8 Perfluoroheptanoic acid (ND)



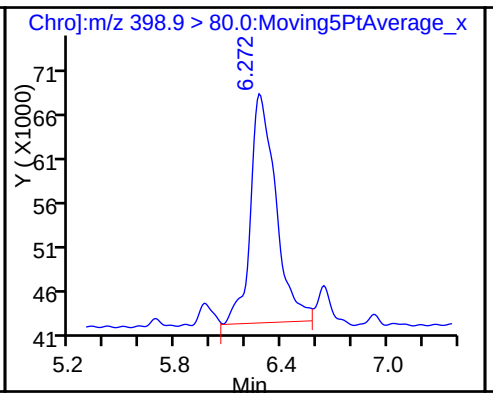
8 Perfluoroheptanoic acid (ND)



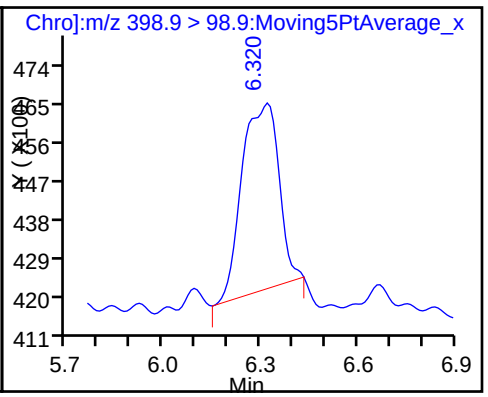
* 9 18O2 PFHxS (IS)



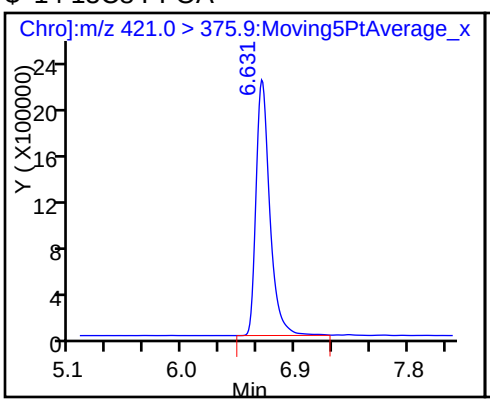
10 Perfluorohexane Sulfonate



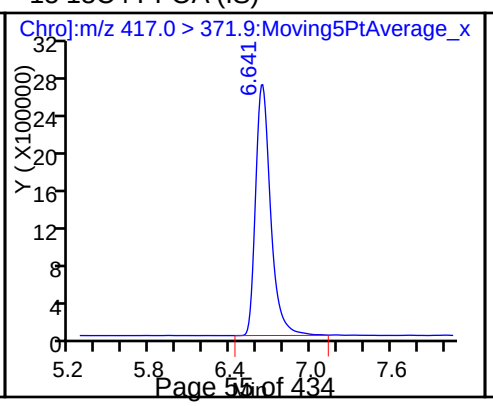
10 Perfluorohexane Sulfonate



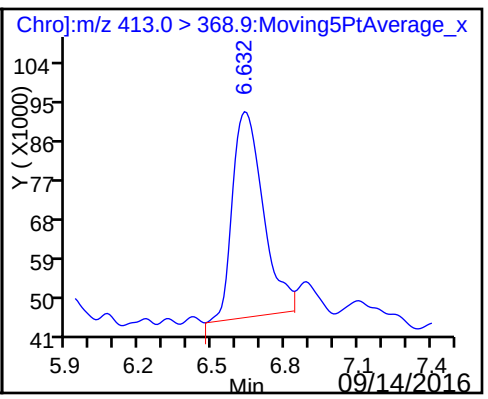
$ 14 13C8 PFOA



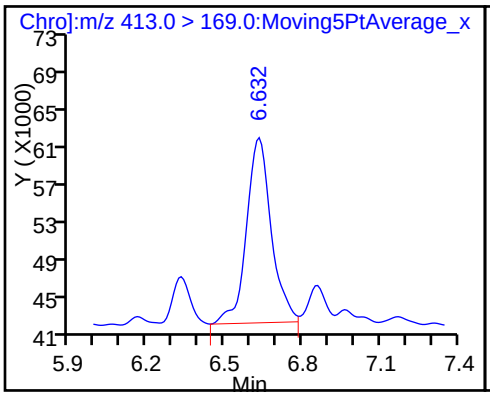
* 15 13C4 PFOA (IS)



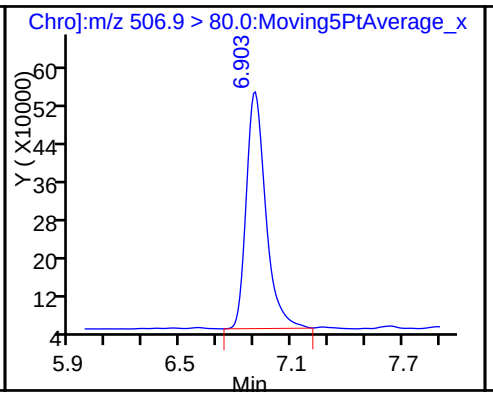
16 Perfluorooctanoic acid



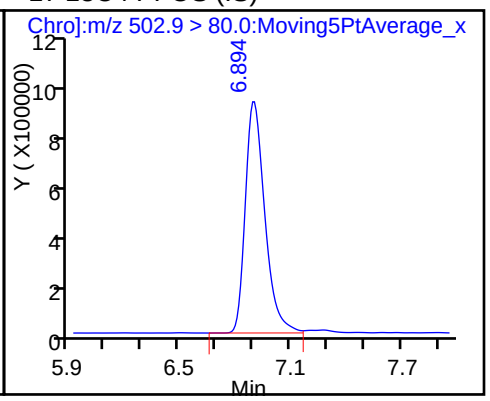
16 Perfluorooctanoic acid



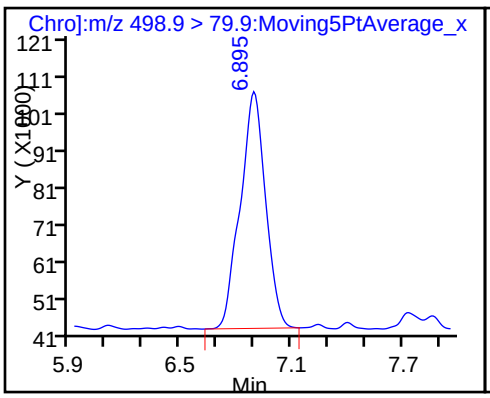
$ 18 13C8 PFOS



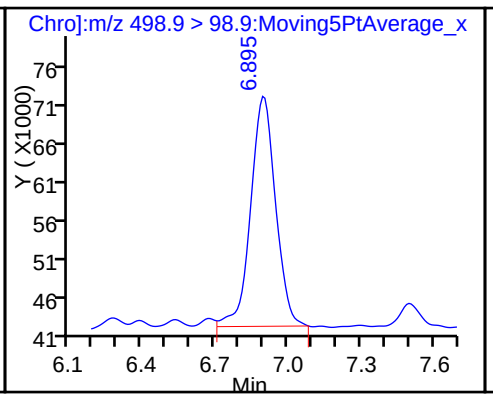
* 17 13C4 PFOS (IS)



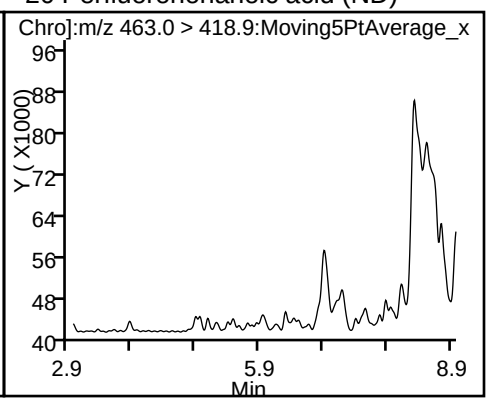
19 Perfluorooctane sulfonic acid



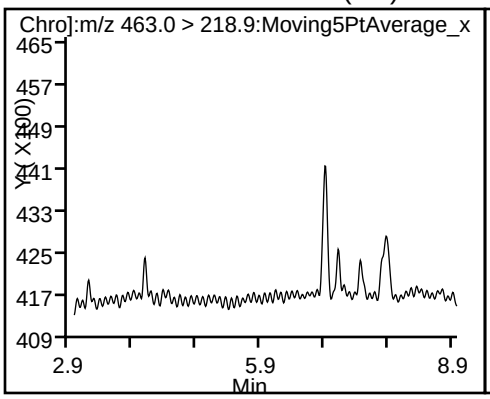
19 Perfluorooctane sulfonic acid



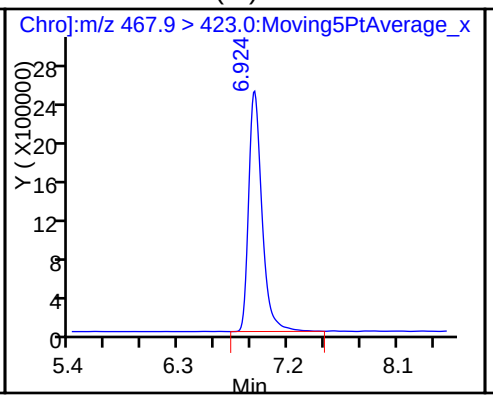
20 Perfluorononanoic acid (ND)



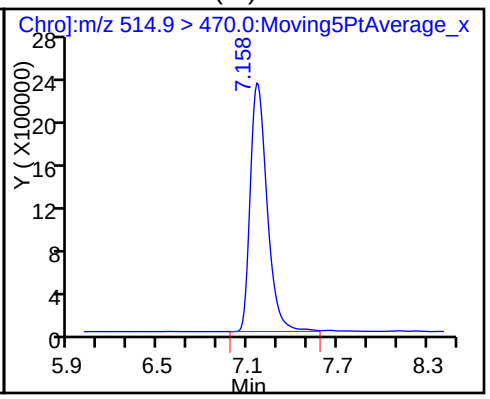
20 Perfluorononanoic acid (ND)



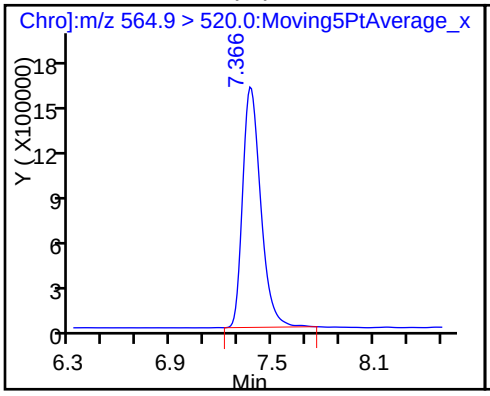
* 21 13C5 PFNA (IS)



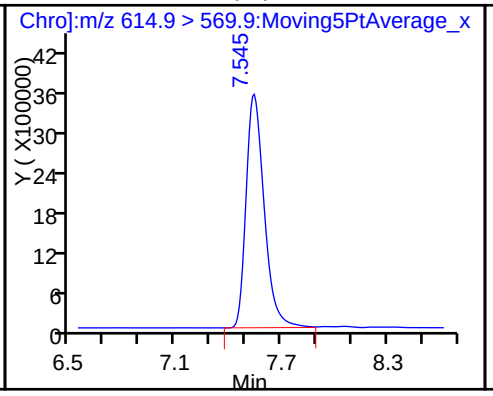
* 22 13C2 PFDA (IS)



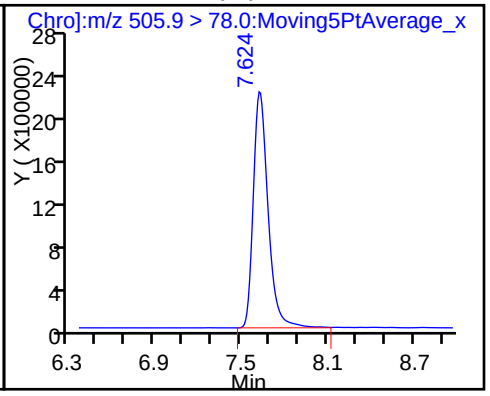
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: SB-PFC-MW2-0.5 | Lab Sample ID: 280-87134-2

Matrix: Solid | Lab File ID: PC516I01076.d

Analysis Method: DV-LC-0012 | Date Collected: 08/15/2016 14:22

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.00(g) | Date Analyzed: 09/01/2016 23:14

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 8.7 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.15	U	0.88	0.15
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.15	J	0.88	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.31	U	0.88	0.31
375-95-1	Perfluorononanoic acid (PFNA)	0.24	U	0.88	0.24
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.47	J	0.88	0.15
335-67-1	Perfluorooctanoic acid (PFOA)	0.25	U	0.88	0.25

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	121		57-153
STL01054	13C8 PFOS	104		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01076.d
Lims ID: 280-87134-A-2-B Lab Sample ID: 280-87134-2
Client ID: SB-PFC-MW2-0.5
Sample Type: Client
Inject. Date: 01-Sep-2016 23:14:03 ALS Bottle#: 0 Worklist Smp#: 63
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-2-B, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:18:15

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.086	4.276	-0.190		12567732	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.431				ND			
298.9 > 98.9		5.431							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.752	5.904	-0.152		11932412	10.0			
8 Perfluoroheptanoic acid									R
363.0 > 318.9	6.472	6.330	0.142	0.990	109810	0.0680			R
363.0 > 168.9	6.396	6.330	0.066	0.978	5561		19.75(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.187	6.338	-0.151		1485738	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.234	6.329	-0.095	1.008	88559	0.1360			R
398.9 > 98.9	6.196	6.329	-0.133	1.002	12166		7.28(1.30-2.41)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.536	6.669	-0.133	1.000	12848427	11.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.537	6.669	-0.132		15778273	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.669				ND			
413.0 > 169.0		6.669							
$ 18 13C8 PFOS									
506.9 > 80.0	6.809	6.941	-0.132	1.001	3248515	9.68			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.800	6.942	-0.142		5580881	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.790	6.942	-0.152	0.999	84065	0.2128			R
498.9 > 98.9	6.734	6.942	-0.208	0.990	3309		25.40(1.31-2.43)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
20 Perfluorononanoic acid									
463.0 > 418.9		6.952				ND			
463.0 > 218.9		6.952							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.829	6.962	-0.133		13930860	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.073	7.206	-0.133		13745193	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.414	-0.133		8910659	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.460	7.583	-0.123		18754869	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.671	-0.133		16039999	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

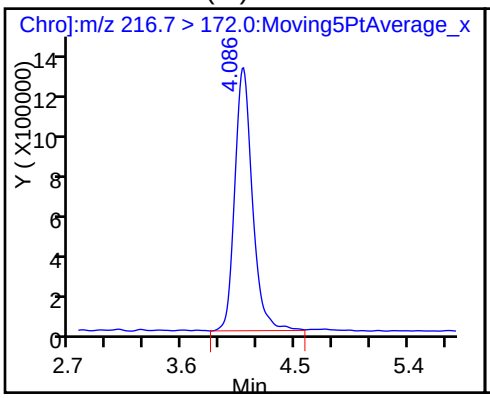
Report Date: 02-Sep-2016 11:55:17 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

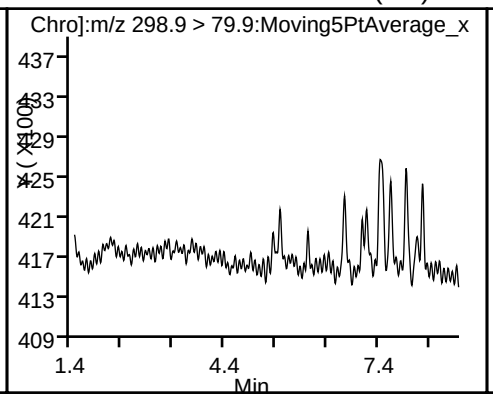
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01076.d

Injection Date:	01-Sep-2016 23:14:03	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-2-B	Lab Sample ID:	280-87134-2		
Client ID:	SB-PFC-MW2-0.5				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	63
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

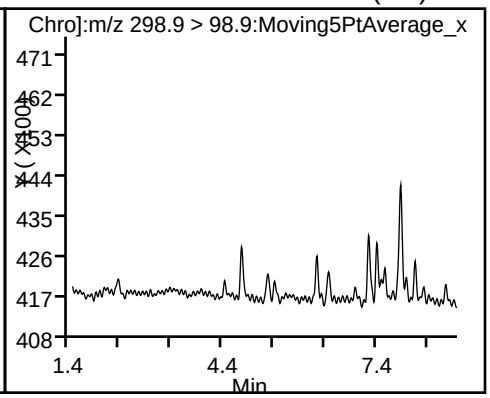
* 1 13C4 PFBA (IS)



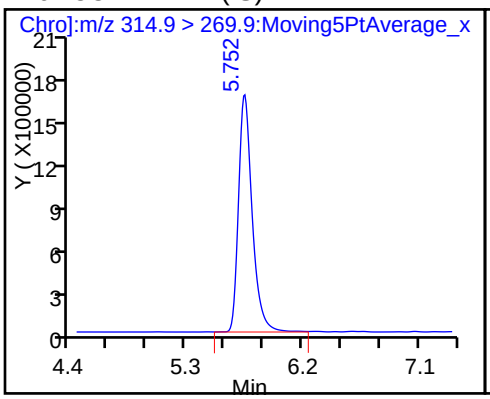
4 Perfluorobutane Sulfonate (ND)



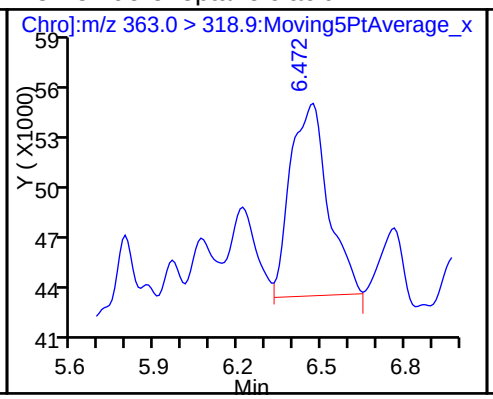
4 Perfluorobutane Sulfonate (ND)



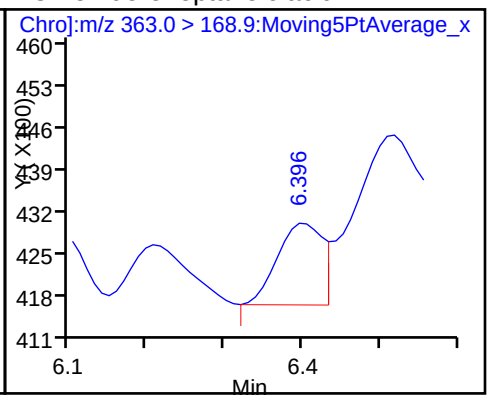
* 6 13C2 PFHxA (IS)



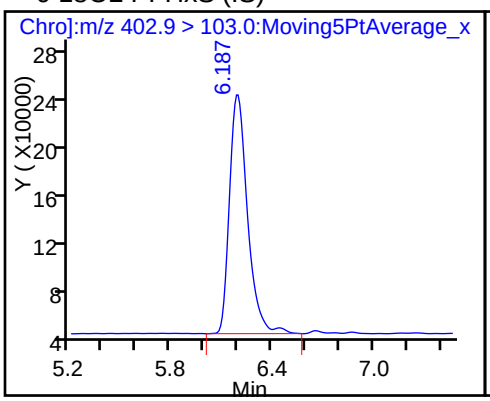
8 Perfluoroheptanoic acid



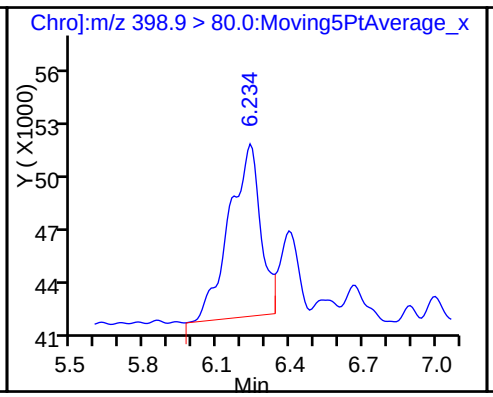
8 Perfluoroheptanoic acid



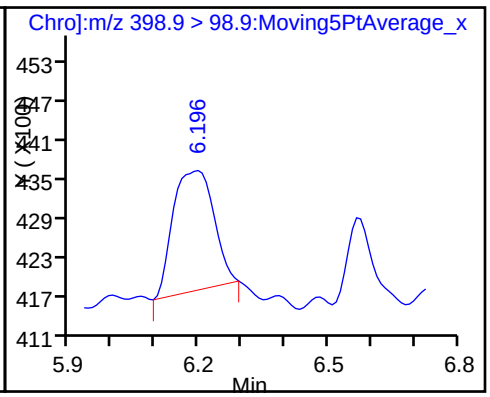
* 9 18O2 PFHxS (IS)



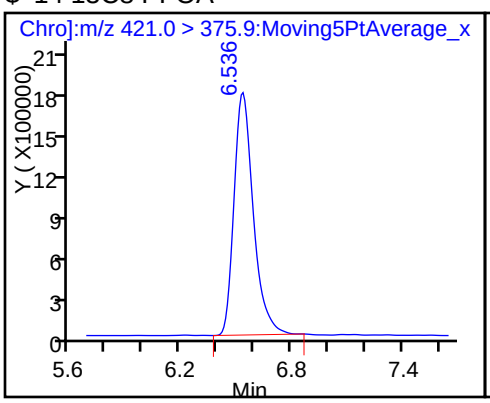
10 Perfluorohexane Sulfonate



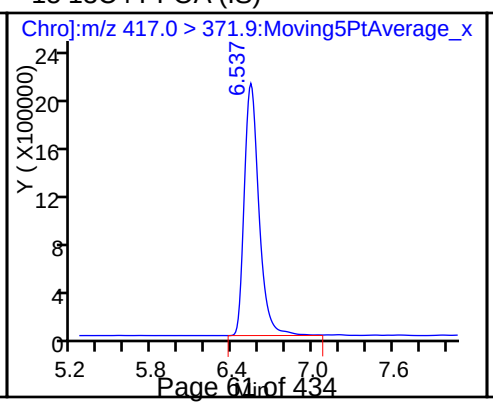
10 Perfluorohexane Sulfonate



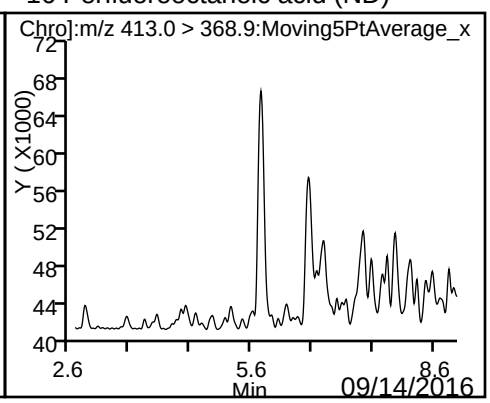
$ 14 13C8 PFOA



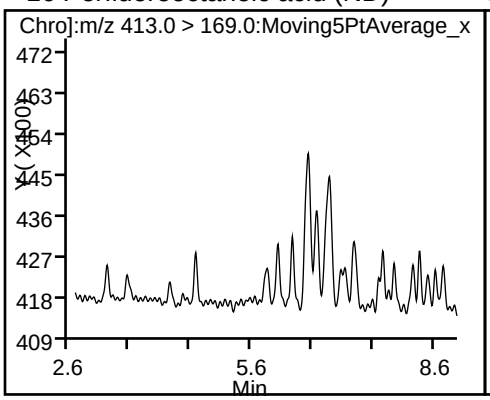
* 15 13C4 PFOA (IS)



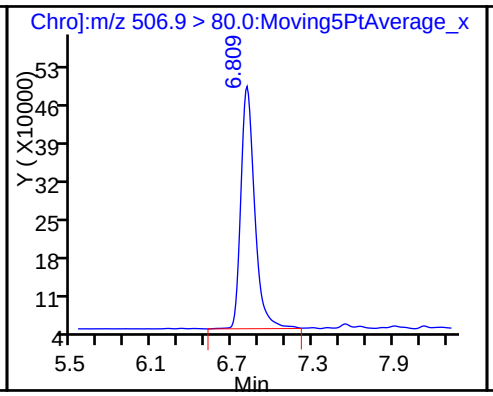
16 Perfluorooctanoic acid (ND)



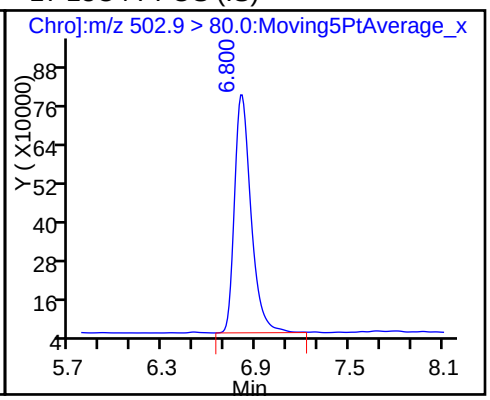
16 Perfluorooctanoic acid (ND)



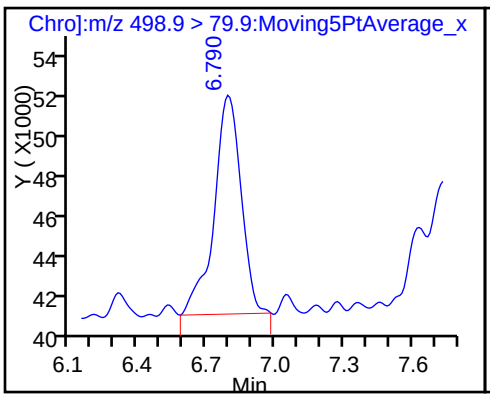
$ 18 13C8 PFOS



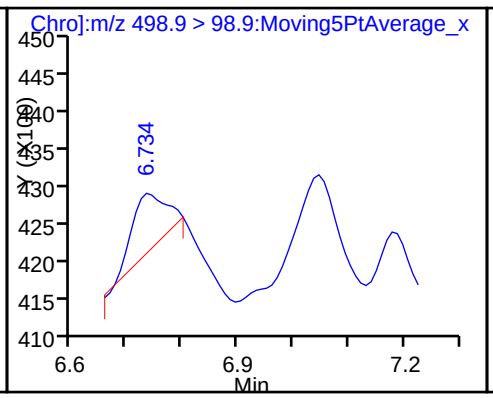
* 17 13C4 PFOS (IS)



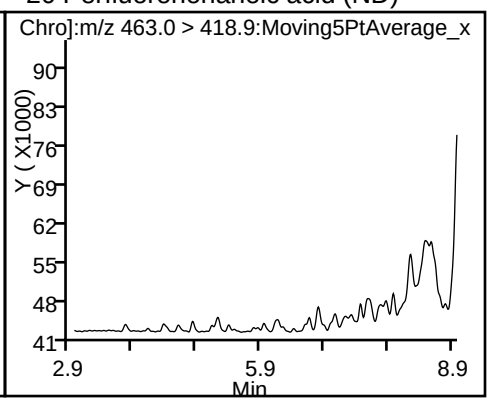
19 Perfluorooctane sulfonic acid



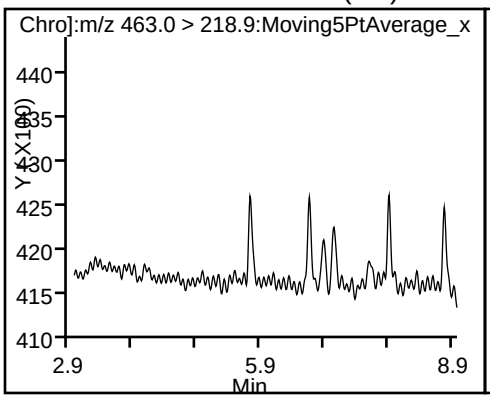
19 Perfluorooctane sulfonic acid



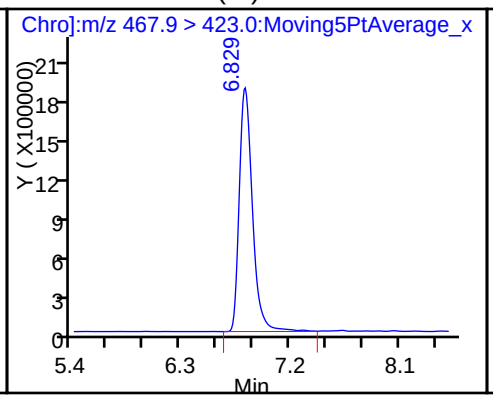
20 Perfluorononanoic acid (ND)



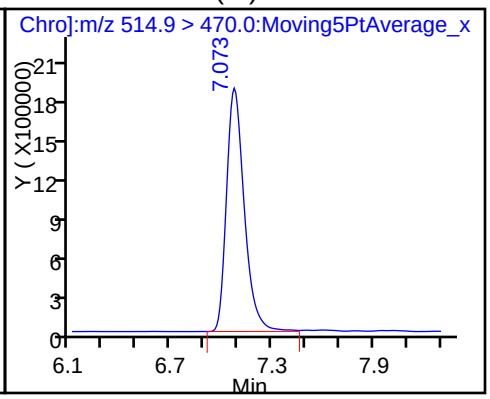
20 Perfluorononanoic acid (ND)



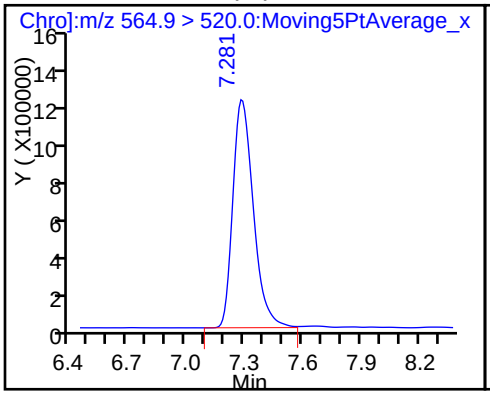
* 21 13C5 PFNA (IS)



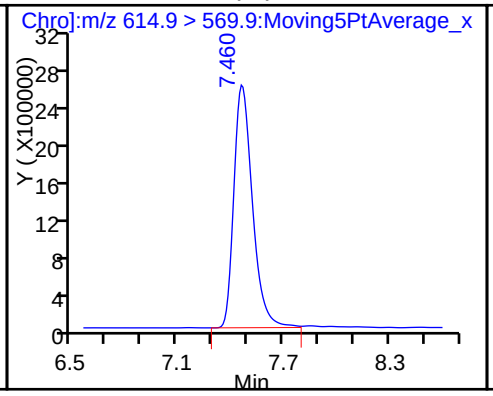
* 22 13C2 PFDA (IS)



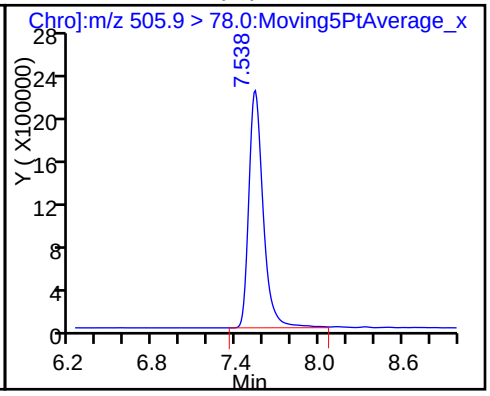
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: MW-FB1 | Lab Sample ID: 280-87134-3

Matrix: Water | Lab File ID: PC516I01044.d

Analysis Method: DV-LC-0012 | Date Collected: 08/15/2016 14:38

Extraction Method: 3535 | Date Extracted: 08/25/2016 20:40

Sample wt/vol: 248.1(mL) | Date Analyzed: 09/01/2016 16:40

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340408 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0083	U	0.020	0.0083
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.018	U	0.040	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	126		60-155
STL01054	13C8 PFOS	105		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01044.d
Lims ID: 280-87134-A-3-A Lab Sample ID: 280-87134-3
Client ID: MW-FB1
Sample Type: Client
Inject. Date: 01-Sep-2016 16:40:07 ALS Bottle#: 0 Worklist Smp#: 31
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:53:17 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:56:42

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.086	3.963	0.123		13584850	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.184				ND			
298.9 > 98.9		5.184							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.800	5.648	0.152		9651576	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.083				ND			
363.0 > 168.9		6.083							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.225	6.092	0.133		1246226	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.092				ND			
398.9 > 98.9		6.092							
$ 14 13C8 PFOA									
421.0 > 375.9	6.565	6.432	0.133	1.000	12202397	12.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.565	6.432	0.133		14442375	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.433				ND			
413.0 > 169.0		6.433							
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.705				ND			
498.9 > 98.9		6.705							
$ 18 13C8 PFOS									
506.9 > 80.0	6.818	6.704	0.114	0.999	2569952	9.78			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.828	6.705	0.123		4371343	9.56			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.838	6.725	0.113		11196906	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.725				ND			
463.0 > 218.9		6.725							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.083	6.969	0.114		10813779	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.177	0.104		6253422	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.460	7.356	0.104		12639846	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.661	7.529	0.132		529912	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

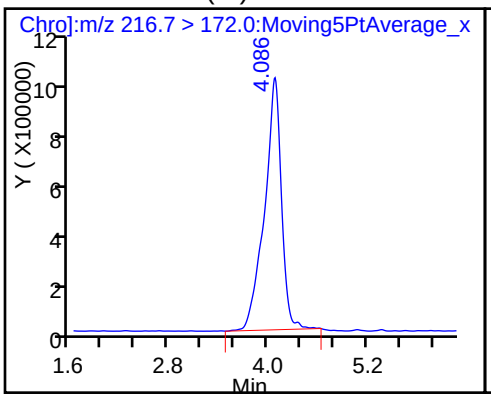
Report Date: 02-Sep-2016 11:53:35 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

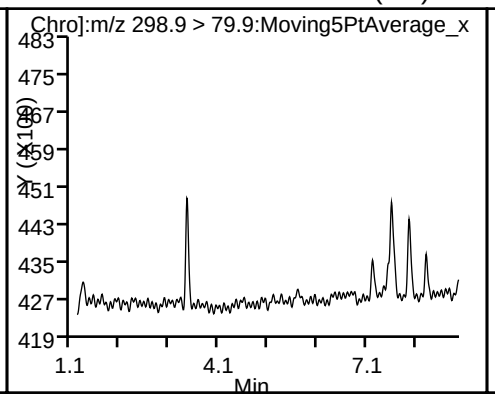
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01044.d

Injection Date:	01-Sep-2016 16:40:07	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-3-A	Lab Sample ID:	280-87134-3		
Client ID:	MW-FB1				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	31
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

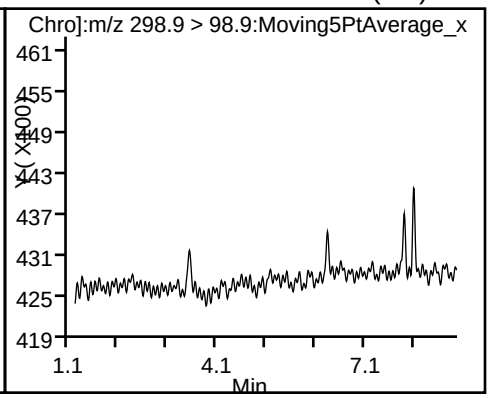
* 1 13C4 PFBA (IS)



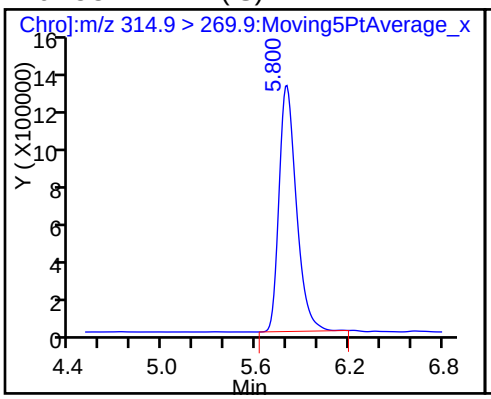
4 Perfluorobutane Sulfonate (ND)



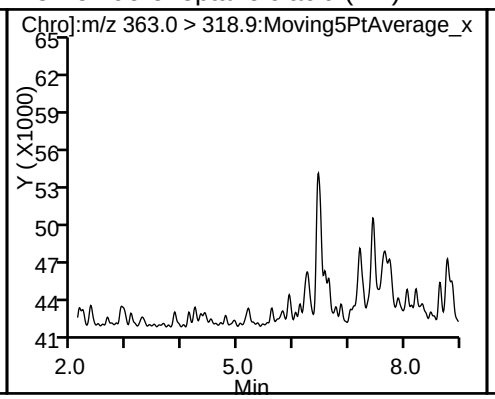
4 Perfluorobutane Sulfonate (ND)



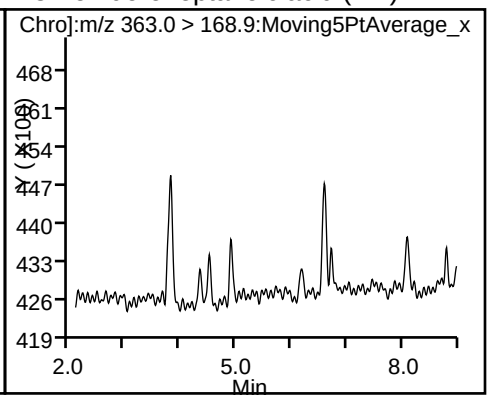
* 6 13C2 PFHxA (IS)



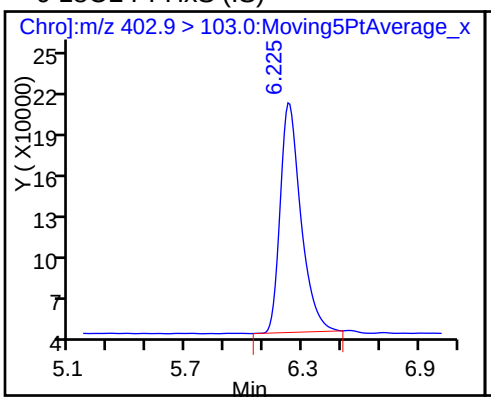
8 Perfluoroheptanoic acid (ND)



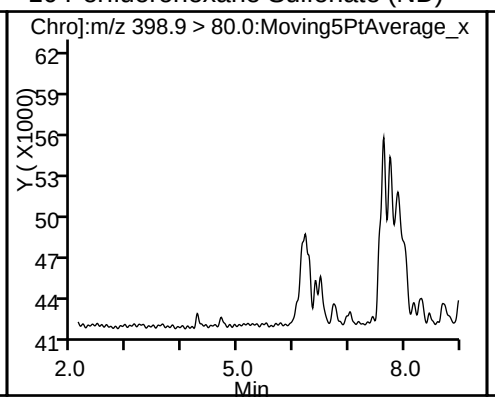
8 Perfluoroheptanoic acid (ND)



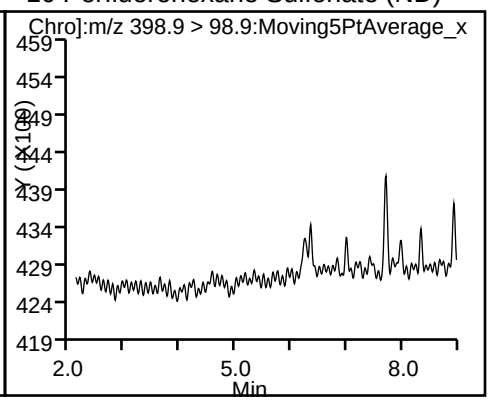
* 9 18O2 PFHxS (IS)



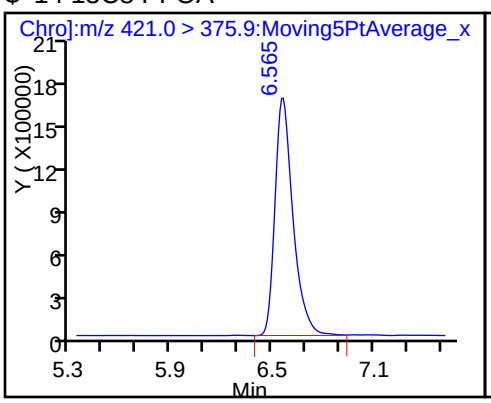
10 Perfluorohexane Sulfonate (ND)



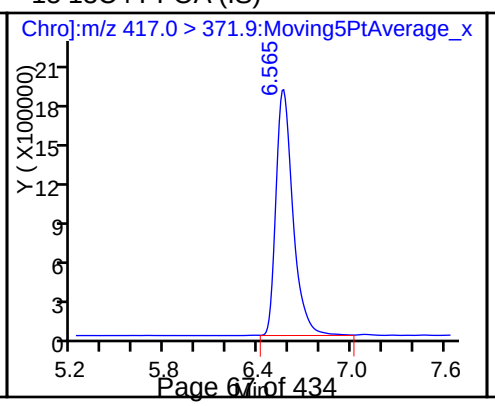
10 Perfluorohexane Sulfonate (ND)



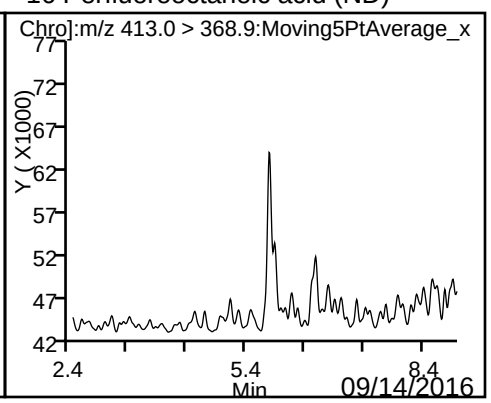
$ 14 13C8 PFOA



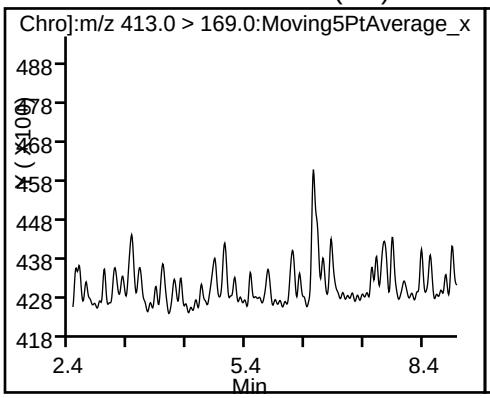
* 15 13C4 PFOA (IS)



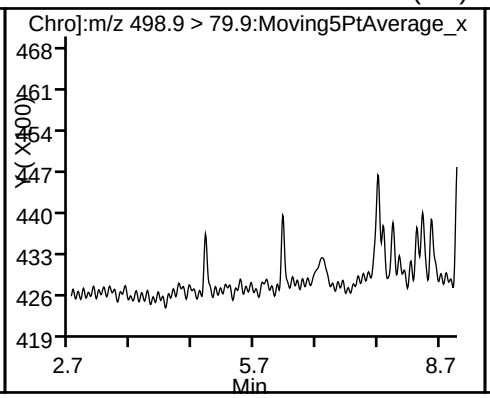
16 Perfluorooctanoic acid (ND)



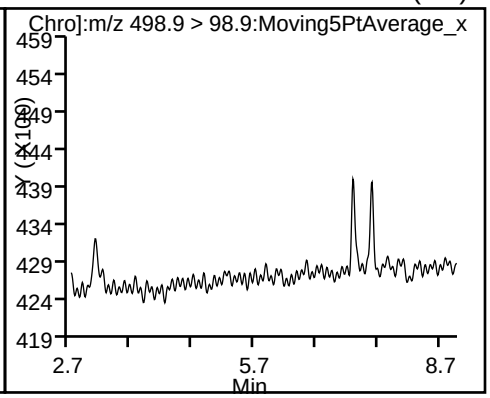
16 Perfluorooctanoic acid (ND)



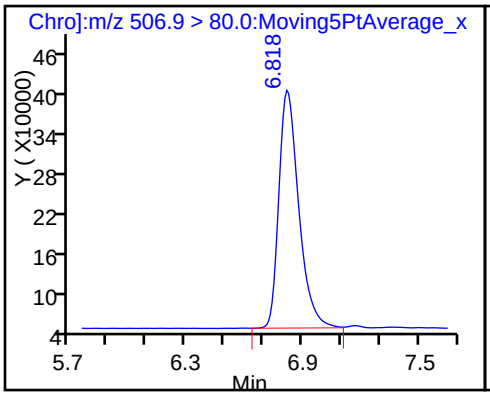
19 Perfluorooctane sulfonic acid (ND)



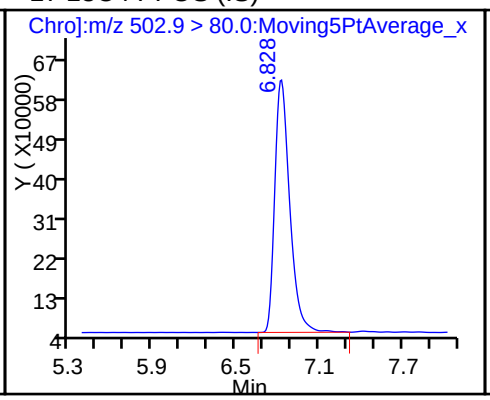
19 Perfluorooctane sulfonic acid (ND)



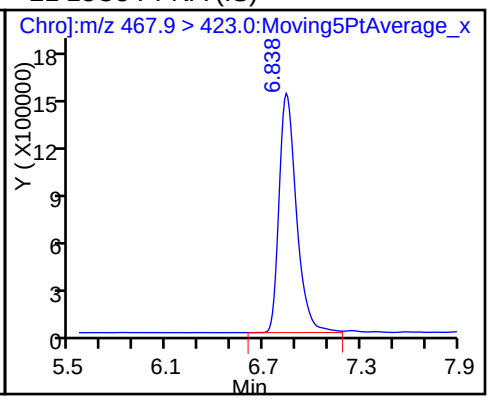
$ 18 13C8 PFOS



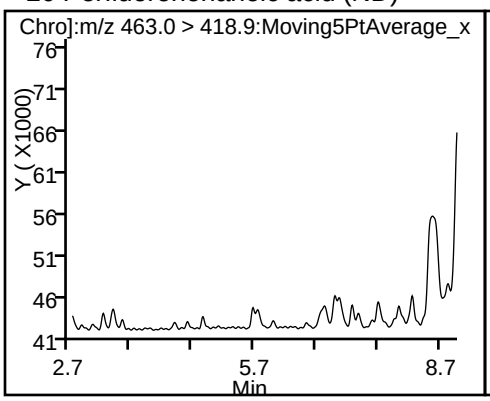
* 17 13C4 PFOS (IS)



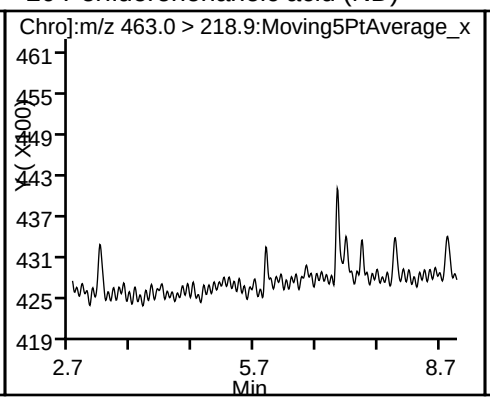
* 21 13C5 PFNA (IS)



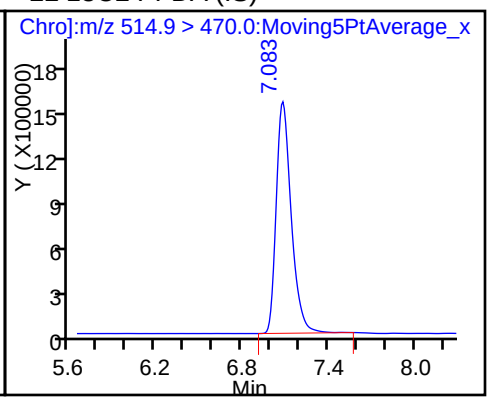
20 Perfluorononanoic acid (ND)



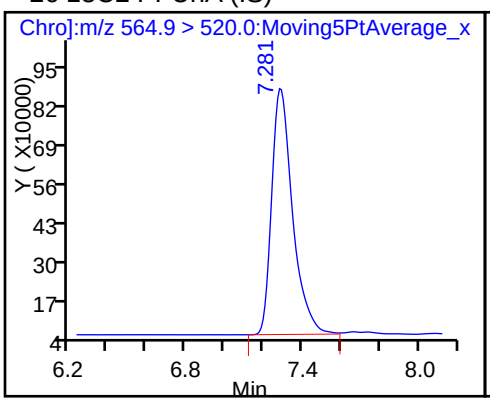
20 Perfluorononanoic acid (ND)



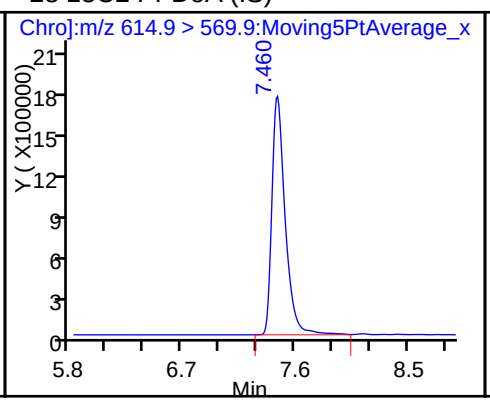
* 22 13C2 PFDA (IS)



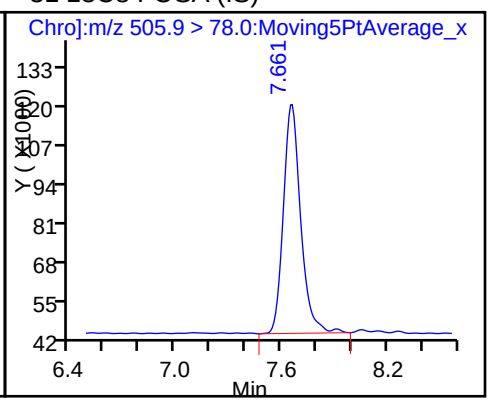
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: MW-WB1 | Lab Sample ID: 280-87134-4

Matrix: Water | Lab File ID: PC516I01116.d

Analysis Method: DV-LC-0012 | Date Collected: 08/16/2016 10:00

Extraction Method: 3535 | Date Extracted: 08/29/2016 19:57

Sample wt/vol: 246.6(mL) | Date Analyzed: 09/02/2016 07:27

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340694 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0084	U	0.020	0.0084
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0071	U	0.030	0.0071
375-95-1	Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	123		60-155
STL01054	13C8 PFOS	107		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01116.d
Lims ID: 280-87134-A-4-A Lab Sample ID: 280-87134-4
Client ID: MW-WB1
Sample Type: Client
Inject. Date: 02-Sep-2016 07:27:07 ALS Bottle#: 0 Worklist Smp#: 103
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-4-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:56:13 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:48:00

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.162	4.276	-0.114		16165915	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.421				ND			
298.9 > 98.9		5.421							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.837	5.885	-0.048		9944574	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.301				ND			
363.0 > 168.9		6.301							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.253	6.310	-0.057		1453397	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.301				ND			
398.9 > 98.9		6.301							
$ 14 13C8 PFOA									
421.0 > 375.9	6.584	6.641	-0.057	1.000	13117268	12.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.584	6.641	-0.057		15916521	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.641				ND			
413.0 > 169.0		6.641							
$ 18 13C8 PFOS									
506.9 > 80.0	6.847	6.903	-0.056	1.000	3100192	9.96			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.847	6.894	-0.047		5178122	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	7.226	6.904	0.322	1.055	4191	0.0801			R
498.9 > 98.9	7.198	6.904	0.294	1.051	3361		1.25(1.31-2.43)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.867	6.914	-0.047		12763239	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.914				ND			
463.0 > 218.9		6.914							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.102	7.149	-0.047		11704171	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.300	7.357	-0.057		6029835	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.469	7.526	-0.057		10653897	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.652	7.699	-0.047		442559	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND
R - Failed Signal Ratio Test
s - Failed ISTD Recovery Test

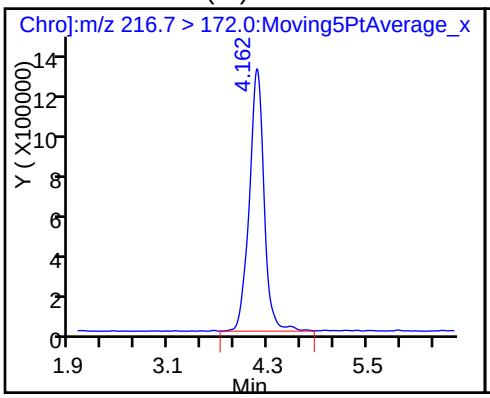
Report Date: 02-Sep-2016 11:56:26 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

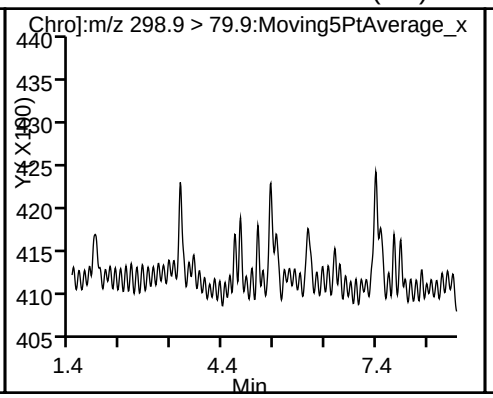
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01116.d

Injection Date:	02-Sep-2016 07:27:07	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-4-A	Lab Sample ID:	280-87134-4		
Client ID:	MW-WB1				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	103
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

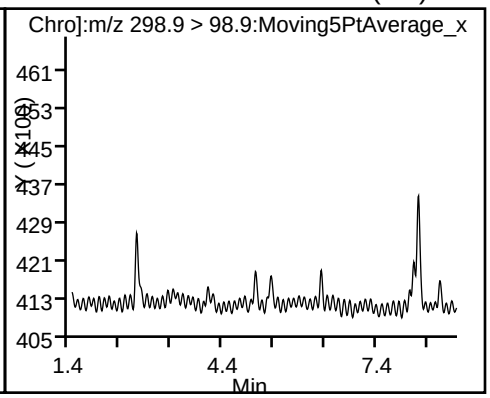
* 1 13C4 PFBA (IS)



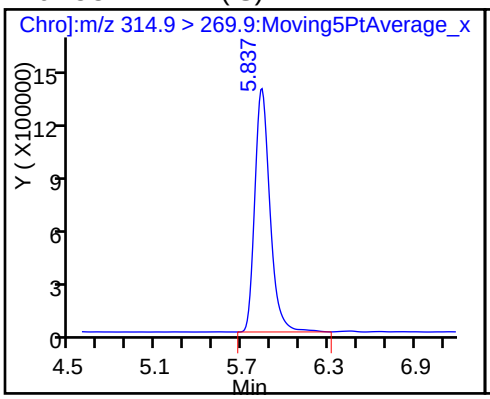
4 Perfluorobutane Sulfonate (ND)



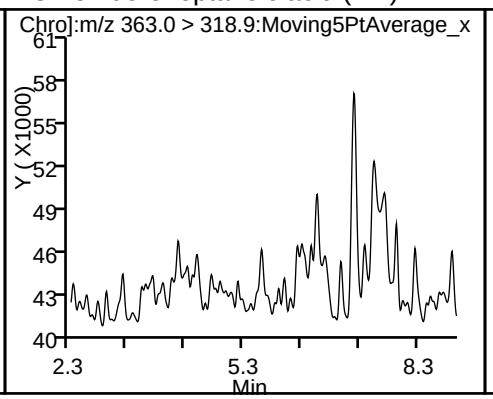
4 Perfluorobutane Sulfonate (ND)



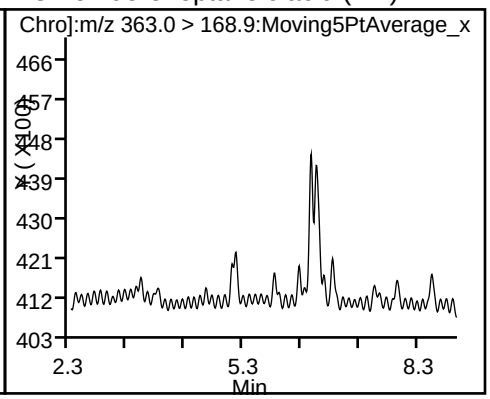
* 6 13C2 PFHxA (IS)



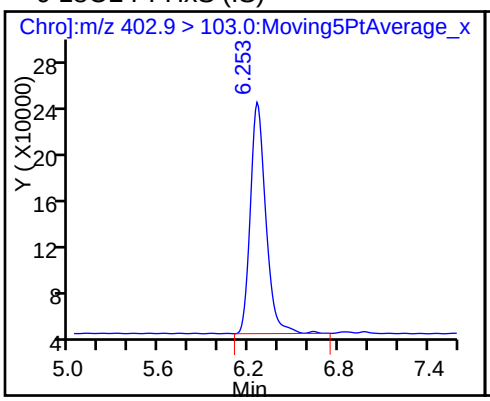
8 Perfluoroheptanoic acid (ND)



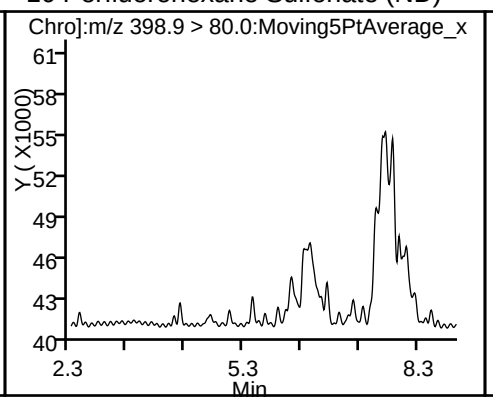
8 Perfluoroheptanoic acid (ND)



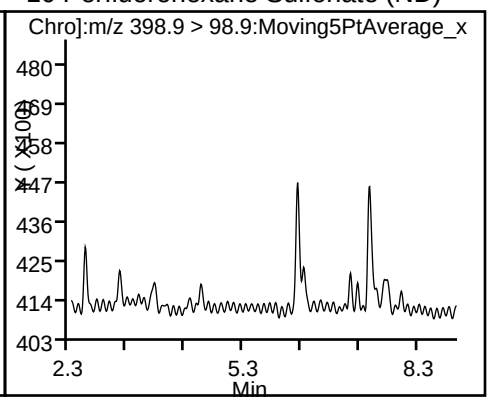
* 9 18O2 PFHxS (IS)



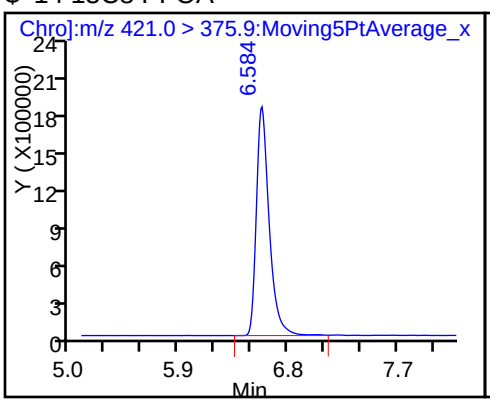
10 Perfluorohexane Sulfonate (ND)



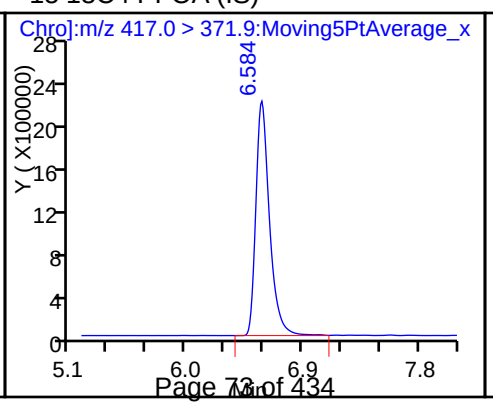
10 Perfluorohexane Sulfonate (ND)



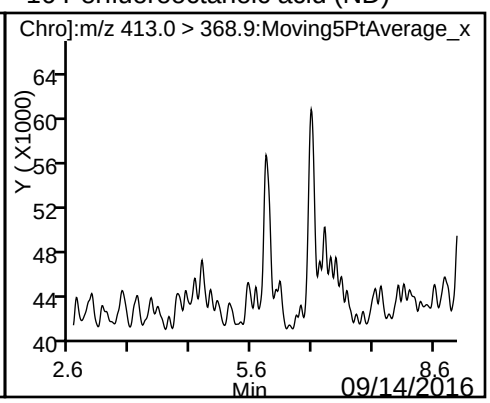
$ 14 13C8 PFOA



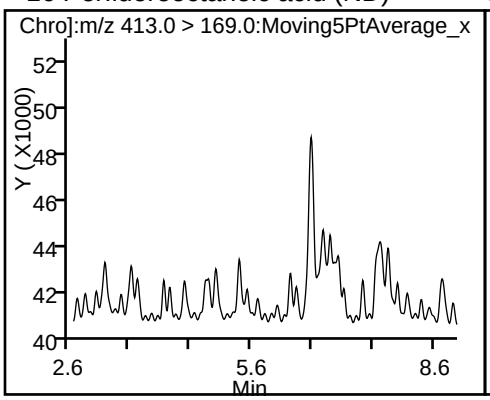
* 15 13C4 PFOA (IS)



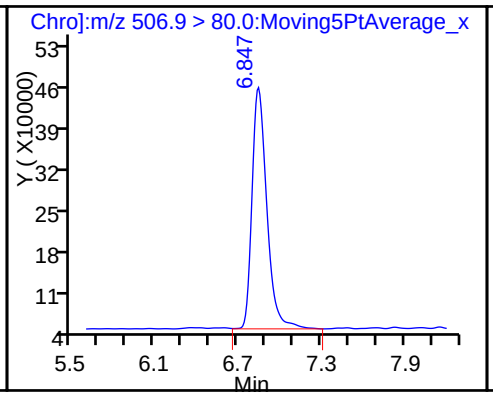
16 Perfluorooctanoic acid (ND)



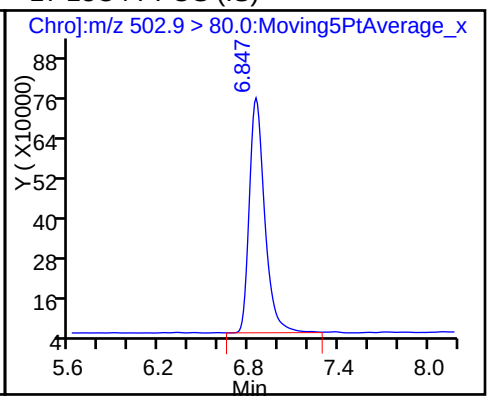
16 Perfluorooctanoic acid (ND)



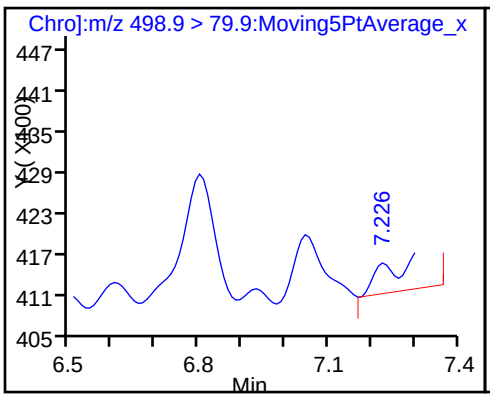
$ 18 13C8 PFOS



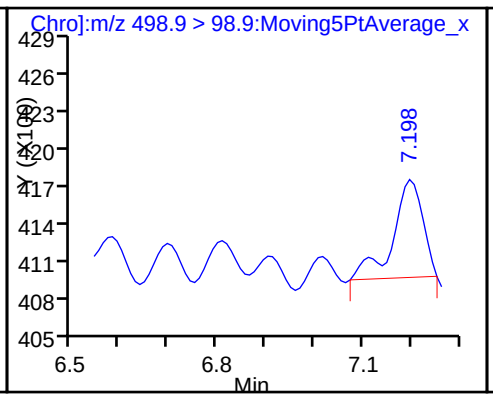
* 17 13C4 PFOS (IS)



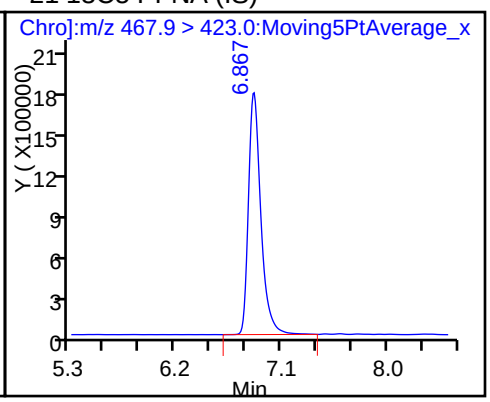
19 Perfluorooctane sulfonic acid



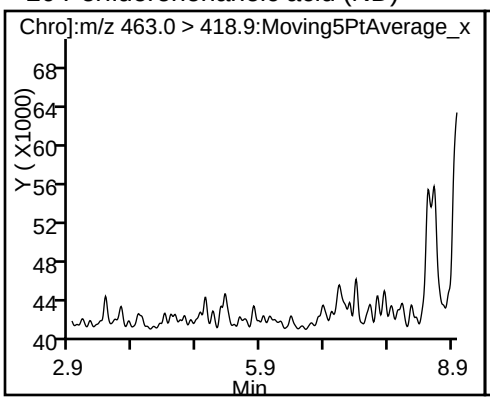
19 Perfluorooctane sulfonic acid



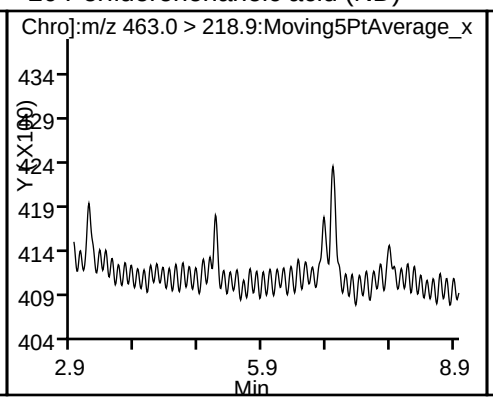
* 21 13C5 PFNA (IS)



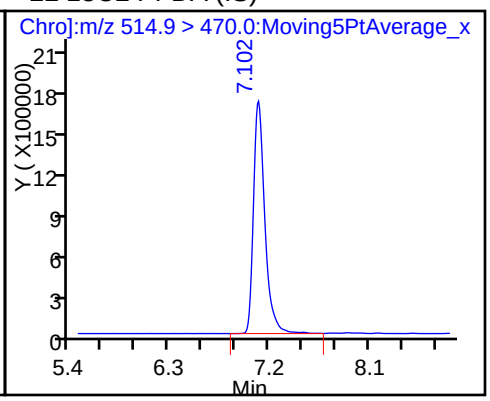
20 Perfluorononanoic acid (ND)



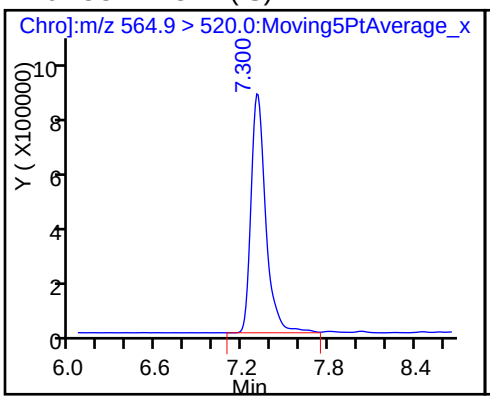
20 Perfluorononanoic acid (ND)



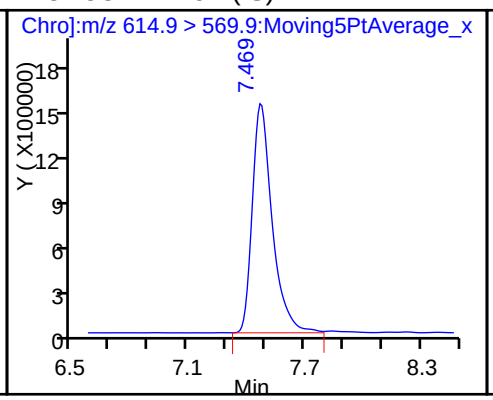
* 22 13C2 PFDA (IS)



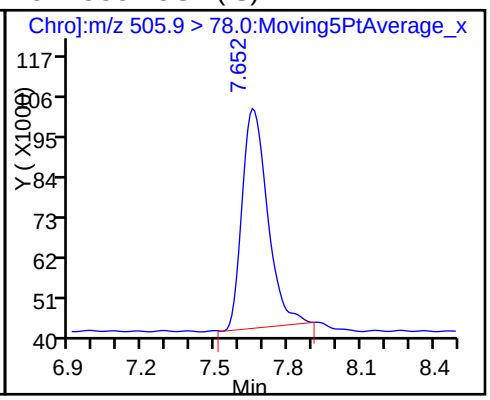
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: MW-FB2 | Lab Sample ID: 280-87134-5

Matrix: Water | Lab File ID: PC516I01117.d

Analysis Method: DV-LC-0012 | Date Collected: 08/16/2016 10:05

Extraction Method: 3535 | Date Extracted: 08/29/2016 19:57

Sample wt/vol: 251(mL) | Date Analyzed: 09/02/2016 07:39

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340694 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0069	U	0.030	0.0069
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	118		60-155
STL01054	13C8 PFOS	98		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01117.d
Lims ID: 280-87134-A-5-A Lab Sample ID: 280-87134-5
Client ID: MW-FB2
Sample Type: Client
Inject. Date: 02-Sep-2016 07:39:26 ALS Bottle#: 0 Worklist Smp#: 104
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-5-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:56:13 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:48:29

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.276	-0.218		14933766	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.421				ND			
298.9 > 98.9		5.421							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.743	5.885	-0.142		9642176	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.301				ND			
363.0 > 168.9		6.301							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.168	6.310	-0.142		1397318	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.215	6.301	-0.086	1.008	68145	0.1104			R
398.9 > 98.9	6.130	6.301	-0.171	0.994	6297		10.82(1.30-2.41)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.641	-0.133	1.000	11650859	11.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.641	-0.133		14616238	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.641				ND			
413.0 > 169.0		6.641							
$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.903	-0.132	0.999	2681603	9.12			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.894	-0.113		4885863	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.904				ND			
498.9 > 98.9		6.904							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.914	-0.123		11786144	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.914				ND			
463.0 > 218.9		6.914							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.149	-0.114		11395044	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.357	-0.123		8803786	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.412	7.526	-0.114		20670664	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.595	7.699	-0.104		668147	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND
R - Failed Signal Ratio Test
s - Failed ISTD Recovery Test

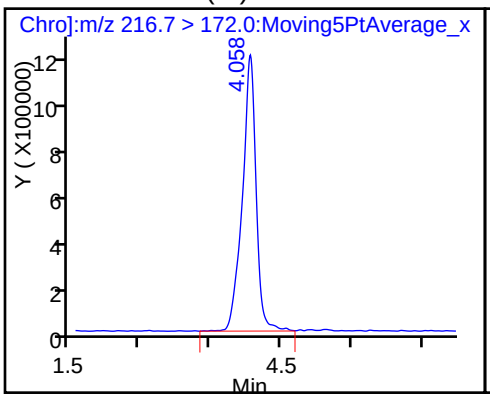
Report Date: 02-Sep-2016 11:56:28 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

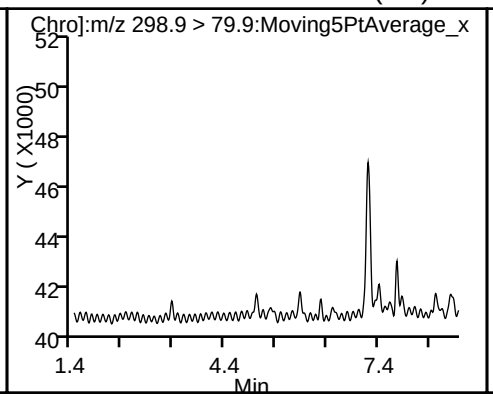
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01117.d

Injection Date:	02-Sep-2016 07:39:26	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-5-A	Lab Sample ID:	280-87134-5		
Client ID:	MW-FB2				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	104
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

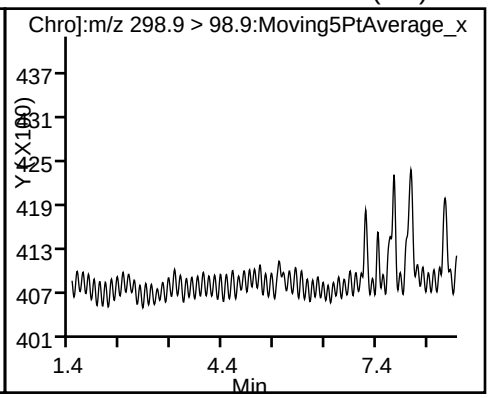
* 1 13C4 PFBA (IS)



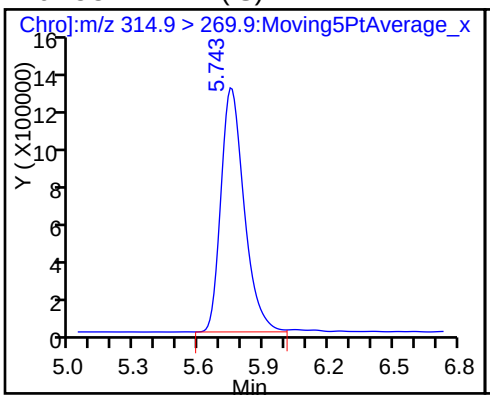
4 Perfluorobutane Sulfonate (ND)



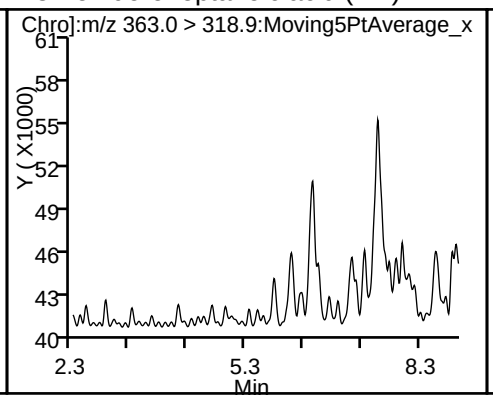
4 Perfluorobutane Sulfonate (ND)



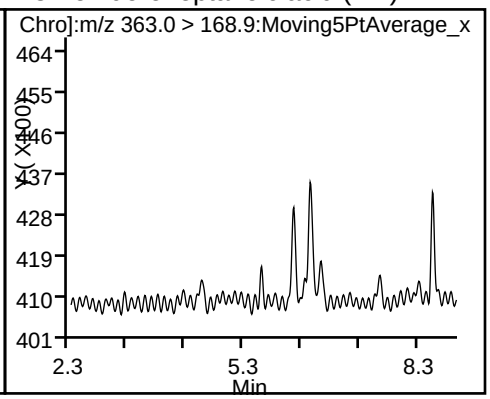
* 6 13C2 PFHxA (IS)



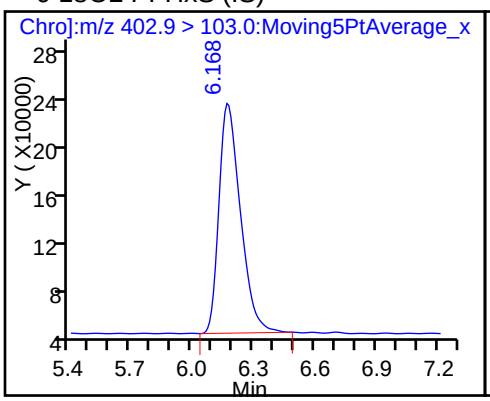
8 Perfluoroheptanoic acid (ND)



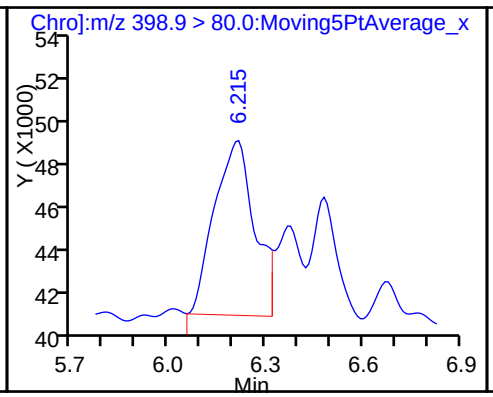
8 Perfluoroheptanoic acid (ND)



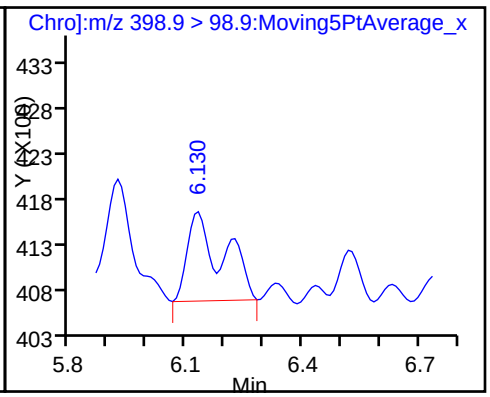
* 9 18O2 PFHxS (IS)



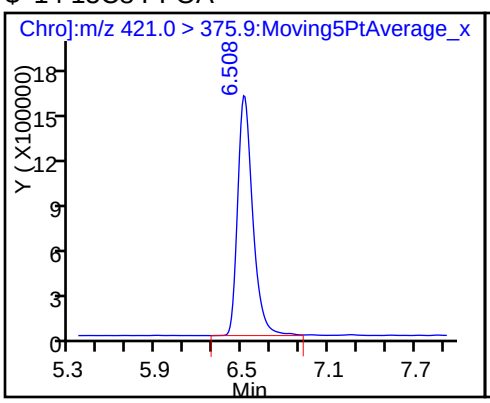
10 Perfluorohexane Sulfonate



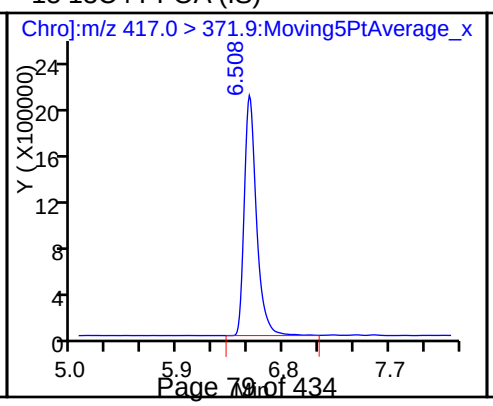
10 Perfluorohexane Sulfonate



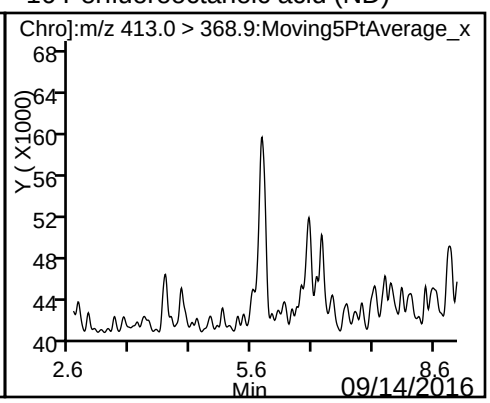
$ 14 13C8 PFOA



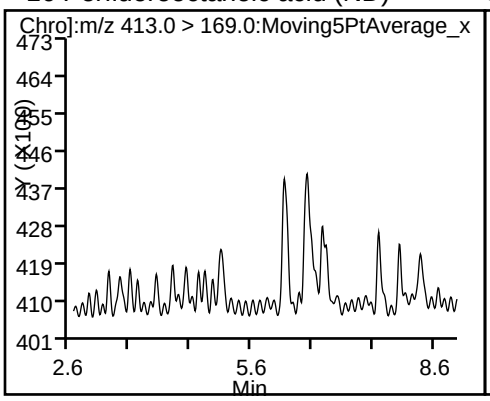
* 15 13C4 PFOA (IS)



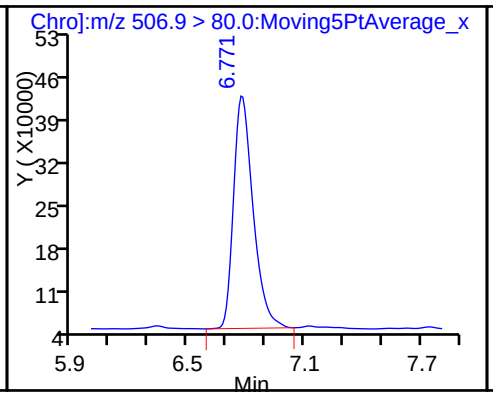
16 Perfluorooctanoic acid (ND)



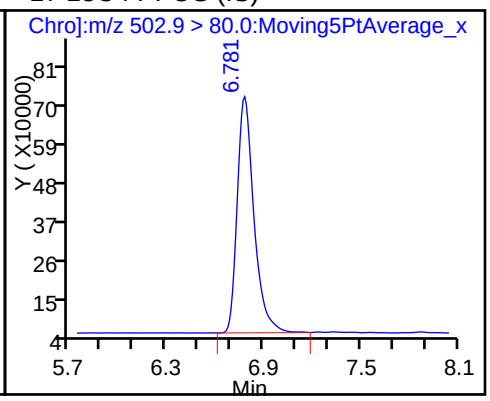
16 Perfluorooctanoic acid (ND)



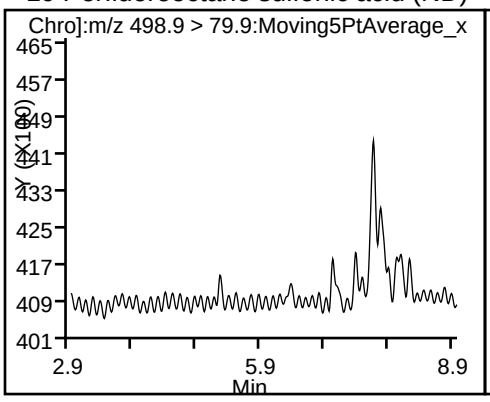
$ 18 13C8 PFOS



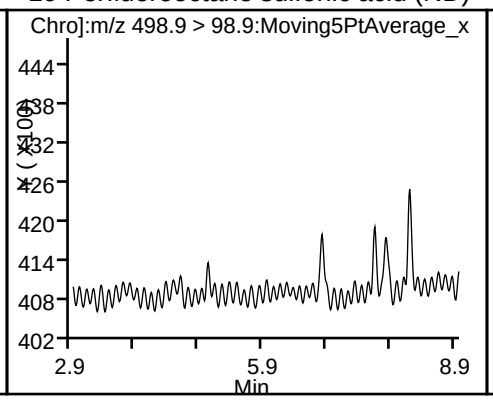
* 17 13C4 PFOS (IS)



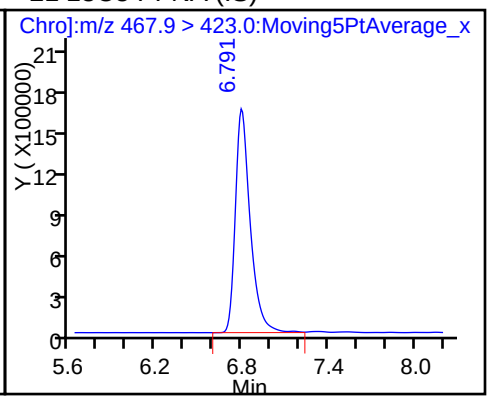
19 Perfluorooctane sulfonic acid (ND)



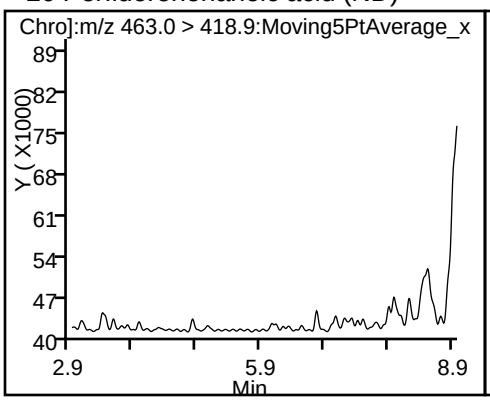
19 Perfluorooctane sulfonic acid (ND)



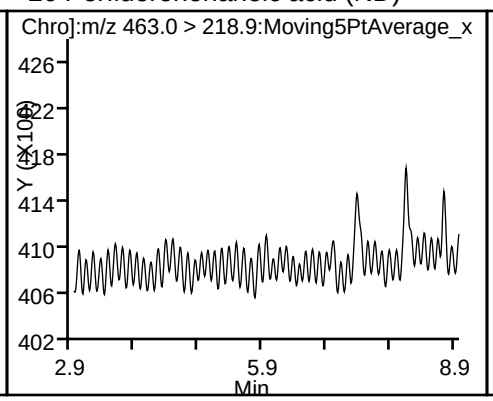
* 21 13C5 PFNA (IS)



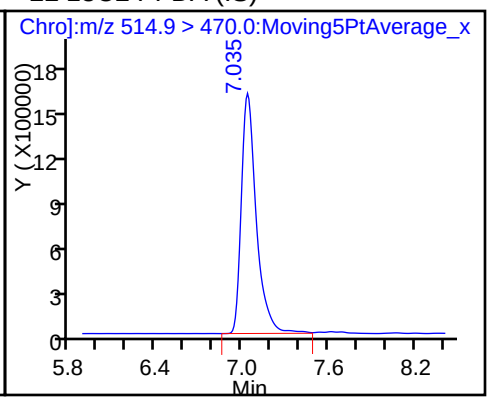
20 Perfluorononanoic acid (ND)



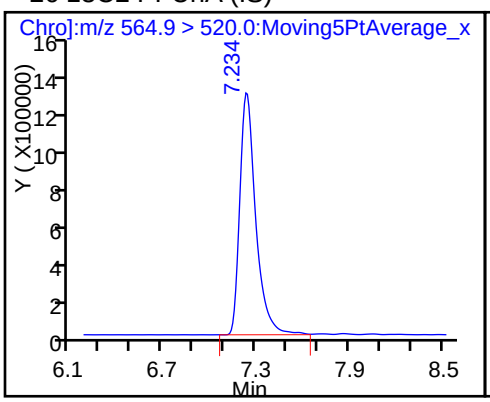
20 Perfluorononanoic acid (ND)



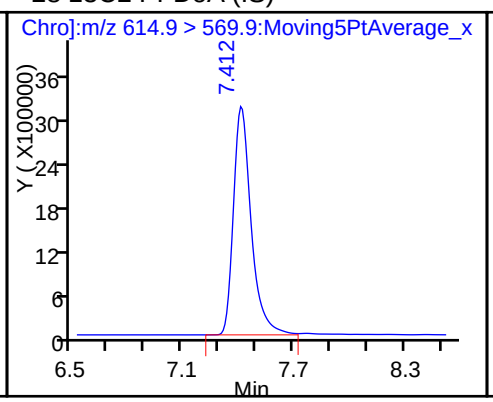
* 22 13C2 PFDA (IS)



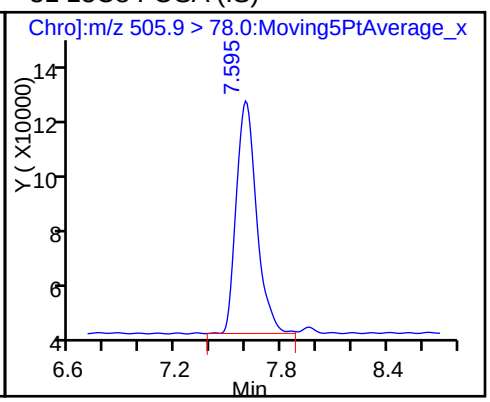
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: SB-PFC-MW1-16.0 | Lab Sample ID: 280-87134-6

Matrix: Solid | Lab File ID: PC516I01077.d

Analysis Method: DV-LC-0012 | Date Collected: 08/16/2016 10:47

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.34(g) | Date Analyzed: 09/01/2016 23:26

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 8.9 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.15	U	0.85	0.15
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.13	J	0.85	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.30	U	0.85	0.30
375-95-1	Perfluorononanoic acid (PFNA)	0.23	U	0.85	0.23
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.85	0.15
335-67-1	Perfluorooctanoic acid (PFOA)	0.24	U	0.85	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	122		57-153
STL01054	13C8 PFOS	106		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01077.d
Lims ID: 280-87134-A-6-B Lab Sample ID: 280-87134-6
Client ID: SB-PFC-MW1-16.0
Sample Type: Client
Inject. Date: 01-Sep-2016 23:26:21 ALS Bottle#: 0 Worklist Smp#: 64
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-6-B, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:18:42

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.086	4.276	-0.190		11962768	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.431				ND			
298.9 > 98.9		5.431							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.743	5.904	-0.161		8336979	10.0			
8 Perfluoroheptanoic acid									R
363.0 > 318.9	6.481	6.330	0.151	0.993	84421	0.0609			R
363.0 > 168.9	6.453	6.330	0.123	0.989	9973		8.46(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.187	6.338	-0.151		1177623	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.329				ND			
398.9 > 98.9		6.329							
$ 14 13C8 PFOA									
421.0 > 375.9	6.527	6.669	-0.142	1.000	10906857	12.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.527	6.669	-0.142		13268355	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.669				ND			
413.0 > 169.0		6.669							
$ 18 13C8 PFOS									
506.9 > 80.0	6.809	6.941	-0.132	1.001	2546444	9.86			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.800	6.942	-0.142		4295432	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.942				ND			
498.9 > 98.9		6.942							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
20 Perfluorononanoic acid									
463.0 > 418.9		6.952				ND			
463.0 > 218.9		6.952							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.819	6.962	-0.143		11090116	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.073	7.206	-0.133		10709568	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.414	-0.133		6551415	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.460	7.583	-0.123		15032346	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.671	-0.142		15218612	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

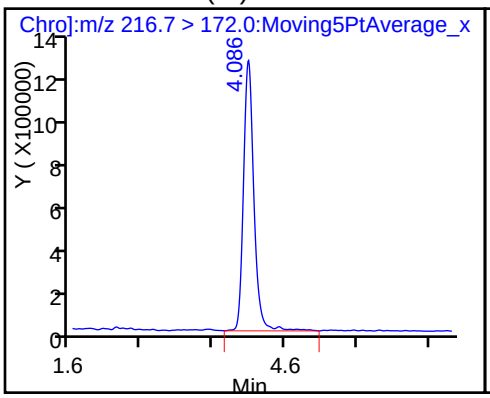
Report Date: 02-Sep-2016 11:55:20 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

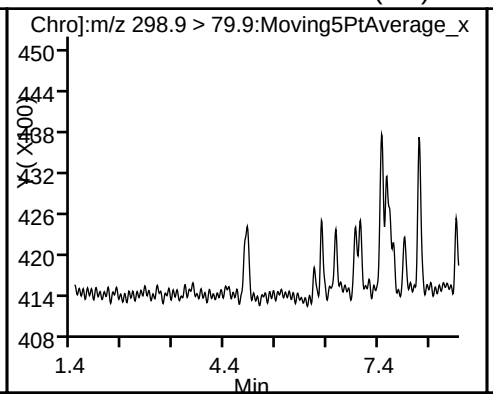
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01077.d

Injection Date:	01-Sep-2016 23:26:21	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-6-B	Lab Sample ID:	280-87134-6		
Client ID:	SB-PFC-MW1-16.0				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	64
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

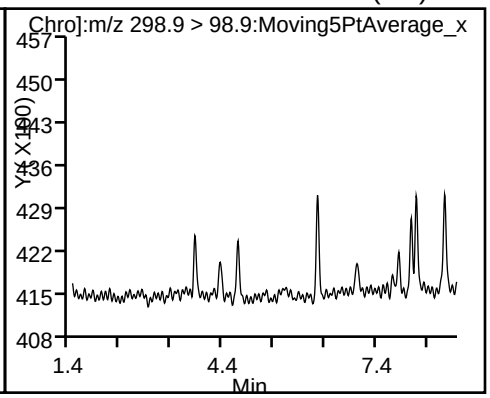
* 1 13C4 PFBA (IS)



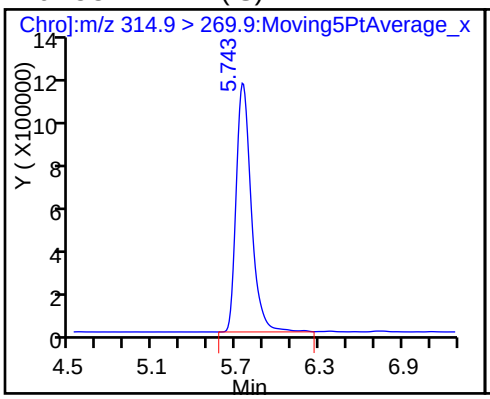
4 Perfluorobutane Sulfonate (ND)



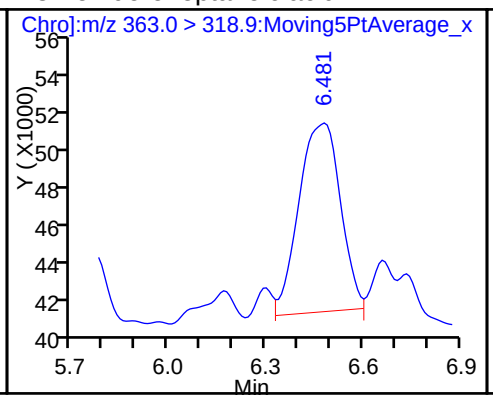
4 Perfluorobutane Sulfonate (ND)



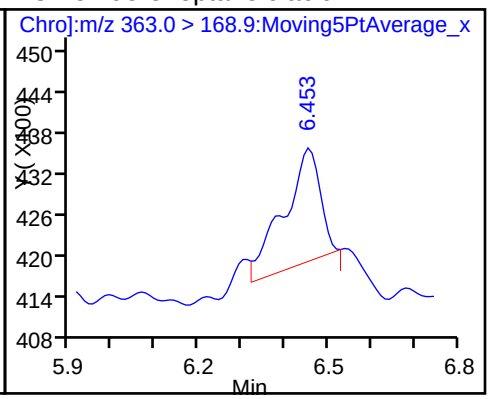
* 6 13C2 PFHxA (IS)



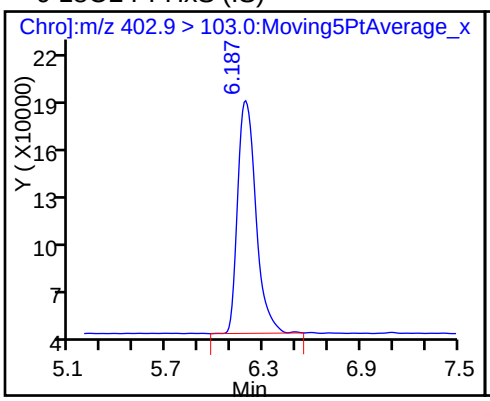
8 Perfluoroheptanoic acid



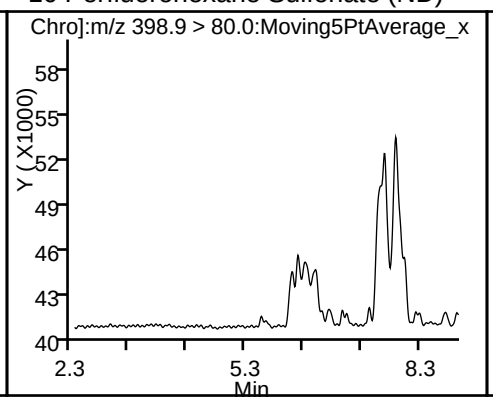
8 Perfluoroheptanoic acid



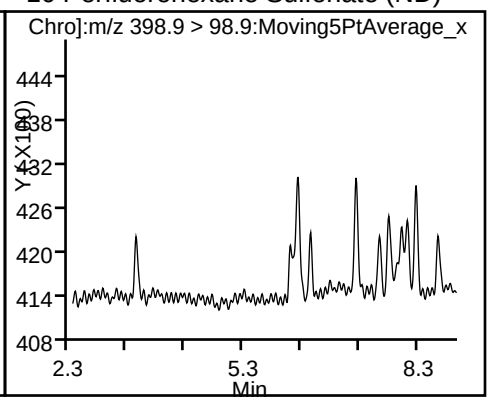
* 9 18O2 PFHxS (IS)



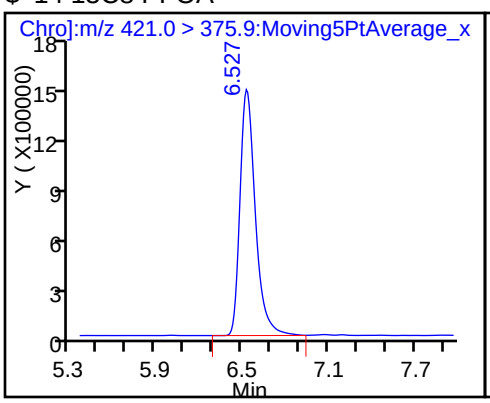
10 Perfluorohexane Sulfonate (ND)



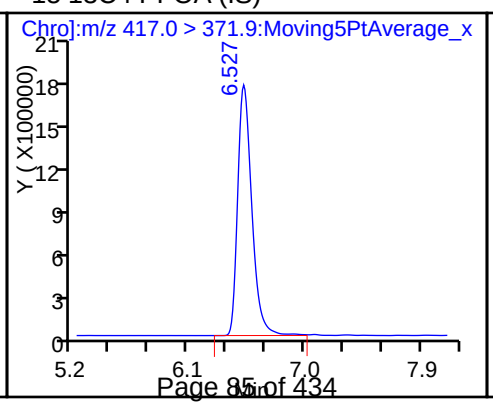
10 Perfluorohexane Sulfonate (ND)



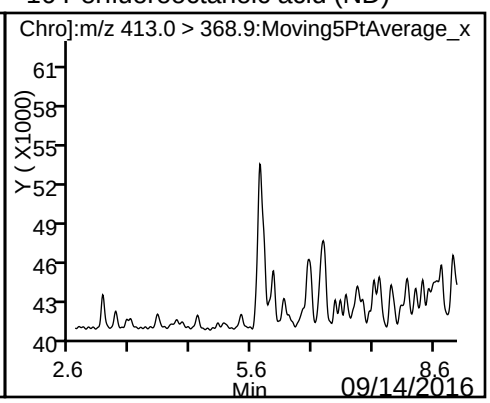
$ 14 13C8 PFOA



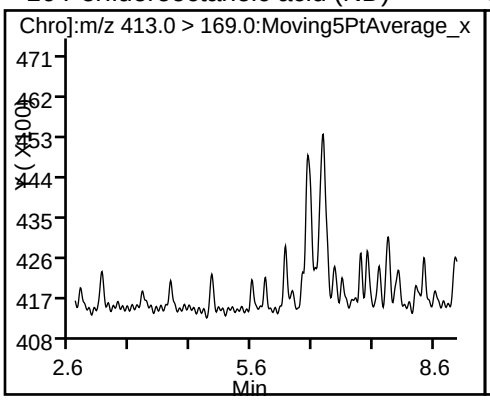
* 15 13C4 PFOA (IS)



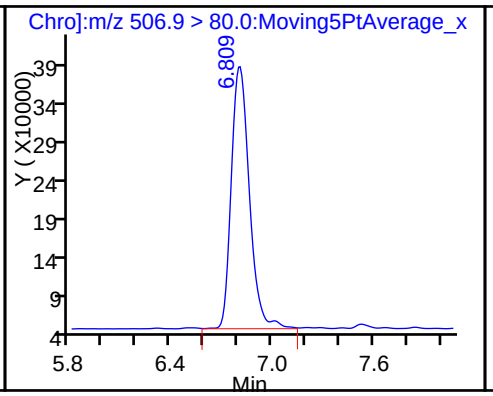
16 Perfluorooctanoic acid (ND)



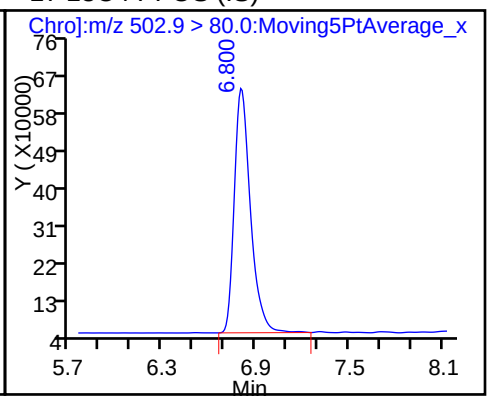
16 Perfluorooctanoic acid (ND)



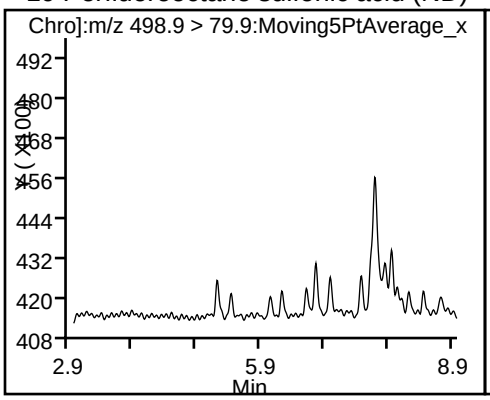
$ 18 13C8 PFOS



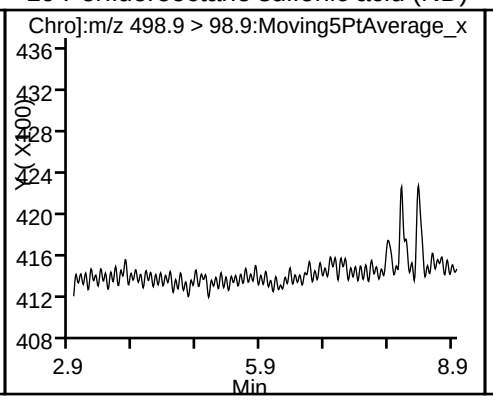
* 17 13C4 PFOS (IS)



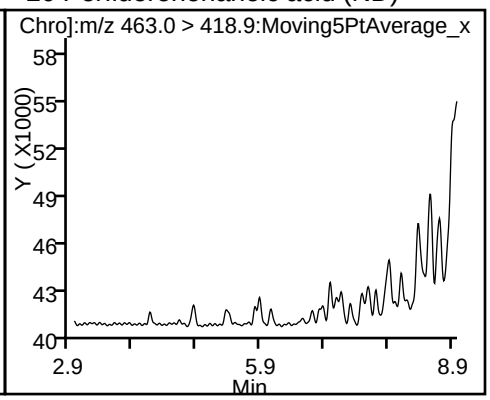
19 Perfluorooctane sulfonic acid (ND)



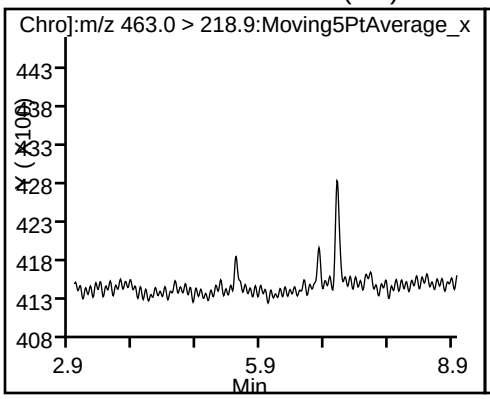
19 Perfluorooctane sulfonic acid (ND)



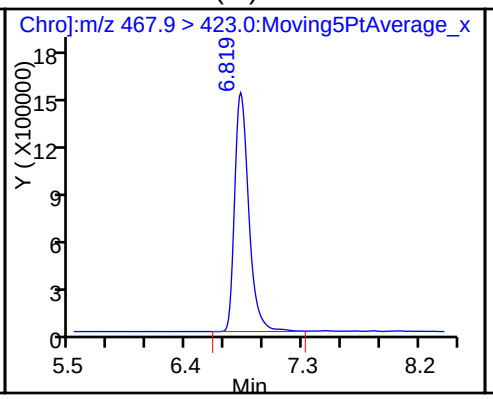
20 Perfluorononanoic acid (ND)



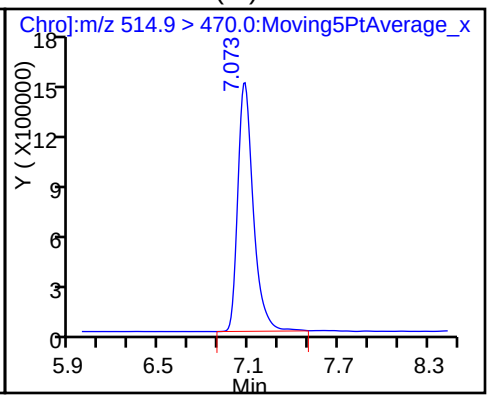
20 Perfluorononanoic acid (ND)



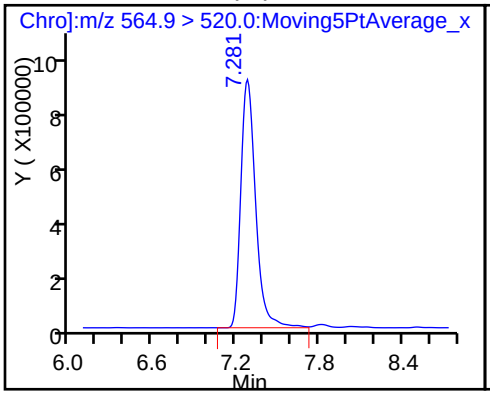
* 21 13C5 PFNA (IS)



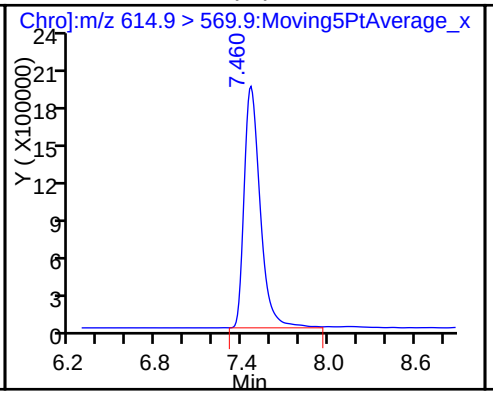
* 22 13C2 PFDA (IS)



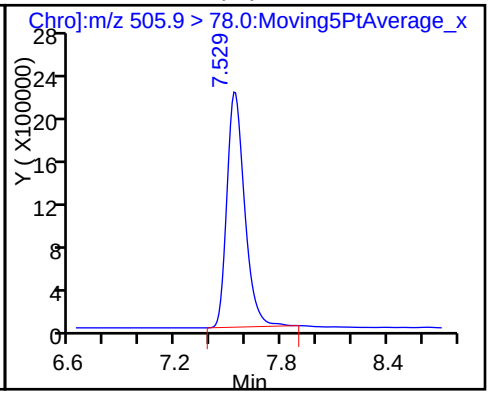
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: SB-PFC-MW1-56.0 | Lab Sample ID: 280-87134-7

Matrix: Solid | Lab File ID: PC516I01078.d

Analysis Method: DV-LC-0012 | Date Collected: 08/18/2016 11:57

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.07(g) | Date Analyzed: 09/01/2016 23:38

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 11.3 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.16	U	0.90	0.16
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.13	U	0.90	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.31	U	0.90	0.31
375-95-1	Perfluorononanoic acid (PFNA)	0.25	U	0.90	0.25
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.28	J	0.90	0.16
335-67-1	Perfluorooctanoic acid (PFOA)	0.26	U	0.90	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	127		57-153
STL01054	13C8 PFOS	100		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01078.d
Lims ID: 280-87134-A-7-B Lab Sample ID: 280-87134-7
Client ID: SB-PFC-MW1-56.0
Sample Type: Client
Inject. Date: 01-Sep-2016 23:38:40 ALS Bottle#: 0 Worklist Smp#: 65
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-7-B, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:19:10

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.096	4.276	-0.180		12077462	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.431				ND			
298.9 > 98.9		5.431							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.752	5.904	-0.152		8509422	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.330				ND			
363.0 > 168.9		6.330							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.187	6.338	-0.151		1224245	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.168	6.329	-0.161	0.997	53291	0.0980			R
398.9 > 98.9	6.187	6.329	-0.142	1.000	8499		6.27(1.30-2.41)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.536	6.669	-0.133	1.000	10551854	12.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.537	6.669	-0.132		12406116	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.669				ND			
413.0 > 169.0		6.669							
$ 18 13C8 PFOS									
506.9 > 80.0	6.809	6.941	-0.132	1.000	2414853	9.26			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.809	6.942	-0.133		4336204	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	7.719	6.942	0.777	1.134	25020	0.1263			R
498.9 > 98.9	7.832	6.942	0.890	1.150	2226		11.24(1.31-2.43)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
20 Perfluorononanoic acid									
463.0 > 418.9		6.952				ND			
463.0 > 218.9		6.952							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.829	6.962	-0.133		10323902	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.073	7.206	-0.133		9996783	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.414	-0.133		6439435	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.469	7.583	-0.114		15129508	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.548	7.671	-0.123		15833773	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

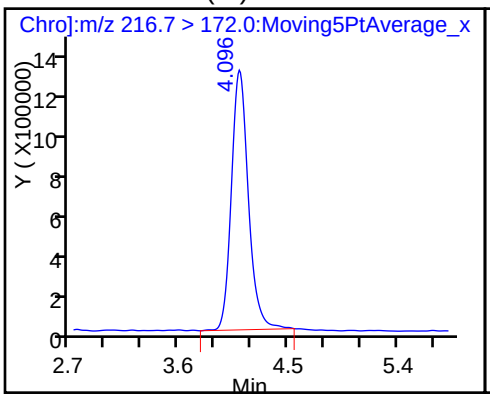
Report Date: 02-Sep-2016 11:55:22 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

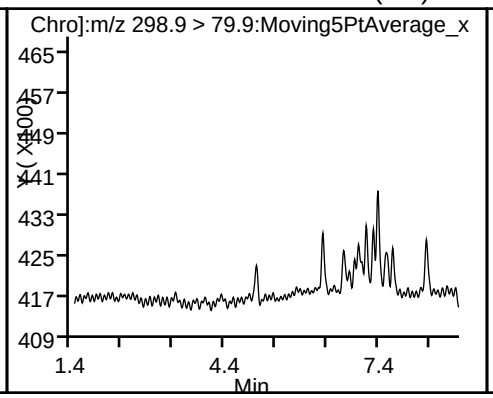
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01078.d

Injection Date:	01-Sep-2016 23:38:40	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-7-B	Lab Sample ID:	280-87134-7		
Client ID:	SB-PFC-MW1-56.0				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	65
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

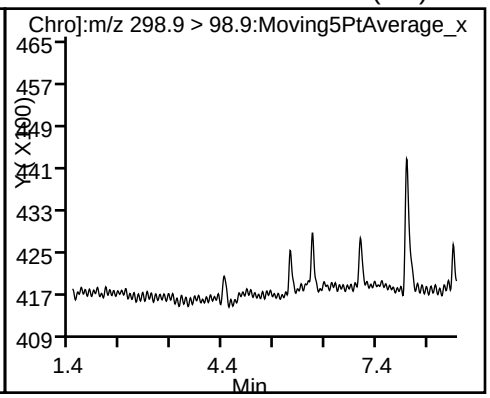
* 1 13C4 PFBA (IS)



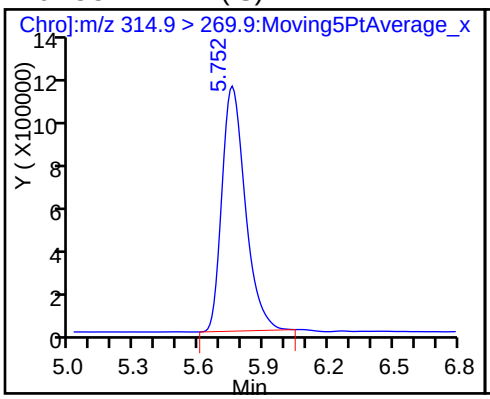
4 Perfluorobutane Sulfonate (ND)



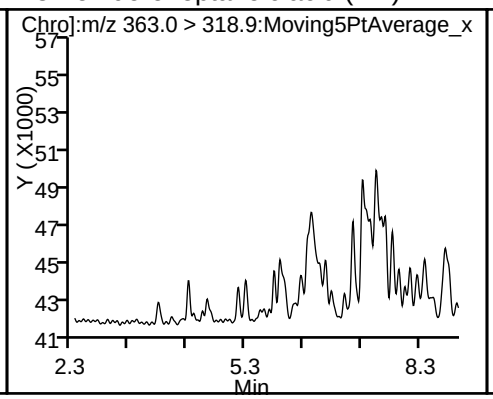
4 Perfluorobutane Sulfonate (ND)



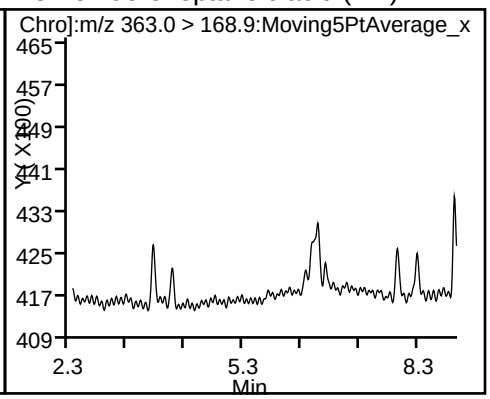
* 6 13C2 PFHxA (IS)



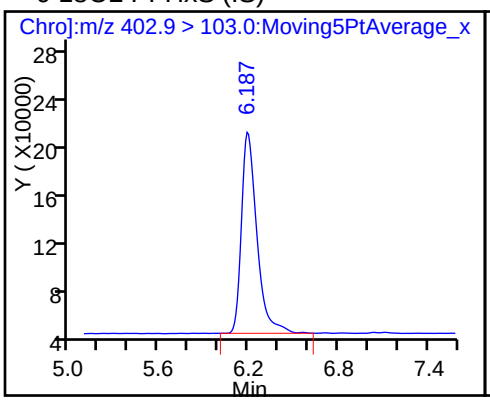
8 Perfluoroheptanoic acid (ND)



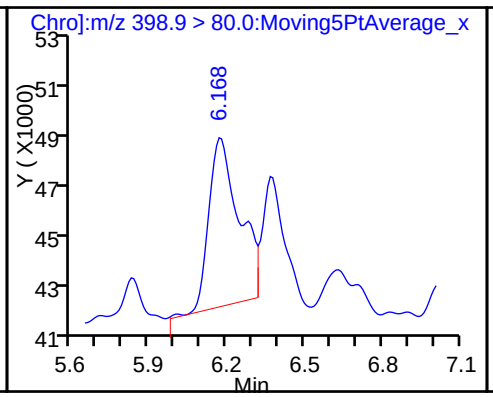
8 Perfluoroheptanoic acid (ND)



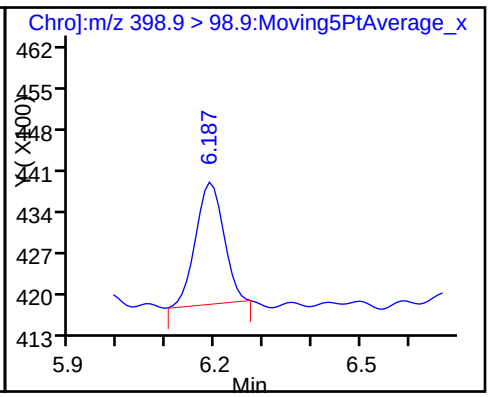
* 9 18O2 PFHxS (IS)



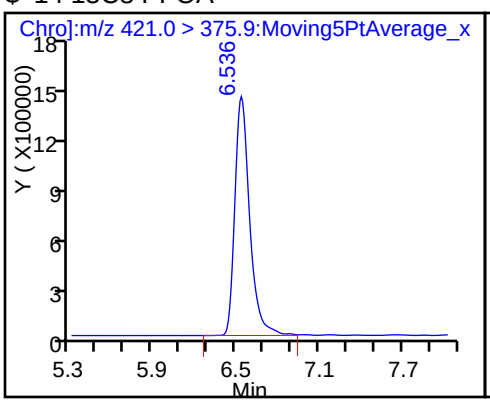
10 Perfluorohexane Sulfonate



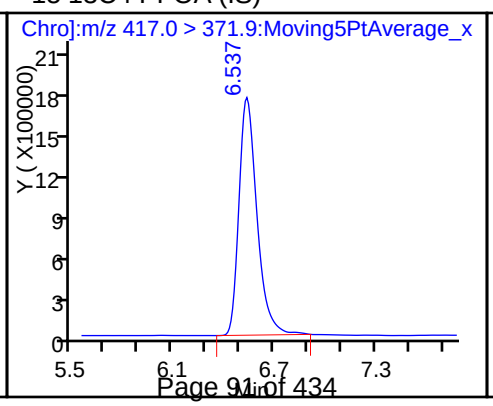
10 Perfluorohexane Sulfonate



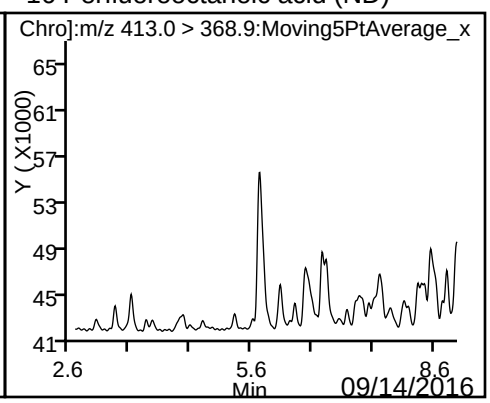
$ 14 13C8 PFOA



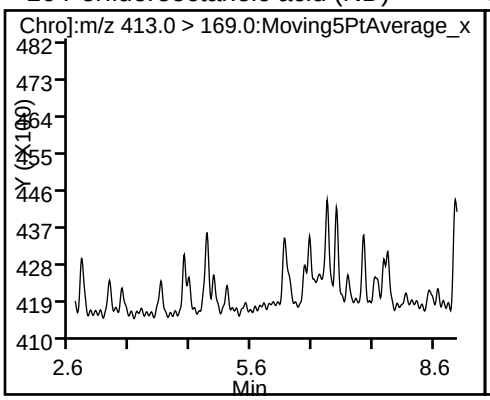
* 15 13C4 PFOA (IS)



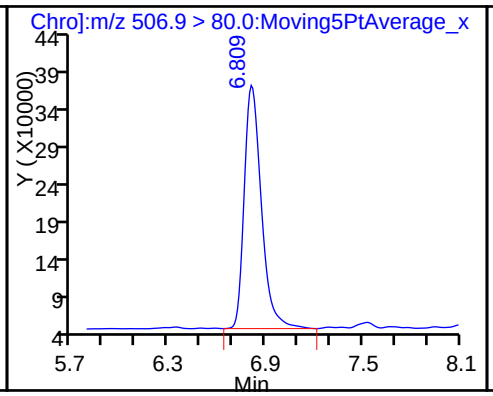
16 Perfluorooctanoic acid (ND)



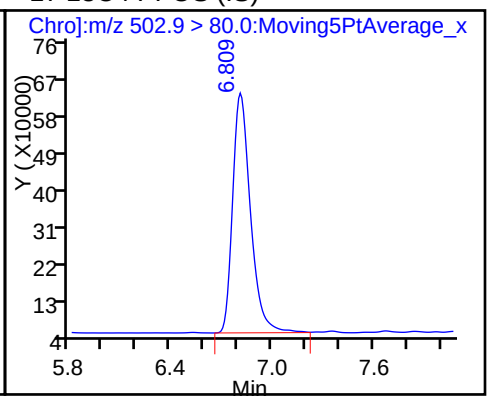
16 Perfluorooctanoic acid (ND)



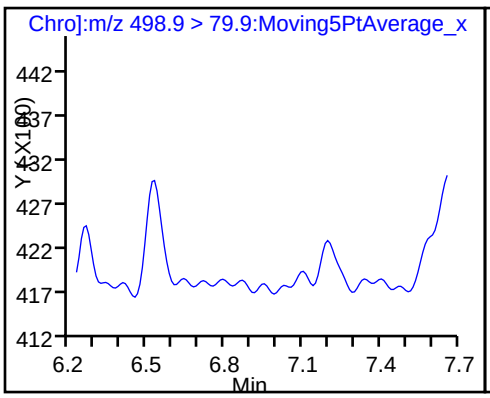
$ 18 13C8 PFOS



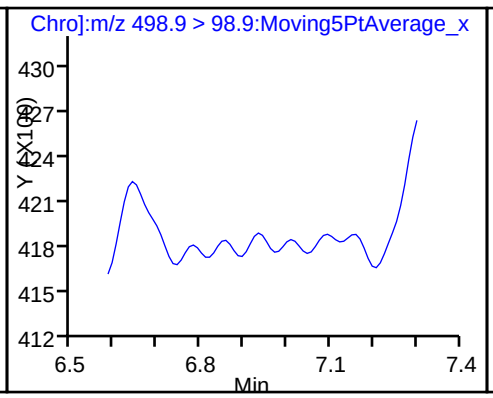
* 17 13C4 PFOS (IS)



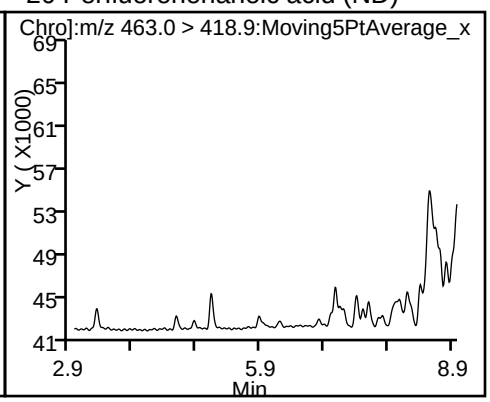
19 Perfluorooctane sulfonic acid



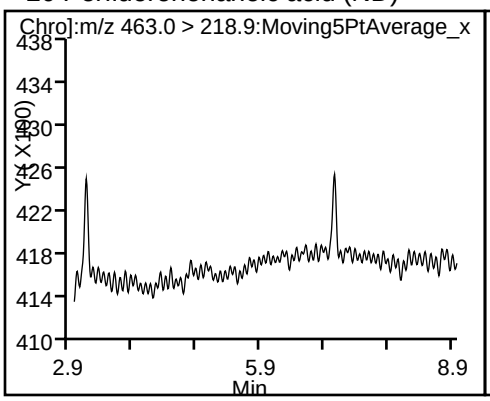
19 Perfluorooctane sulfonic acid



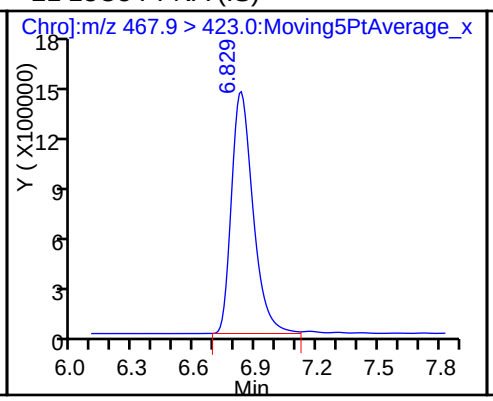
20 Perfluorononanoic acid (ND)



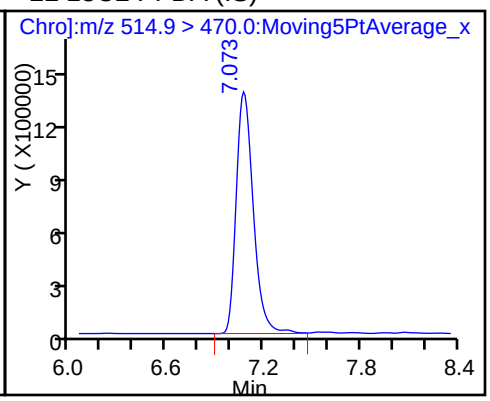
20 Perfluorononanoic acid (ND)



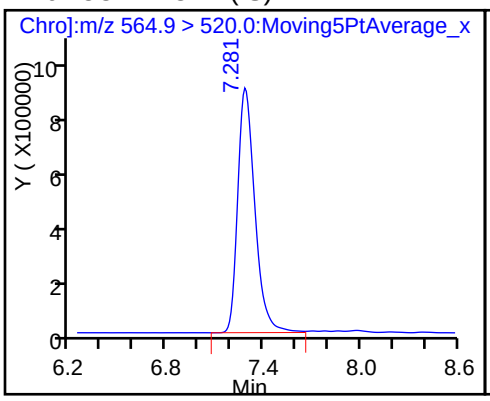
* 21 13C5 PFNA (IS)



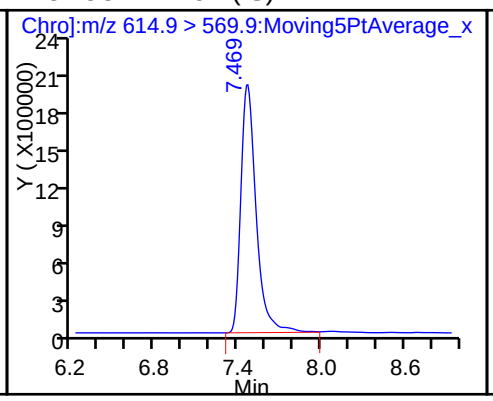
* 22 13C2 PFDA (IS)



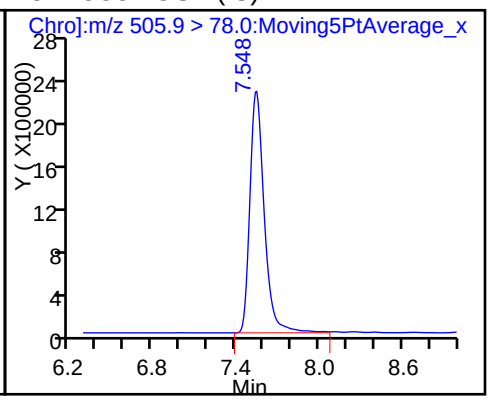
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: SB-PFC-MW1-3.0 | Lab Sample ID: 280-87134-8

Matrix: Solid | Lab File ID: PC516I01079.d

Analysis Method: DV-LC-0012 | Date Collected: 08/18/2016 12:05

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.00(g) | Date Analyzed: 09/01/2016 23:51

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 8.2 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.15	U	0.87	0.15
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.13	U	0.87	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.30	U	0.87	0.30
375-95-1	Perfluorononanoic acid (PFNA)	0.24	U	0.87	0.24
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.87	0.15
335-67-1	Perfluorooctanoic acid (PFOA)	0.25	U	0.87	0.25

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	129		57-153
STL01054	13C8 PFOS	105		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01079.d
Lims ID: 280-87134-A-8-B Lab Sample ID: 280-87134-8
Client ID: SB-PFC-MW1-3.0
Sample Type: Client
Inject. Date: 01-Sep-2016 23:51:00 ALS Bottle#: 0 Worklist Smp#: 66
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-8-B, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:19:57

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.276	-0.218		11783337	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.431				ND			
298.9 > 98.9		5.431							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.743	5.904	-0.161		8440969	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.330				ND			
363.0 > 168.9		6.330							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.177	6.338	-0.161		1164088	9.46			
10 Perfluorohexane Sulfonate									R7M
398.9 > 80.0	6.187	6.329	-0.142	1.002	31470	0.0589			R7M
398.9 > 98.9	6.244	6.329	-0.085	1.011	6661		4.72(1.30-2.41)		
LOD = 0.0600									
$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.669	-0.152	1.000	10996584	12.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.669	-0.151		12713289	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.669				ND			
413.0 > 169.0		6.669							
$ 18 13C8 PFOS									
506.9 > 80.0	6.799	6.941	-0.142	1.000	2485530	9.74			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.800	6.942	-0.142		4243141	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.942				ND			
498.9 > 98.9		6.942							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
20 Perfluorononanoic acid									
463.0 > 418.9		6.952				ND			
463.0 > 218.9		6.952							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.962	-0.152		11366481	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.064	7.206	-0.142		9972705	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.414	-0.143		6207937	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.583	-0.133		14972219	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.671	-0.133		16622741	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

7 - Failed Limit of Detection

Review Flags

M - Manually Integrated

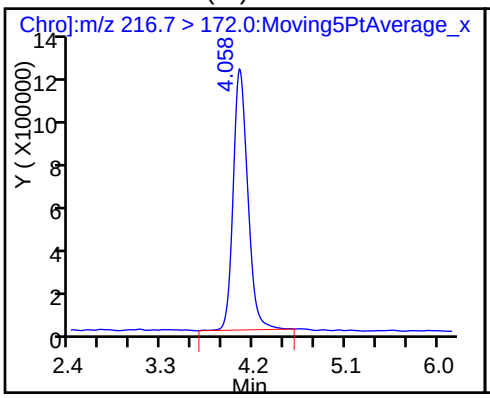
Report Date: 02-Sep-2016 11:55:25 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

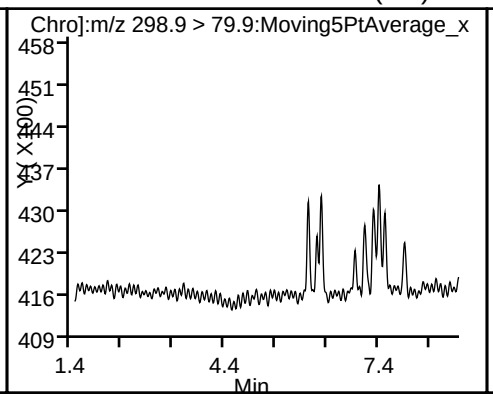
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01079.d

Injection Date:	01-Sep-2016 23:51:00	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-8-B	Lab Sample ID:	280-87134-8		
Client ID:	SB-PFC-MW1-3.0				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	66
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

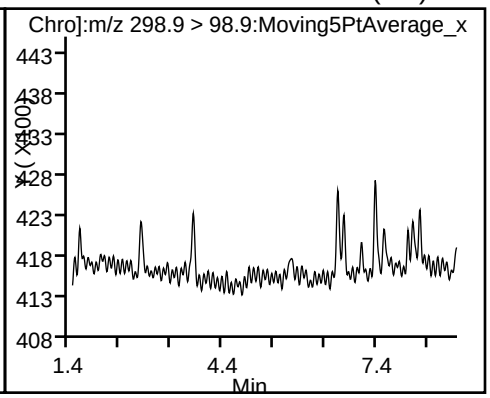
* 1 13C4 PFBA (IS)



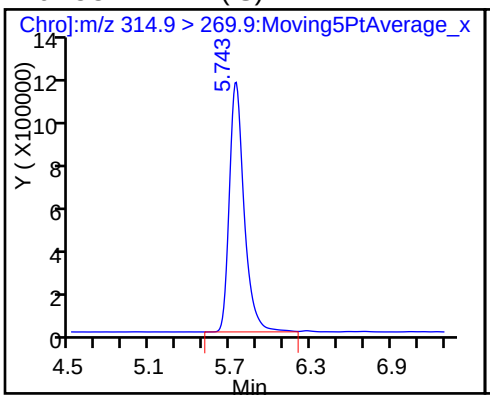
4 Perfluorobutane Sulfonate (ND)



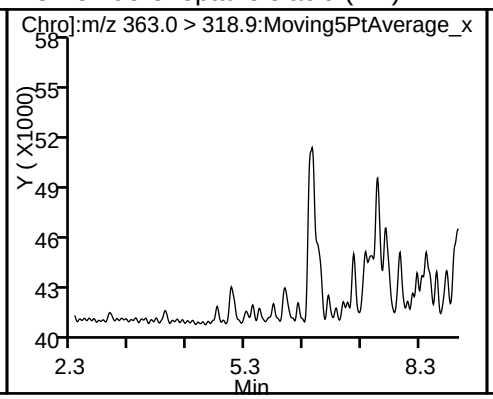
4 Perfluorobutane Sulfonate (ND)



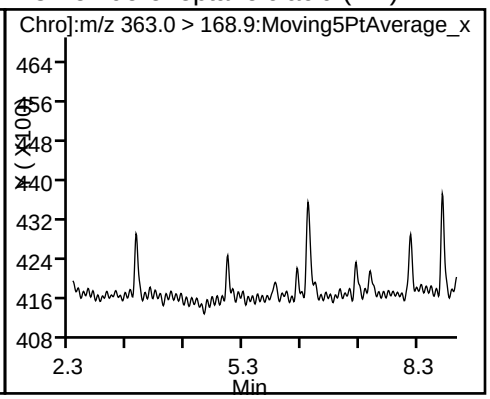
* 6 13C2 PFHxA (IS)



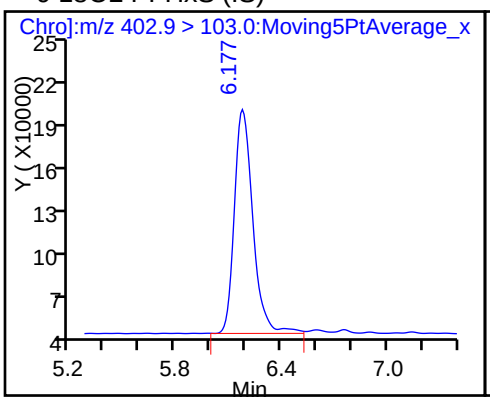
8 Perfluoroheptanoic acid (ND)



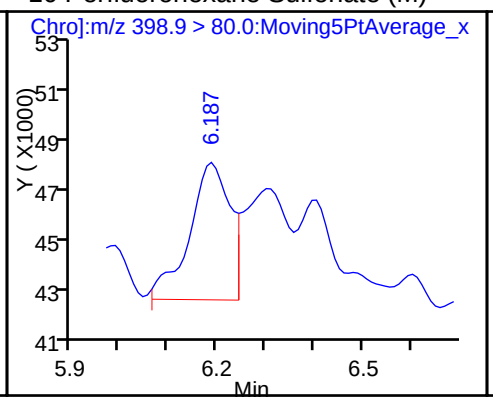
8 Perfluoroheptanoic acid (ND)



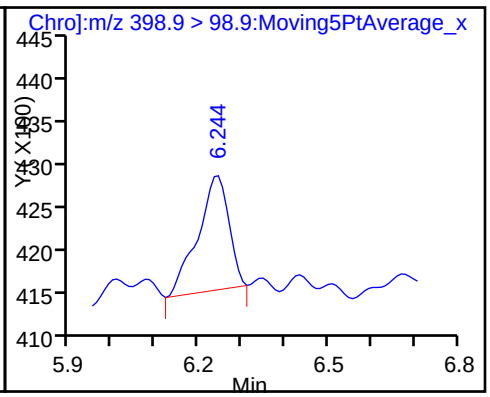
* 9 18O2 PFHxS (IS)



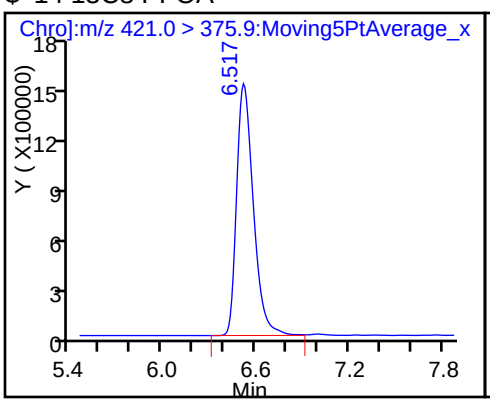
10 Perfluorohexane Sulfonate (M)



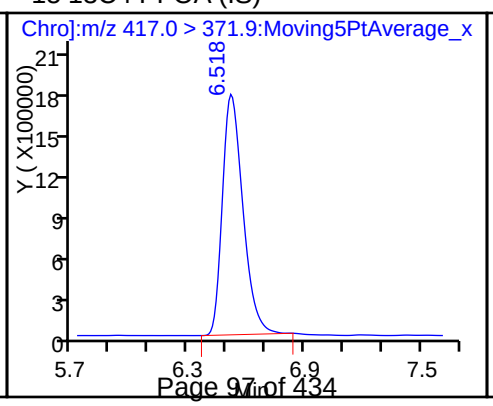
10 Perfluorohexane Sulfonate



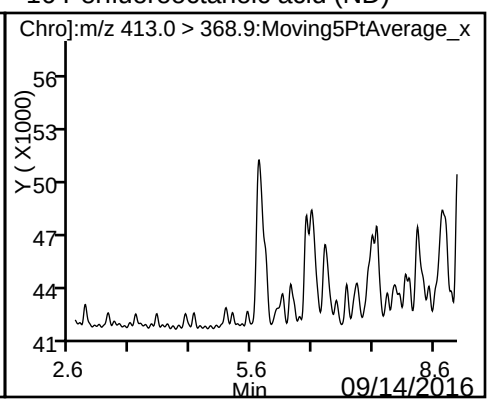
$ 14 13C8 PFOA



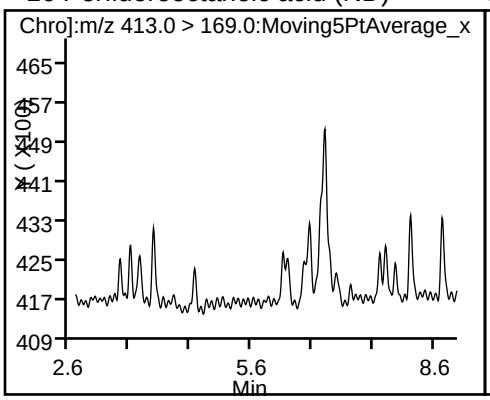
* 15 13C4 PFOA (IS)



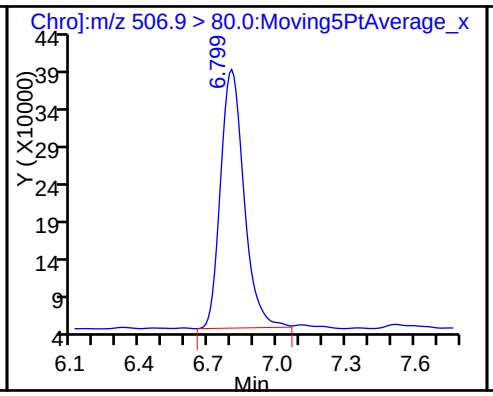
16 Perfluorooctanoic acid (ND)



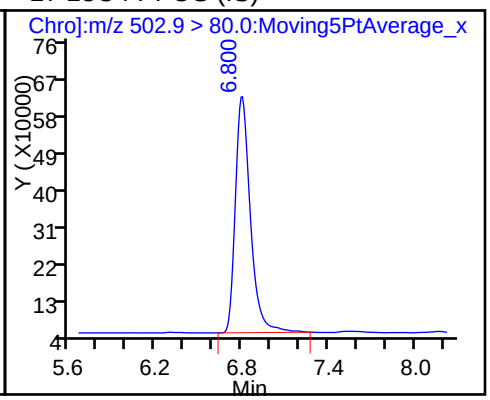
16 Perfluorooctanoic acid (ND)



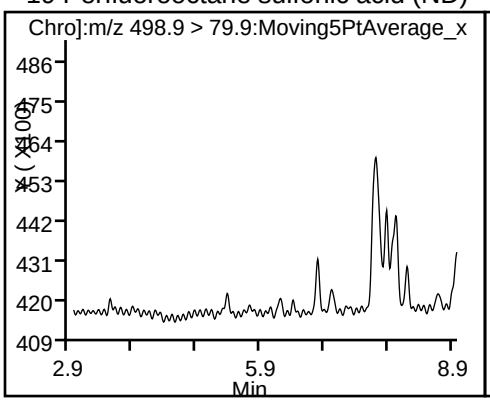
$ 18 13C8 PFOS



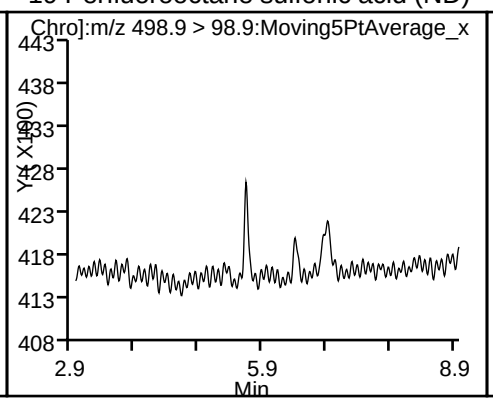
* 17 13C4 PFOS (IS)



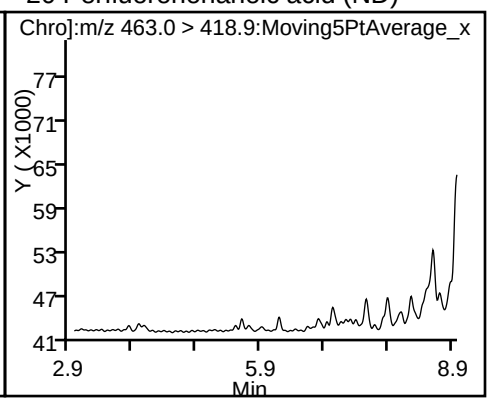
19 Perfluorooctane sulfonic acid (ND)



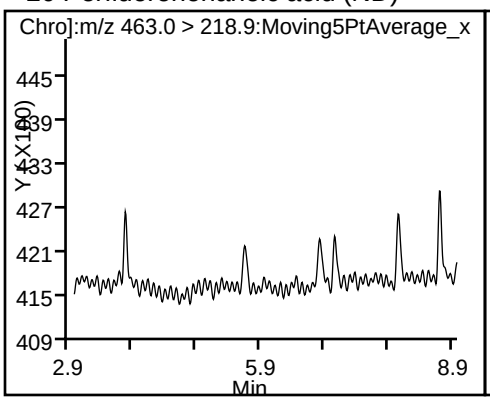
19 Perfluorooctane sulfonic acid (ND)



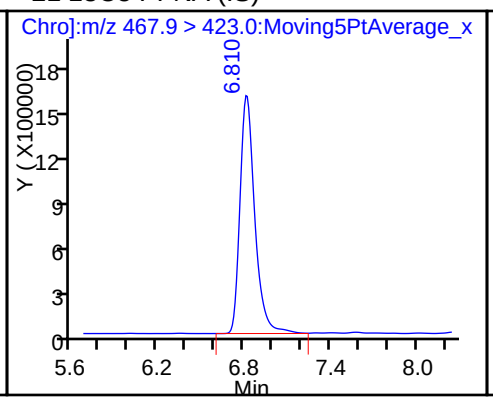
20 Perfluorononanoic acid (ND)



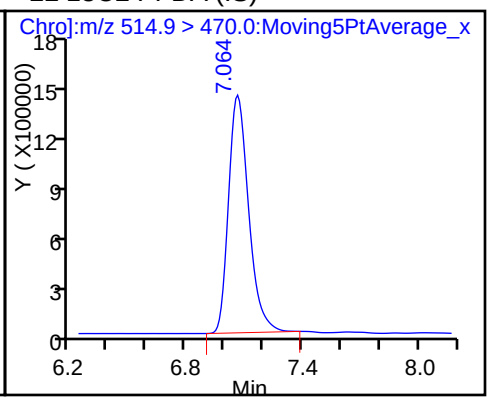
20 Perfluorononanoic acid (ND)



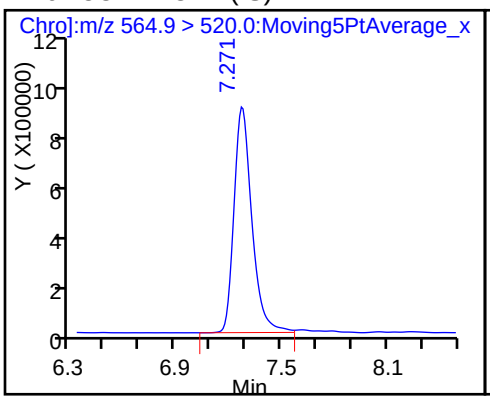
* 21 13C5 PFNA (IS)



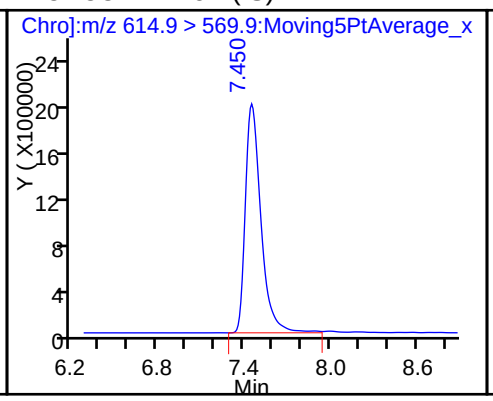
* 22 13C2 PFDA (IS)



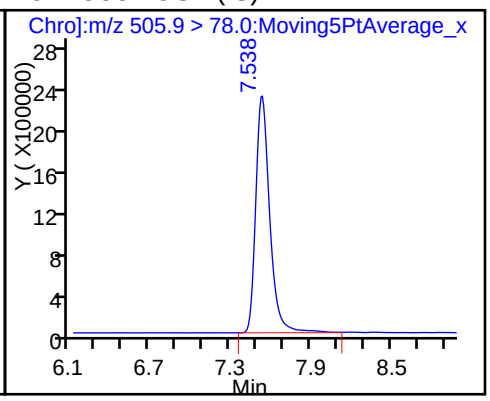
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



Manual Integration/User Assign Peak Report

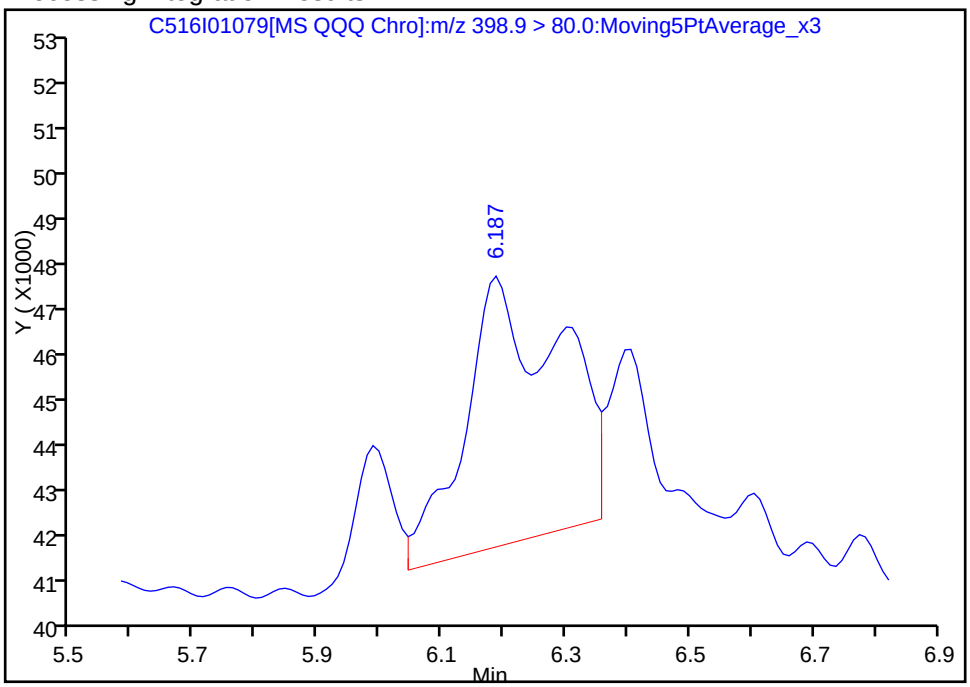
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01079.d				
Injection Date:	01-Sep-2016 23:51:00	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-8-B	Lab Sample ID:	280-87134-8		
Client ID:	SB-PFC-MW1-3.0				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	66
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

10 Perfluorohexane Sulfonate, CAS: 108427-53-8

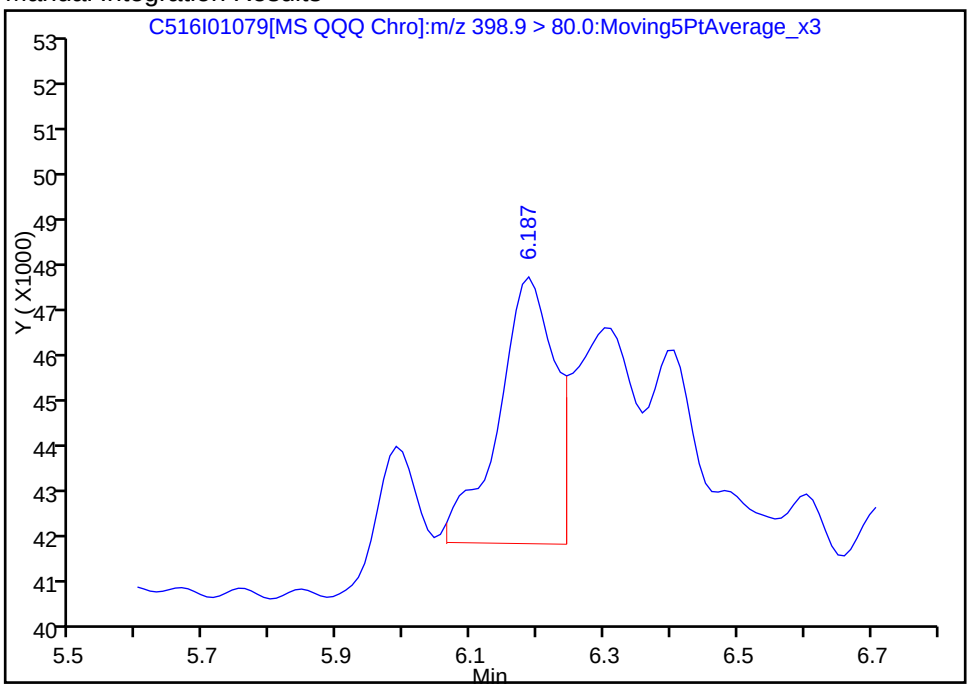
Processing Integration Results

RT: 6.19
Area: 57851
Amount: 0.112563
Amount Units: ug/L



Manual Integration Results

RT: 6.19
Area: 31470
Amount: 0.058923
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 11:19:57
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: MW-FB3 | Lab Sample ID: 280-87134-9

Matrix: Water | Lab File ID: PC516I02021.d

Analysis Method: DV-LC-0012 | Date Collected: 08/18/2016 12:10

Extraction Method: 3535 | Date Extracted: 09/01/2016 19:29

Sample wt/vol: 241.9(mL) | Date Analyzed: 09/02/2016 14:23

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340829 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0085	U	0.021	0.0085
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.014	U	0.031	0.014
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0072	U	0.031	0.0072
375-95-1	Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.014	U	0.031	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.010	U	0.021	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	125		60-155
STL01054	13C8 PFOS	106		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02021.d
Lims ID: 280-87134-A-9-A Lab Sample ID: 280-87134-9
Client ID: MW-FB3
Sample Type: Client
Inject. Date: 02-Sep-2016 14:23:46 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-9-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:24 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:31:58

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.115	4.314	-0.199		19448974	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.459				ND			
298.9 > 98.9		5.459							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.809	5.923	-0.114		12315535	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.244	6.348	-0.104		1663566	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.234	6.348	-0.114	0.999	59725	0.0799			R
398.9 > 98.9	6.291	6.348	-0.057	1.008	22321		2.68(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.349				ND			
363.0 > 168.9		6.349							
$ 14 13C8 PFOA									
421.0 > 375.9	6.574	6.688	-0.114	1.000	15206979	12.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.575	6.688	-0.114		18070670	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.688				ND			
413.0 > 169.0		6.688							
$ 18 13C8 PFOS									
506.9 > 80.0	6.837	6.960	-0.123	1.000	3461754	9.87			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.837	6.961	-0.124		5835255	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.838	6.951	-0.113	1.000	15946	0.0980			
498.9 > 98.9	6.847	6.951	-0.104	1.001	7887		2.02(1.31-2.43)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.857	6.971	-0.114		13827048	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.971				ND			
463.0 > 218.9		6.971							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.102	7.206	-0.104		13762194	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.300	7.404	-0.104		10246017	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.479	7.573	-0.094		21247589	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.652	7.718	-0.066		361653	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND
R - Failed Signal Ratio Test
s - Failed ISTD Recovery Test

Report Date: 06-Sep-2016 08:22:44 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02021.d

Injection Date: 02-Sep-2016 14:23:46 Instrument ID: LC_LCMS5

Lims ID: 280-87134-A-9-A Lab Sample ID: 280-87134-9

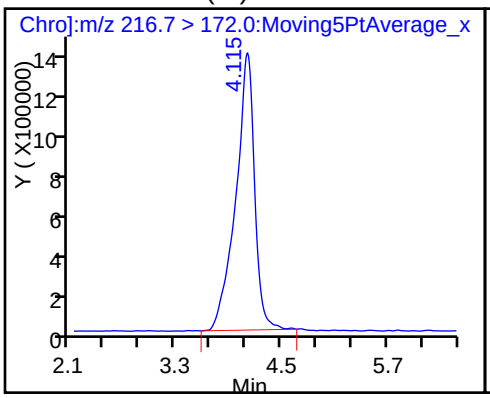
Client ID: MW-FB3

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 9

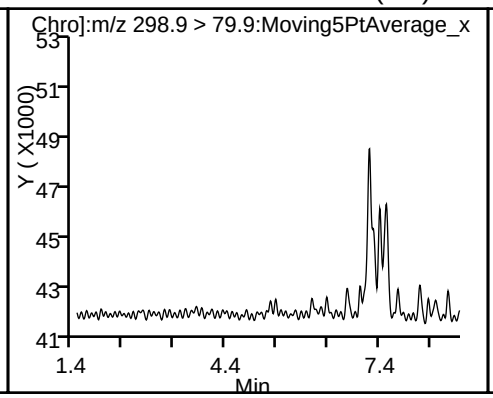
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

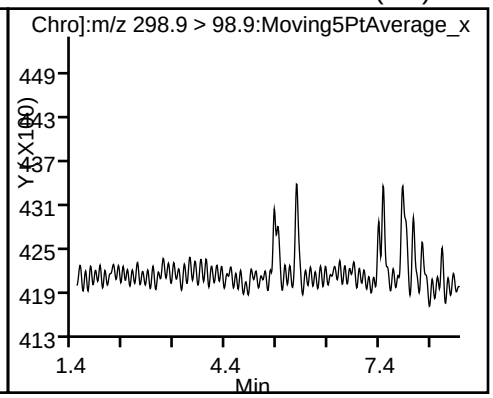
* 1 13C4 PFBA (IS)



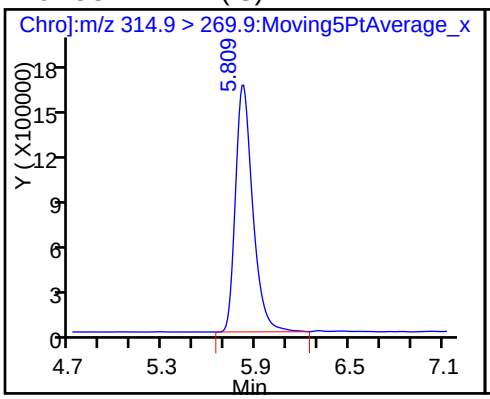
4 Perfluorobutane Sulfonate (ND)



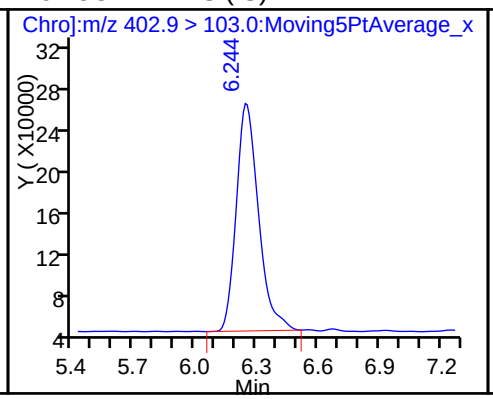
4 Perfluorobutane Sulfonate (ND)



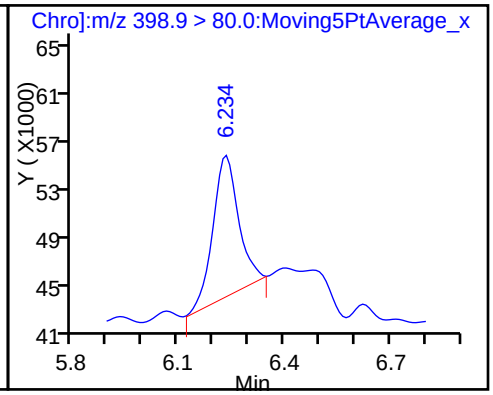
* 6 13C2 PFHxA (IS)



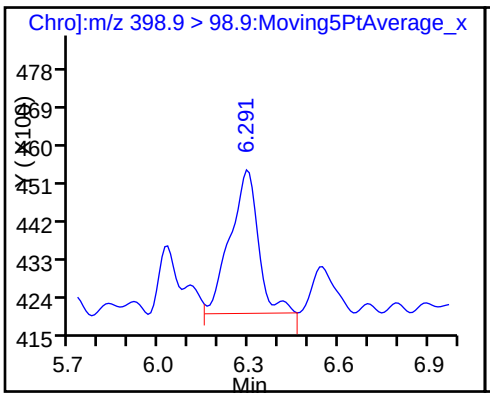
* 9 18O2 PFHxS (IS)



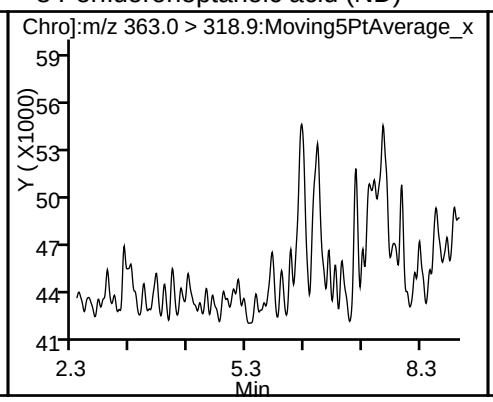
10 Perfluorohexane Sulfonate



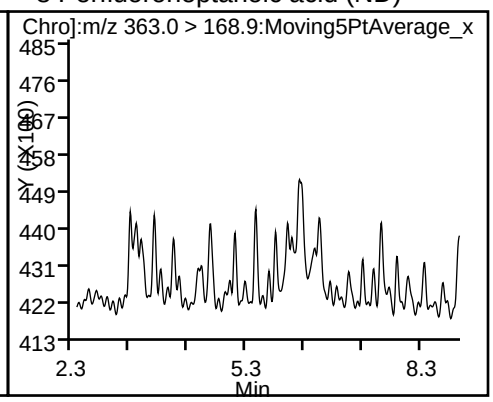
10 Perfluorohexane Sulfonate



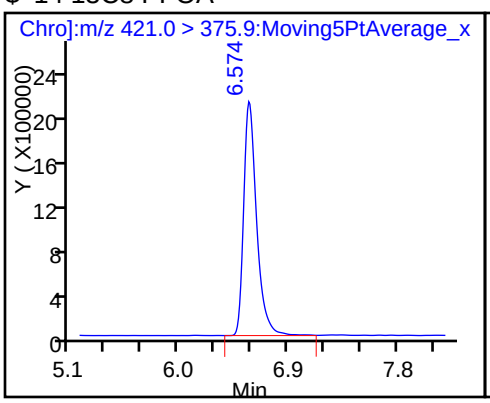
8 Perfluoroheptanoic acid (ND)



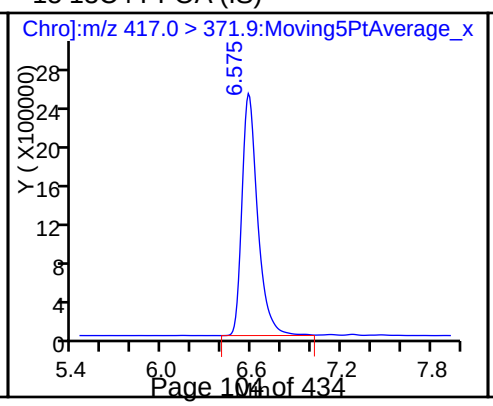
8 Perfluoroheptanoic acid (ND)



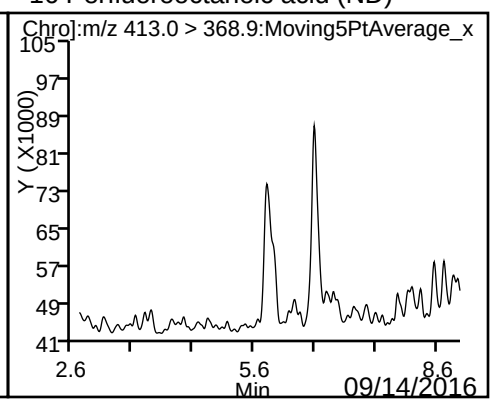
$ 14 13C8 PFOA



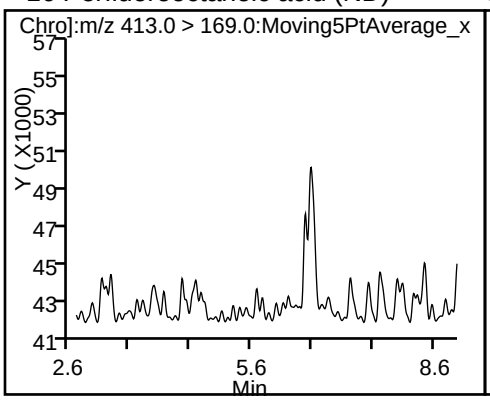
* 15 13C4 PFOA (IS)



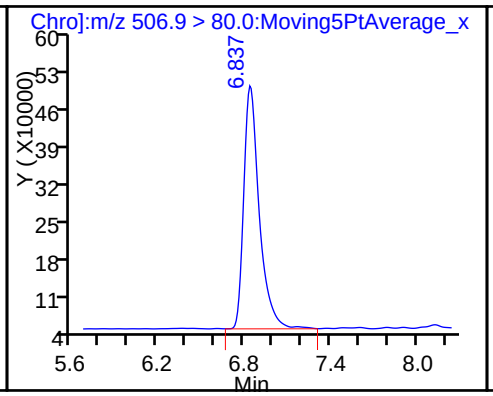
16 Perfluorooctanoic acid (ND)



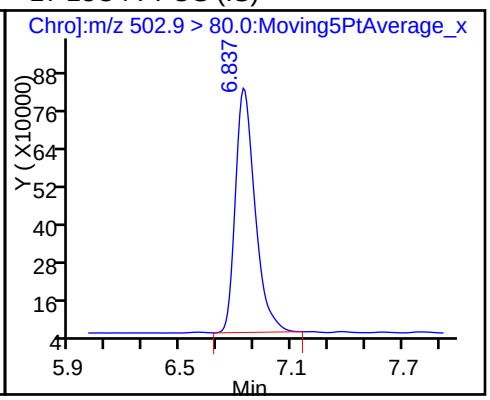
16 Perfluorooctanoic acid (ND)



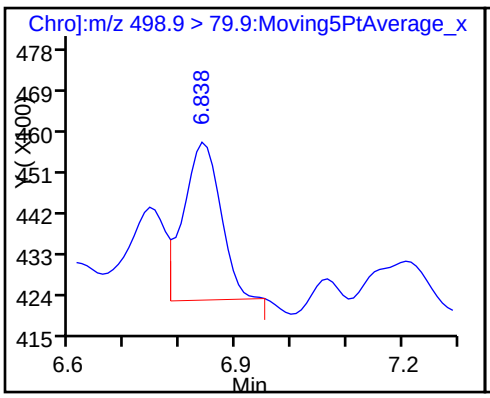
$ 18 13C8 PFOS



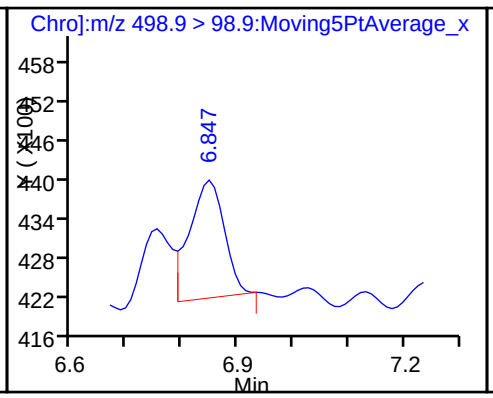
* 17 13C4 PFOS (IS)



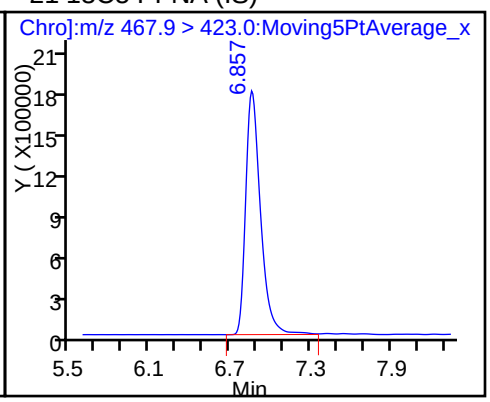
19 Perfluorooctane sulfonic acid



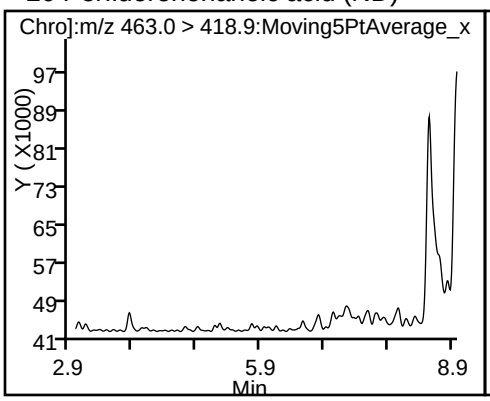
19 Perfluorooctane sulfonic acid



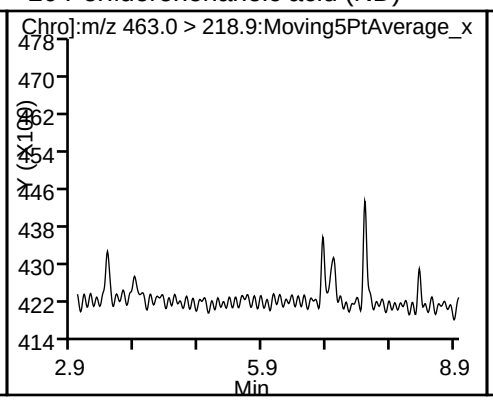
* 21 13C5 PFNA (IS)



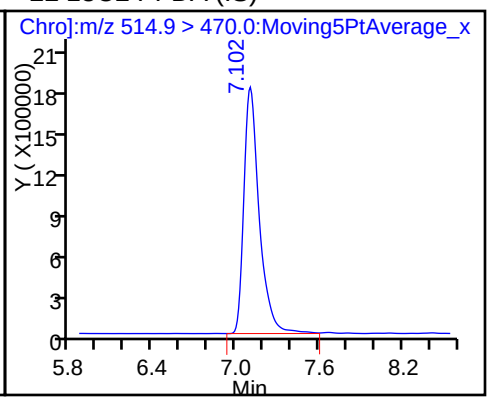
20 Perfluorononanoic acid (ND)



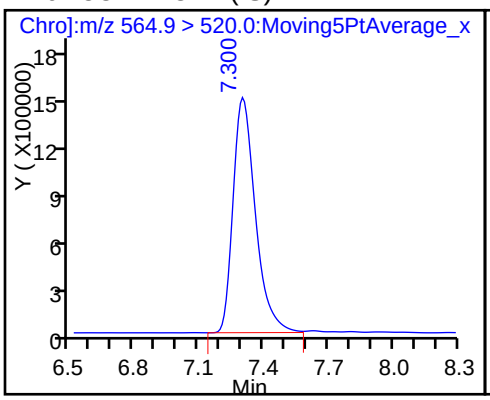
20 Perfluorononanoic acid (ND)



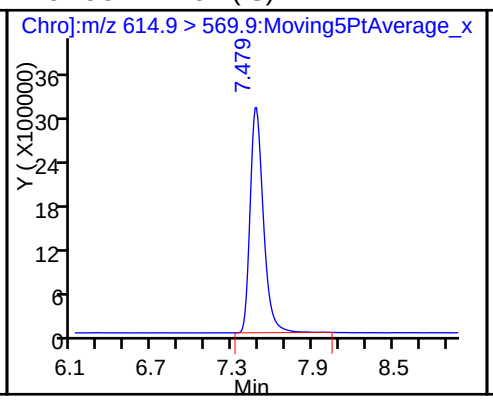
* 22 13C2 PFDA (IS)



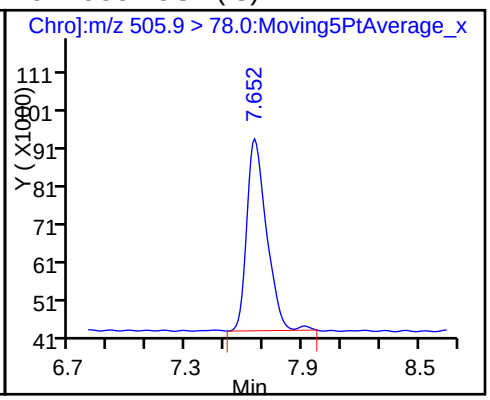
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: PFC-MW-DUP1 | Lab Sample ID: 280-87134-10

Matrix: Solid | Lab File ID: PC516I01080.d

Analysis Method: DV-LC-0012 | Date Collected: 08/18/2016 09:00

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.42(g) | Date Analyzed: 09/02/2016 00:03

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 9.7 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.15	U	0.85	0.15
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.13	U	0.85	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.30	U	0.85	0.30
375-95-1	Perfluorononanoic acid (PFNA)	0.23	U	0.85	0.23
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.85	0.15
335-67-1	Perfluorooctanoic acid (PFOA)	0.24	U	0.85	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	122		57-153
STL01054	13C8 PFOS	105		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01080.d
Lims ID: 280-87134-A-10-D Lab Sample ID: 280-87134-10
Client ID: PFC-MW-DUP1
Sample Type: Client
Inject. Date: 02-Sep-2016 00:03:23 ALS Bottle#: 0 Worklist Smp#: 67
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-10-D, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:20:17

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.067	4.276	-0.209		11400163	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		4.266				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.308				ND			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.431				ND			
298.9 > 98.9		5.431							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.431				ND			
298.9 > 98.9		5.431							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.733	5.904	-0.171		8269221	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.894				ND			
313.0 > 118.6		5.894							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.330				ND			
363.0 > 168.9		6.330							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.177	6.338	-0.161		1137328	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.329				ND			
398.9 > 98.9		6.329							
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.329				ND			
398.9 > 98.9		6.329							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.659				ND			
449.0 > 98.9		6.659							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.659				ND			
449.0 > 98.9		6.659							
$ 14 13C8 PFOA									
421.0 > 375.9	6.527	6.669	-0.142	1.000	10414647	12.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.527	6.669	-0.142		12656304	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.669				ND			
413.0 > 169.0		6.669							
$ 18 13C8 PFOS									
506.9 > 80.0	6.799	6.941	-0.142	1.000	2389697	9.72			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.800	6.942	-0.142		4091021	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.942				ND			
498.9 > 98.9		6.942							
20 Perfluorononanoic acid									
463.0 > 418.9		6.952				ND			
463.0 > 218.9		6.952							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.819	6.962	-0.143		10433290	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.064	7.206	-0.142		9683497	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.206				ND			
513.0 > 219.0		7.206							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.375				ND			
598.9 > 99.0		7.375							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.375				ND			
598.9 > 99.0		7.375							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.414	-0.143		6335986	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.414				ND			
563.0 > 268.9		7.414							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.583	-0.133		15235903	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.583				ND			
613.0 > 168.9		7.583							
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.734				ND			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.672				ND			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.671	-0.133		15527618	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.857				ND			
712.9 > 169.0		7.857							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

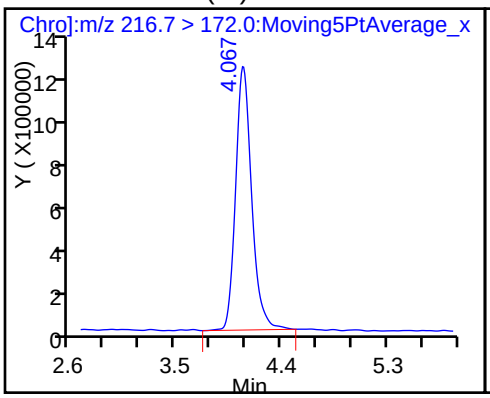
Report Date: 02-Sep-2016 11:55:27 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

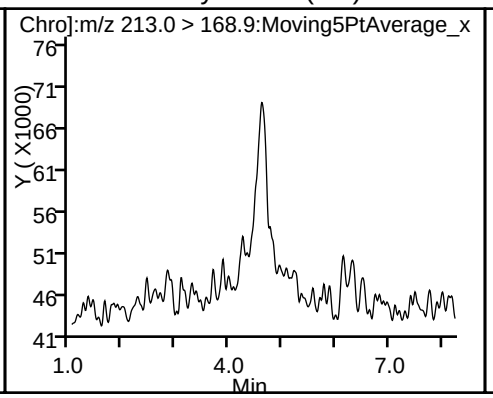
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01080.d

Injection Date:	02-Sep-2016 00:03:23	Instrument ID:	LC_LCMS5		
Lims ID:	280-87134-A-10-D	Lab Sample ID:	280-87134-10		
Client ID:	PFC-MW-DUP1				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	67
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

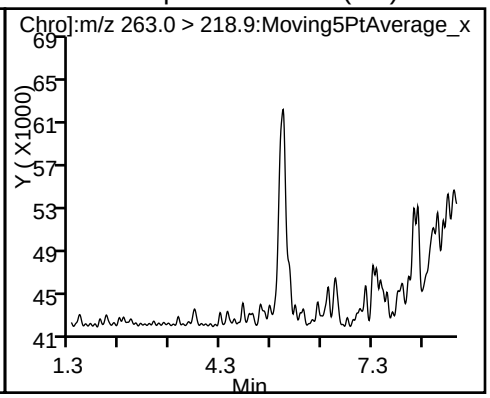
* 1 13C4 PFBA (IS)



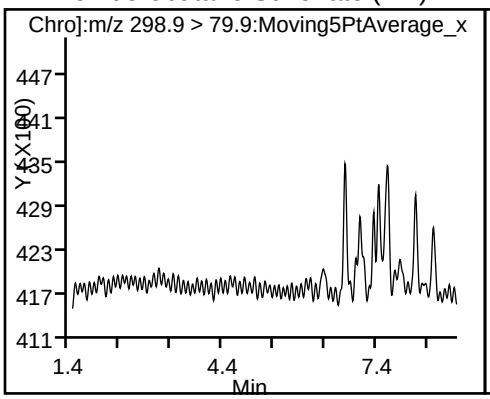
2 Perfluorobutyric acid (ND)



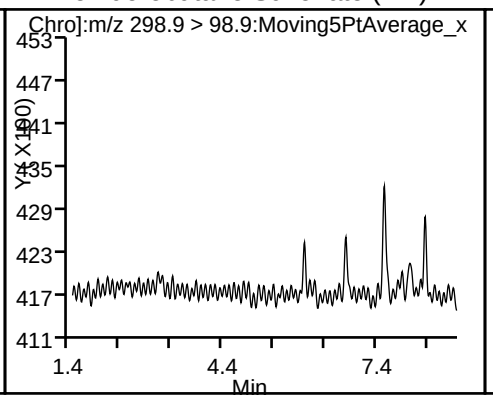
3 Perfluoropentanoic acid (ND)



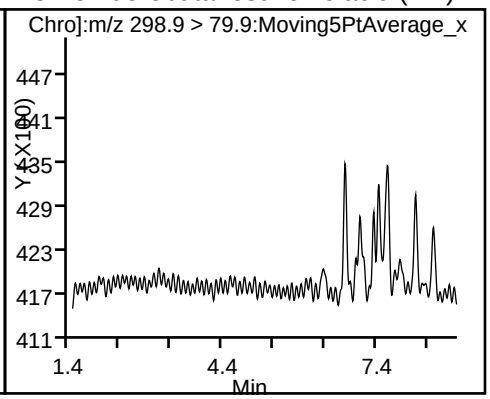
4 Perfluorobutane Sulfonate (ND)



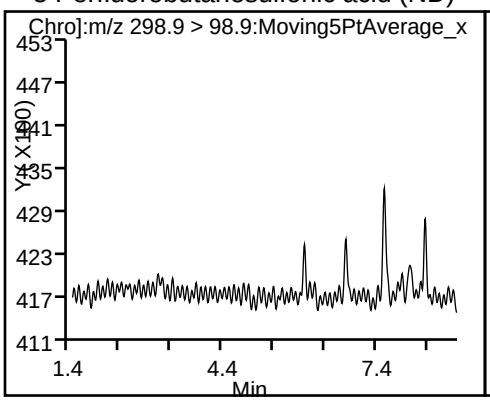
4 Perfluorobutane Sulfonate (ND)



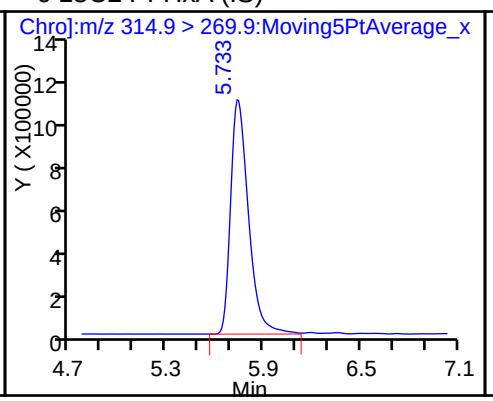
5 Perfluorobutanesulfonic acid (ND)



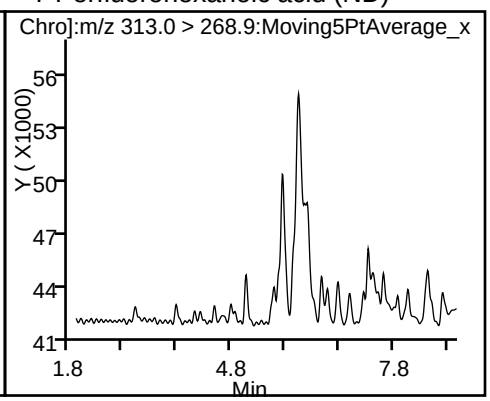
5 Perfluorobutanesulfonic acid (ND)



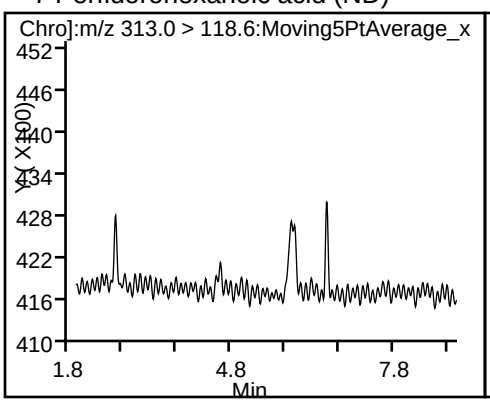
* 6 13C2 PFHxA (IS)



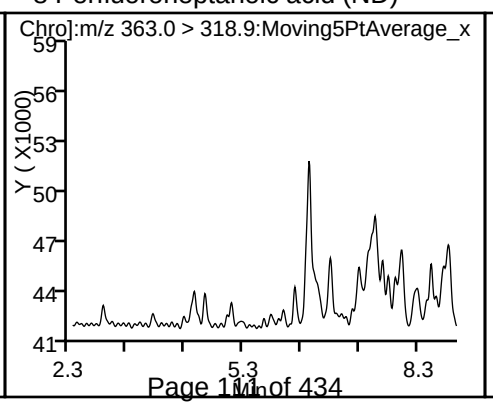
7 Perfluorohexanoic acid (ND)



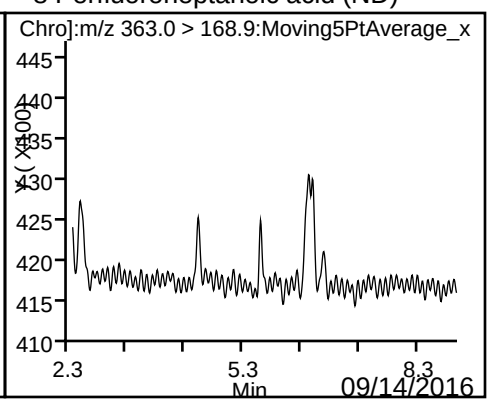
7 Perfluorohexanoic acid (ND)



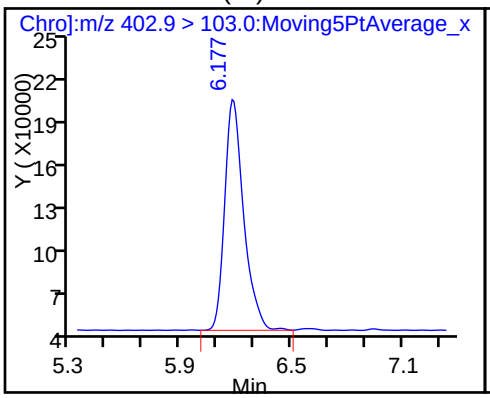
8 Perfluoroheptanoic acid (ND)



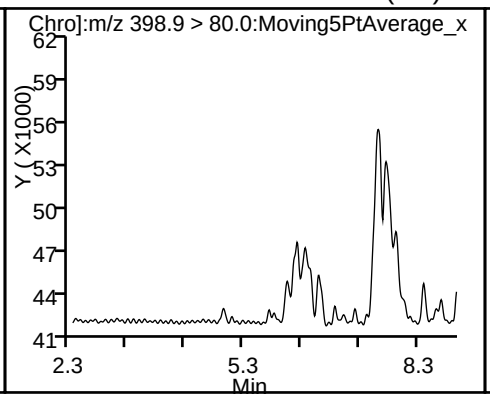
8 Perfluoroheptanoic acid (ND)



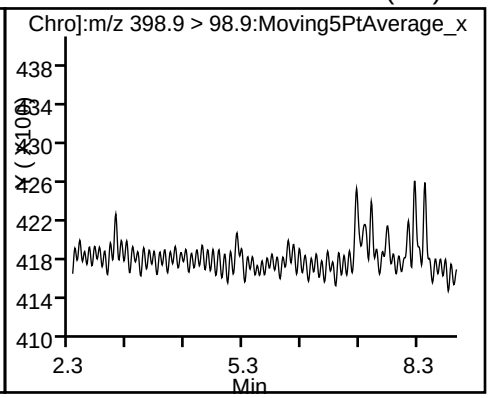
* 9 18O2 PFHxS (IS)



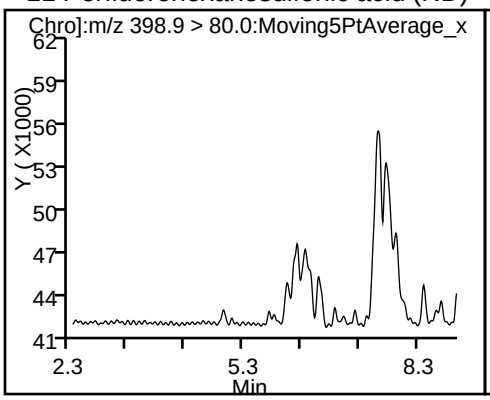
10 Perfluorohexane Sulfonate (ND)



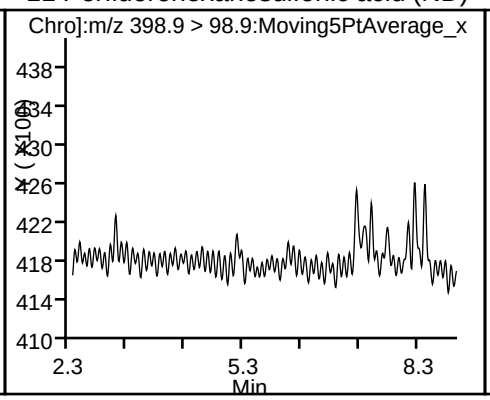
10 Perfluorohexane Sulfonate (ND)



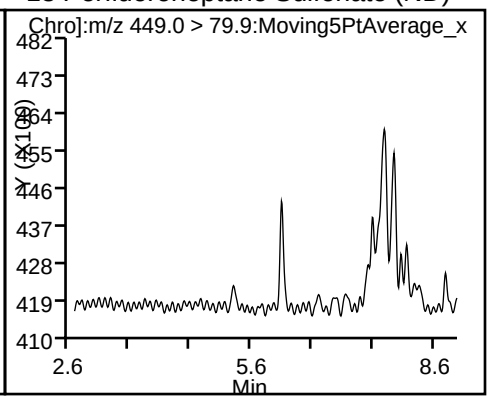
11 Perfluorohexanesulfonic acid (ND)



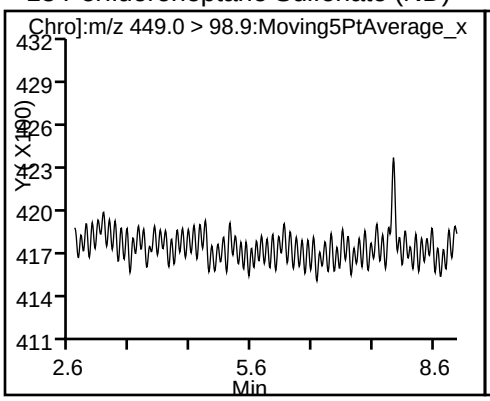
11 Perfluorohexanesulfonic acid (ND)



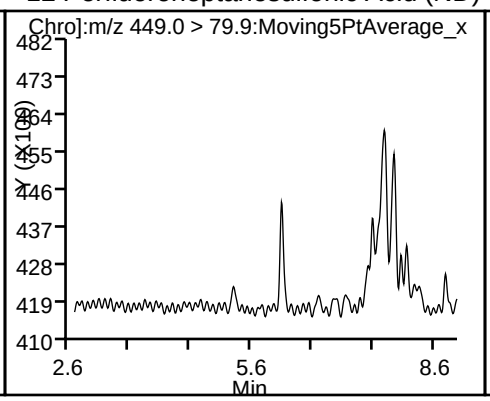
13 Perfluoroheptane Sulfonate (ND)



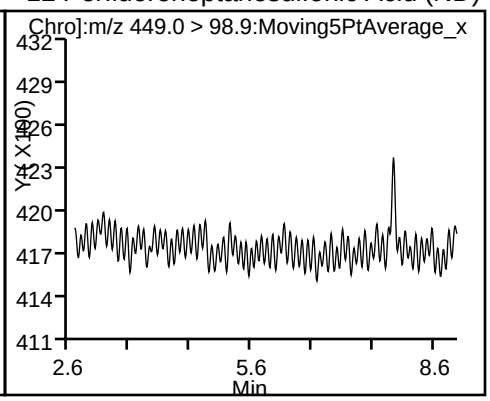
13 Perfluoroheptane Sulfonate (ND)



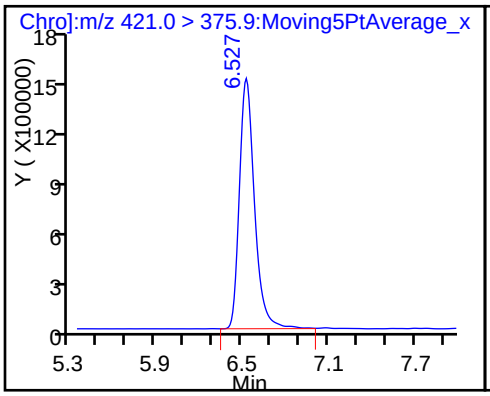
12 Perfluoroheptanesulfonic Acid (ND)



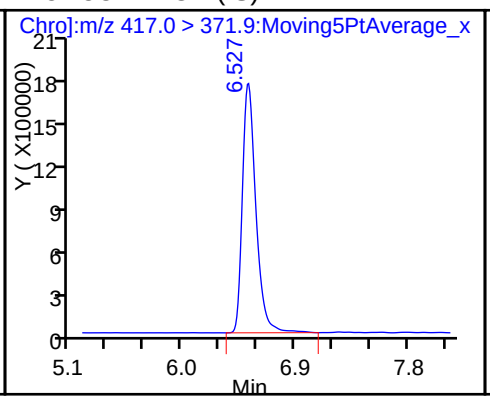
12 Perfluoroheptanesulfonic Acid (ND)



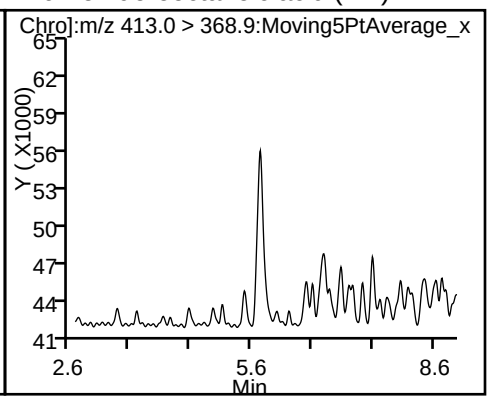
$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



16 Perfluorooctanoic acid (ND)



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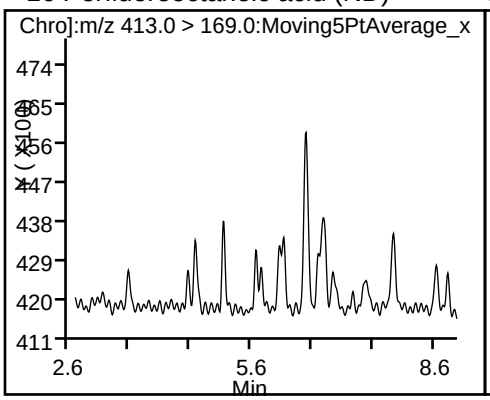

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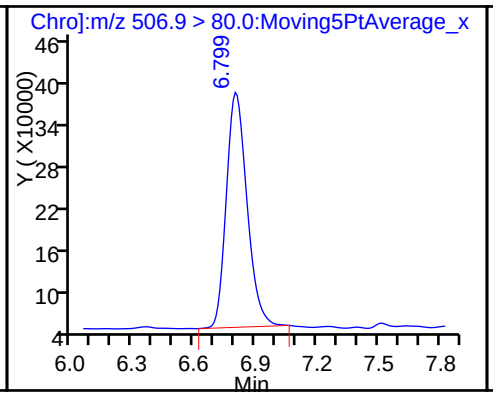

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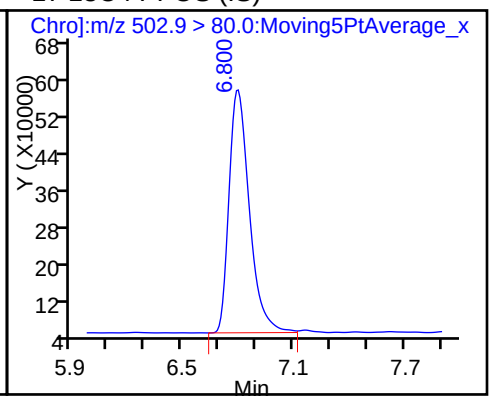
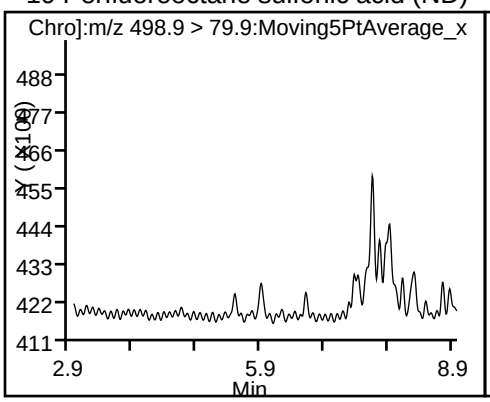
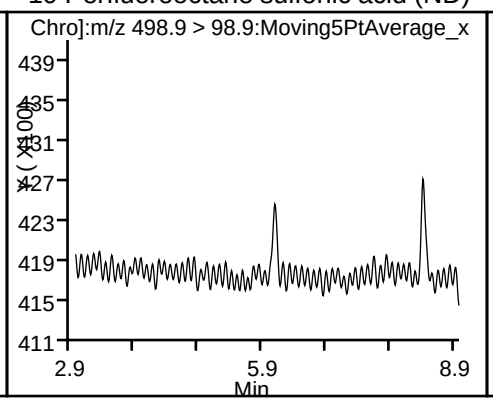


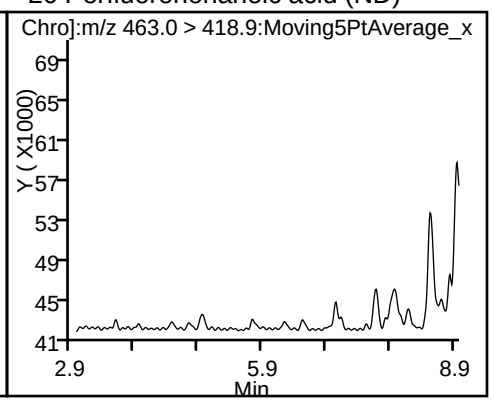
19 Perfluorooctane sulfonic acid (ND)



19 Perfluorooctane sulfonic acid (ND)



20 Perfluorononanoic acid (ND)



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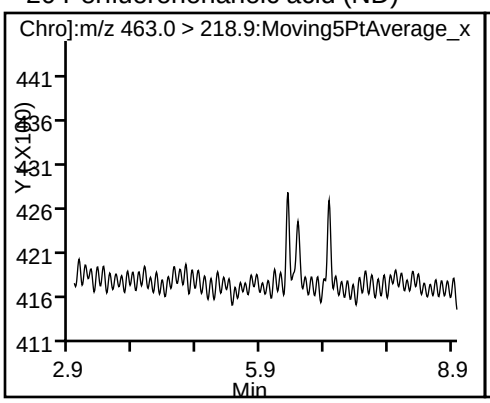
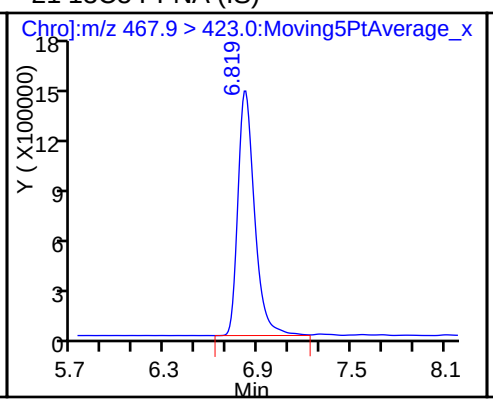
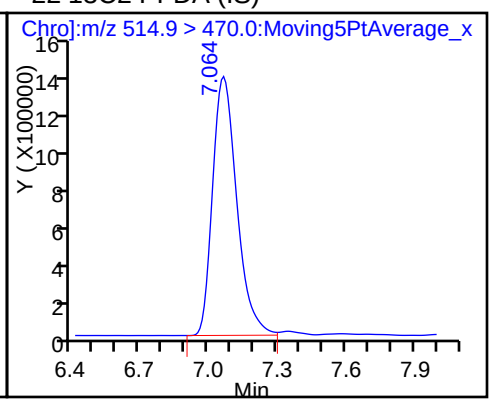


* 21 13C5 PFNA (IS)



* 22 13C2 PFDA (IS)



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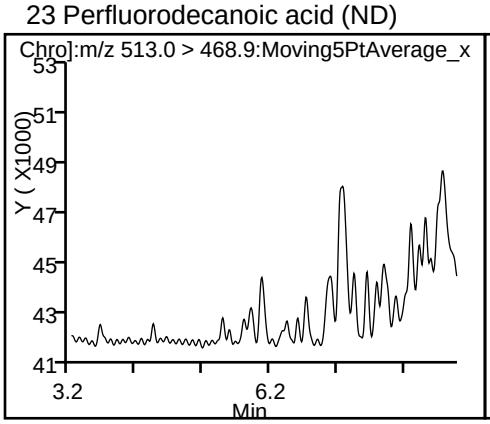
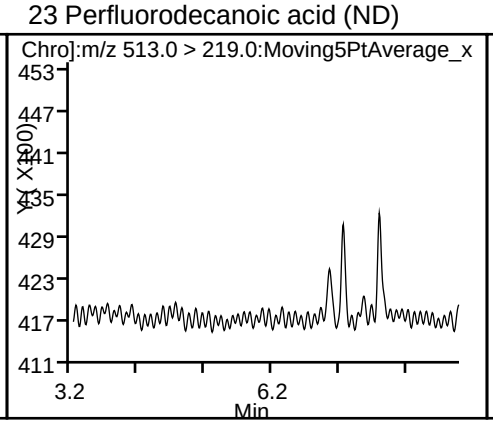
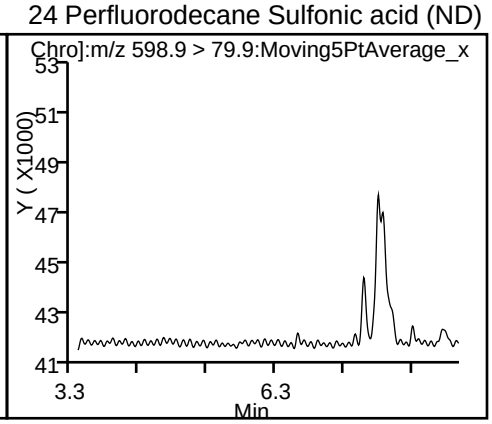


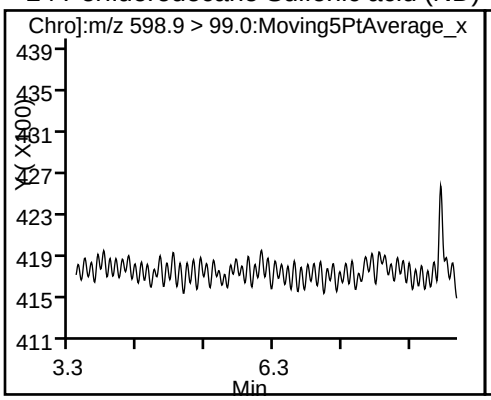
23 Perfluorodecanoic acid (ND)



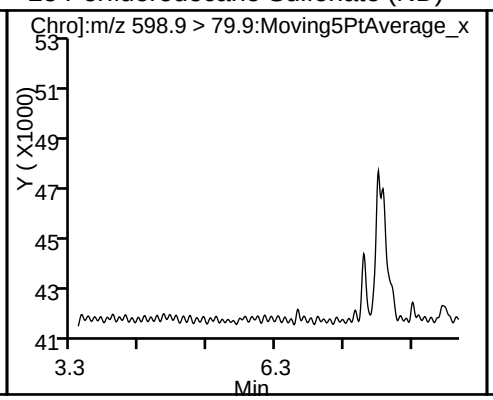
24 Perfluorodecane Sulfonic acid (ND)



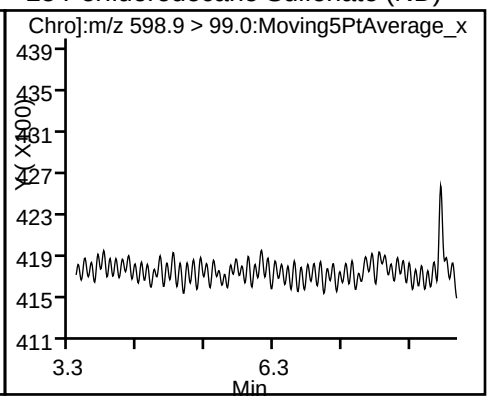
24 Perfluorodecane Sulfonic acid (ND)



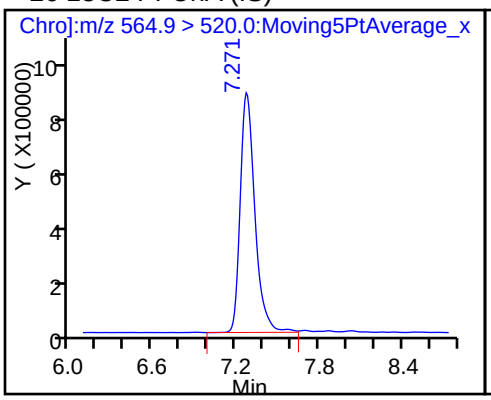
25 Perfluorodecane Sulfonate (ND)



25 Perfluorodecane Sulfonate (ND)



* 26 13C2 PFUnA (IS)



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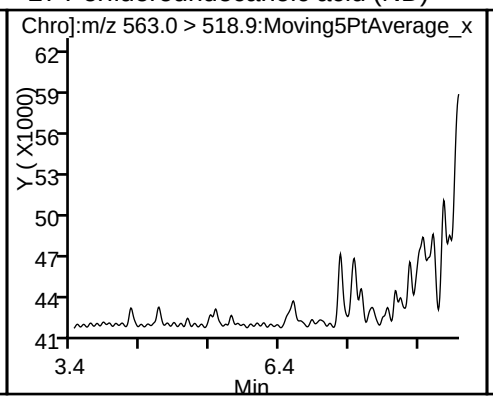

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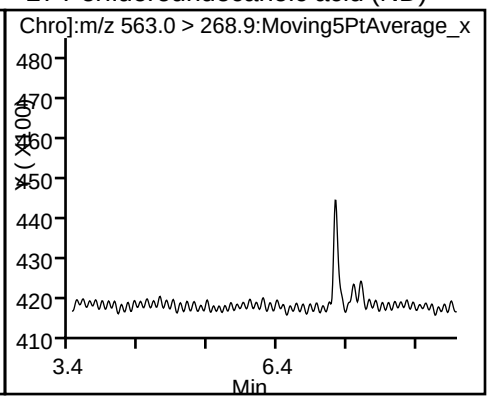

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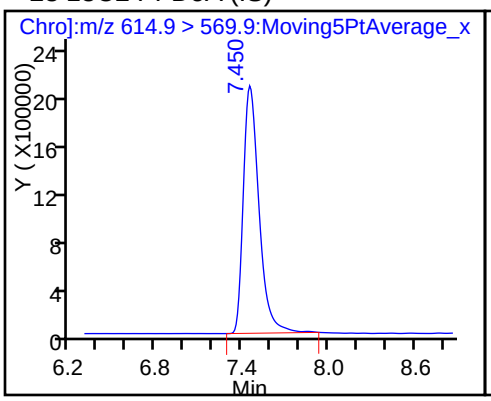

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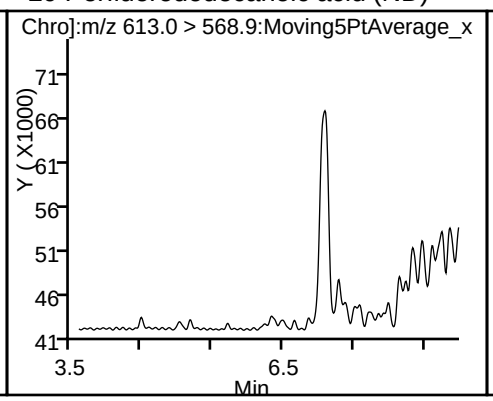
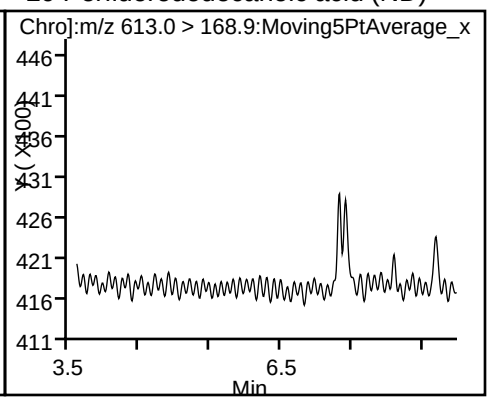


29 Perfluorododecanoic acid (ND)



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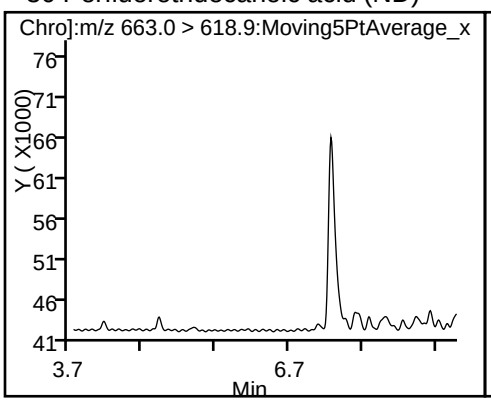
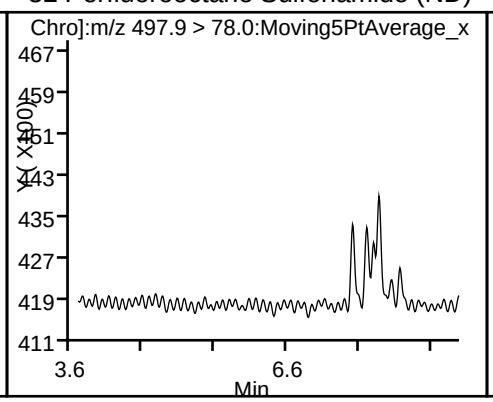
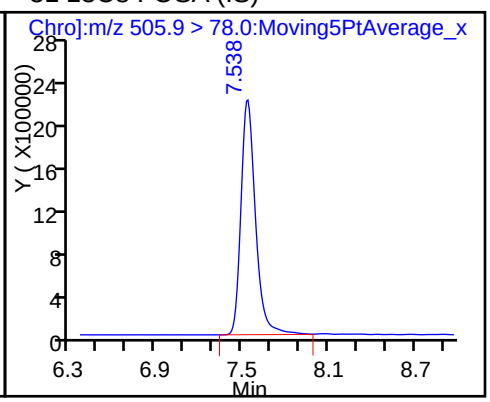


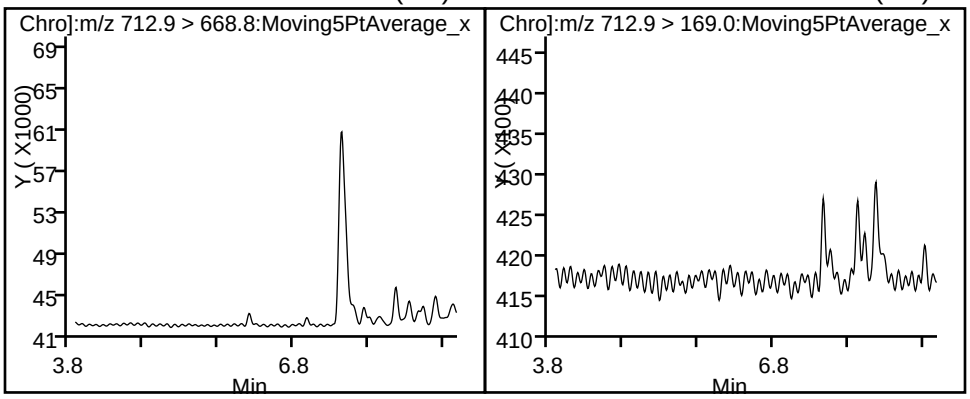
32 Perfluorooctane Sulfonamide (ND)



* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-87134-1 Analy Batch No.: 340408

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/01/2016 10:55 Calibration End Date: 09/01/2016 12:33 Calibration ID: 26894

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-340408/3	PC516I01016.d
Level 2	STD0005 280-340408/4	PC516I01017.d
Level 3	STD0010 280-340408/5	PC516I01018.d
Level 4	STD0020 280-340408/6	PC516I01019.d
Level 5	STD0050 280-340408/7	PC516I01020.d
Level 6	STD0100 280-340408/8	PC516I01021.d
Level 7	STD0200 280-340408/9	PC516I01022.d
Level 8	STD0500 280-340408/10	PC516I01023.d
Level 9	STD1250 280-340408/11	PC516I01024.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.9096 0.9705	1.0870 0.9382	0.9432 0.9713	0.9822 0.9513	0.9107	Lin2	-0.002	0.9644							0.9960		0.9800
Perfluoropentanoic acid (PFPA)	1.4841 1.0917	1.3447 1.1157	1.1123 1.0764	1.1171 1.1155	1.0333	Lin2	0.0851	1.0817							0.9980		0.9800
Perfluorobutane Sulfonate (PFBS)	4.6094 4.4492	3.9071 4.3295	5.6510 4.1681	4.3433 4.5777	3.9274	Lin2	0.0341	4.4023							0.9830		0.9800
Perfluorobutanesulfonic acid	4.6094 4.4492	3.9071 4.3295	5.6510 4.1681	4.3433 4.5777	3.9274	Lin2	0.0341	4.4023							0.9830		0.9800
Perfluorohexanoic acid (PFHxA)	1.0838 0.8634	0.9846 0.8952	0.9566 0.8605	0.9479 0.8919	0.8496	Lin2	0.0429	0.8837							0.9990		0.9800
Perfluoroheptanoic acid (PFHpA)	0.8765 0.8592	0.8543 0.8377	0.9629 0.8102	0.9140 0.7237	0.8179	Lin2	0.0126	0.8383							0.9930		0.9800
Perfluorohexane Sulfonate (PFHxS)	3.9524 4.0975	4.1340 3.8373	4.5810 3.6691	4.0057 3.8196	4.0647	Lin2	0.0202	3.9968							0.9950		0.9800
Perfluorohexanesulfonic acid	3.9524 4.0975	4.1340 3.8373	4.5810 3.6691	4.0057 3.8196	4.0647	Lin2	0.0202	3.9968							0.9950		0.9800
Perfluoroheptane Sulfonate	0.8318 1.1565	1.0386 1.1033	1.1629 1.1382	1.1078 0.9298	1.0266	Lin2	-0.045	1.1012							0.9930		0.9800
Perfluoroheptanesulfonic Acid (PFHpS)	0.8318 1.1565	1.0386 1.1033	1.1629 1.1382	1.1078 0.9298	1.0266	Lin2	-0.045	1.1012							0.9930		0.9800
Perfluorooctanoic acid (PFOA)	1.4138 1.0413	1.0078 0.9958	1.1068 0.9633	1.1452 0.7977	1.0059	Lin2	0.0833	0.9708							0.9880		0.9800
Perfluorooctanesulfonic acid (PFOS)	0.6543 1.1240	0.7781 1.0430	1.0104 1.0601	1.0556 0.8574	0.9643	Lin2	-0.074	1.0266							0.9910		0.9800
Perfluorononanoic acid (PFNA)	0.9805 1.0535	1.0407 0.9900	1.0870 1.0754	1.1338 1.0497	1.0094	Lin2	-0.012	1.0589							0.9980		0.9800

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-87134-1 Analy Batch No.: 340408

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/01/2016 10:55 Calibration End Date: 09/01/2016 12:33 Calibration ID: 26894

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	1.0741 0.9515	0.9253 0.9378	1.0699 0.9202	1.0806 0.9145	0.8703	Lin2	0.0254	0.9465							0.9930		0.9800
Perfluorodecane sulfonate (PFDS)	1.2939 1.0705	0.9032 1.0409	1.0195 1.0582	0.9715 0.8904	1.0543	Lin2	0.0449	0.9877							0.9900		0.9800
Perfluorodecane Sulfonic acid	1.2939 1.0705	0.9032 1.0409	1.0195 1.0582	0.9715 0.8904	1.0543	Lin2	0.0449	0.9877							0.9900		0.9800
Perfluoroundecanoic acid (PFUnA)	1.8620 1.3779	1.3933 1.3126	1.4864 1.2769	1.3636 1.1879	1.3125	Lin2	0.1097	1.2888							0.9960		0.9800
Perfluorododecanoic acid (PFDoA)	0.9676 1.0267	0.9513 0.9724	1.0241 0.9636	1.0077 0.9418	0.8911	Lin2	0	0.9720							0.9980		0.9800
Perfluorooctane Sulfonamide (FOSA)	1.1303 1.0382	1.0157 1.0241	1.1067 1.0111	1.0551 1.0625	1.0001	Lin2	0.0179	1.0317							0.9990		0.9800
Perfluorotridecanoic Acid (PFTriA)	1.6081 1.4218	1.2419 1.2644	1.4228 1.2662	1.3173 1.1435	1.2018	Lin2	0.0631	1.2587							0.9930		0.9800
Perfluorotetradecanoic acid (PFTeA)	1.2332 1.0023	0.9521 0.9922	1.0367 0.9862	1.0370 0.9147	0.9631	Lin2	0.0465	0.9672							0.9970		0.9800
13C8 PFOA	0.8563 0.7997	1.0405 0.8094	0.8013 0.7312	0.9409 0.6137	0.8735	Lin1	0.1590	0.6728							0.9860		0.9800
13C8 PFOS	0.8685 0.6111	0.6317 0.5956	0.6595 0.5652	0.6696 0.4699	0.5676	Lin2	0.0558	0.5689							0.9900		0.9800

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-87134-1 Analy Batch No.: 340408

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/01/2016 10:55 Calibration End Date: 09/01/2016 12:33 Calibration ID: 26894

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-340408/3	PC516I01016.d
Level 2	STD0005 280-340408/4	PC516I01017.d
Level 3	STD0010 280-340408/5	PC516I01018.d
Level 4	STD0020 280-340408/6	PC516I01019.d
Level 5	STD0050 280-340408/7	PC516I01020.d
Level 6	STD0100 280-340408/8	PC516I01021.d
Level 7	STD0200 280-340408/9	PC516I01022.d
Level 8	STD0500 280-340408/10	PC516I01023.d
Level 9	STD1250 280-340408/11	PC516I01024.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorobutanoic acid (PFBA)	BA	Lin2	259031 12895488	712107 24783380	1265156 63432662	2607159 154342797	6654790	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoropentanoic acid (PFPA)	HXA	Lin2	297189 10624114	640986 20937672	1071032 52082548	2195290 123787287	5467867	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorobutane Sulfonate (PFBS)	HXS	Lin2	126832 5156065	252687 10278122	679417 25102967	1141745 58702268	2685289	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorobutanesulfonic acid	HXS	Lin2	126832 5156065	252687 10278122	679417 25102967	1141745 58702268	2685289	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorohexanoic acid (PFHxA)	HXA	Lin2	217036 8402668	469372 16800712	921156 41635305	1862676 98976344	4495592	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoroheptanoic acid (PFHpA)	OA	Lin2	281748 12959988	628524 24713014	1454204 59774956	2768798 142918889	6648694	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorohexane Sulfonate (PFHxS)	HXS	Lin2	116129 5070334	285485 9727199	588104 23595828	1124374 52301837	2967617	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluorohexanesulfonic acid	HXS	Lin2	116129 5070334	285485 9727199	588104 23595828	1124374 52301837	2967617	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluoroheptane Sulfonate	PFOS	Lin2	85490 5121961	248542 9639164	521954 22770367	1083388 50154548	2541992	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluoroheptanesulfonic Acid (PFHpS)	PFOS	Lin2	85490 5121961	248542 9639164	521954 22770367	1083388 50154548	2541992	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluorooctanoic acid (PFOA)	OA	Lin2	454474 15706871	741430 29379405	1671542 71067411	3469106 157527806	8176935	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctanesulfonic acid (PFOS)	PFOS	Lin2	67459 4994005	186796 9140566	454948 21274119	1035672 46396532	2395297	0.191 9.55	0.478 19.1	0.955 47.8	1.91 119	4.78
Perfluorononanoic acid (PFNA)	NA	Lin2	239678 11860060	605760 22299666	1260645 53901822	2625464 122511662	6259116	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorodecanoic acid (PFDA)	DA	Lin2	244510 10395613	519575 20217922	1147452 48609515	2269609 118049050	5263939	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-87134-1 Analy Batch No.: 340408

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/01/2016 10:55 Calibration End Date: 09/01/2016 12:33 Calibration ID: 26894

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorodecane sulfonate (PFDS)	PFOS	Lin2	134803 4806013	219098 9218011	463863 21459219	963082 48688260	2646264	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluorodecane Sulfonic acid	PFOS	Lin2	134803 4806013	219098 9218011	463863 21459219	963082 48688260	2646264	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluoroundecanoic acid (PFUnA)	UNA	Lin2	249219 8601057	478266 16971733	997089 40165888	1832257 91112669	4589716	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorododecanoic acid (PFDoA)	DOA	Lin2	276106 13981225	694761 26732518	1440999 65559095	2908460 160800256	6879432	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctane Sulfonamide (FOSA)	FOSA	Lin2	398980 16605818	861583 32592976	1815022 77190935	3520358 173475638	8682703	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotridecanoic Acid (PFTriA)	DOA	Lin2	458869 19361463	906994 34759616	2002045 86143679	3801994 195237711	9277562	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotetradecanoic acid (PFTeA)	DOA	Lin2	351893 13647994	695346 27275322	1458639 67093348	2992817 156178707	7435175	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOA	OA	Lin1	275277 12063143	765475 23880169	1210205 53941464	2850136 121199928	7100681	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOS	PFOS	Lin2	89635 2717920	151819 5225135	297271 11353754	657593 25454631	1411484	0.191 9.56	0.478 19.1	0.956 47.8	1.91 120	4.78

Curve Type Legend:
Lin1 = Linear 1/conc ISTD
Lin2 = Linear 1/conc^2 ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01016.d
Lims ID: STD0002
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 01-Sep-2016 10:55:16 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0002, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:51:58 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:40:40

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	4.276	-0.275		14238181	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.030	4.276	-0.246	1.007	259031	0.1904			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.071	5.308	-0.237	0.896	297189	0.1957			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.194	5.421	-0.227	0.853	126832	0.1776			
298.9 > 98.9	5.194	5.421	-0.227	0.853	45049		2.82(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.194	5.421	-0.227	0.853	126832	0.1776			
298.9 > 98.9	5.194	5.421	-0.227	0.853	45049		2.82(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.657	5.885	-0.228		10012322	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.648	5.885	-0.237	0.998	217036	0.1968			
313.0 > 118.6	5.743	5.885	-0.142	1.015	2343		92.63(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.092	6.310	-0.218		1470639	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.111	6.301	-0.190	1.003	116129	0.1818			
398.9 > 98.9	6.092	6.301	-0.209	1.000	51110		2.27(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.301	-0.190	1.003	116129	0.1818			
398.9 > 98.9	6.092	6.301	-0.209	1.000	51110		2.27(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.083	6.301	-0.218	0.944	281748	0.1941			
363.0 > 168.9	6.102	6.301	-0.199	0.947	59241		4.76(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									M
449.0 > 79.9	6.403	6.631	-0.228	0.954	85490	0.1842			M
449.0 > 98.9	6.432	6.631	-0.199	0.958	52026		1.64(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									M
449.0 > 79.9	6.403	6.631	-0.228	0.954	85490	0.1842			M
449.0 > 98.9	6.432	6.631	-0.199	0.958	52026		1.64(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.641	-0.199	1.000	275277	0.0183			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.641	-0.199		16072729	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.641	-0.199	1.000	454474	0.2054			
413.0 > 169.0	6.442	6.641	-0.199	1.000	111414		4.08(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.704	6.903	-0.199	0.999	89635	0.1938			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.894	-0.180		5160421	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.715	6.904	-0.189	1.000	67459	0.1943			
498.9 > 98.9	6.696	6.904	-0.208	0.997	43669		1.54(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.725	6.914	-0.189		12221855	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.725	6.914	-0.189	1.000	239678	0.1969			R
463.0 > 218.9	6.753	6.914	-0.161	1.004	46532		5.15(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.969	7.149	-0.180		11381922	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.979	7.149	-0.170	1.001	244510	0.2001			R
513.0 > 219.0	6.998	7.149	-0.151	1.004	25108		9.74(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.148	7.328	-0.180	1.065	134803	0.2074			
598.9 > 99.0	7.167	7.328	-0.161	1.067	17739		7.60(2.84-2.84)		
25 Perfluorodecane Sulfonate									R
598.9 > 79.9	7.148	7.328	-0.180	1.065	134803	0.2074			R
598.9 > 99.0	7.167	7.328	-0.161	1.067	17739		7.60(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.347	-0.161	1.001	249219	0.2038			R
563.0 > 268.9	7.196	7.347	-0.151	1.003	33490		7.44(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.177	7.357	-0.180		6692250	10.0			
29 Perfluorododecanoic acid									R
613.0 > 568.9	7.375	7.526	-0.151	1.001	276106	0.1992			R
613.0 > 168.9	7.356	7.526	-0.170	0.999	14735		18.74(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.526	-0.161		14267832	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.516	7.668	-0.152	1.021	458869	0.2054			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.700	-0.189	0.999	398980	0.2018			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.699	-0.180		17648728	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.639	7.800	-0.161	1.037	351893	0.2070			
712.9 > 169.0	7.649	7.800	-0.151	1.038	82285		4.28(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	10.00	Units: uL

Report Date: 02-Sep-2016 11:51:59 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01016.d

Injection Date: 01-Sep-2016 10:55:16 Instrument ID: LC_LCMS5

Lims ID: STD0002

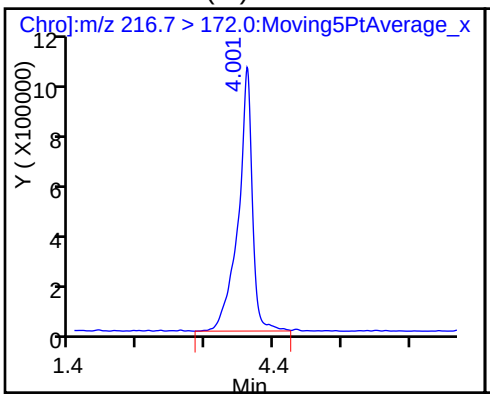
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

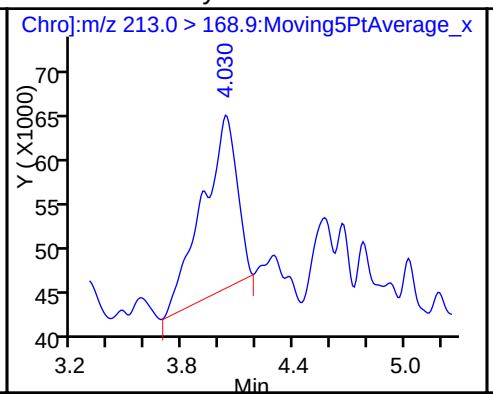
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

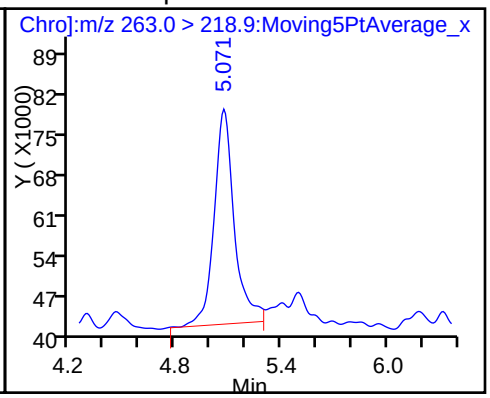
* 1 13C4 PFBA (IS)



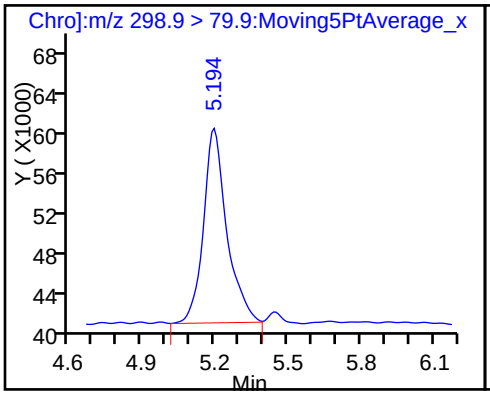
2 Perfluorobutyric acid



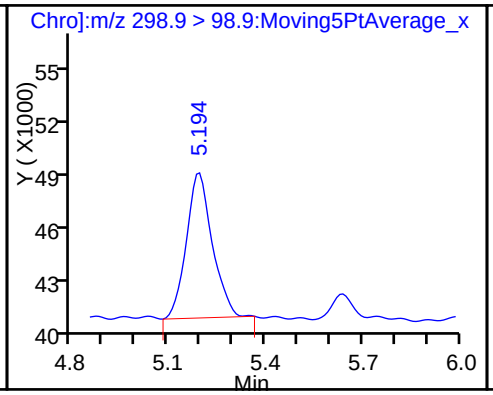
3 Perfluoropentanoic acid



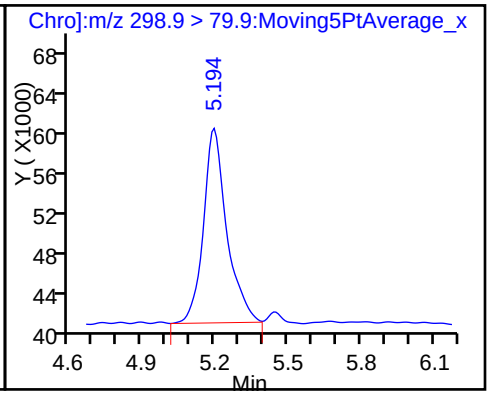
4 Perfluorobutane Sulfonate



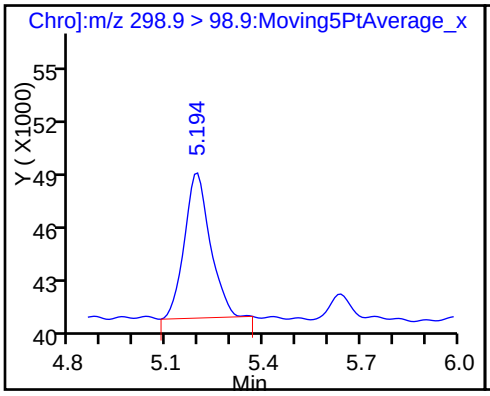
4 Perfluorobutane Sulfonate



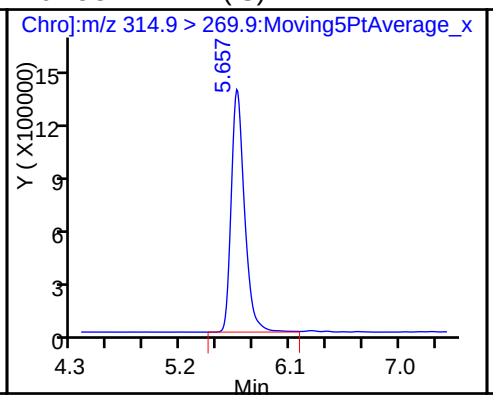
5 Perfluorobutanesulfonic acid



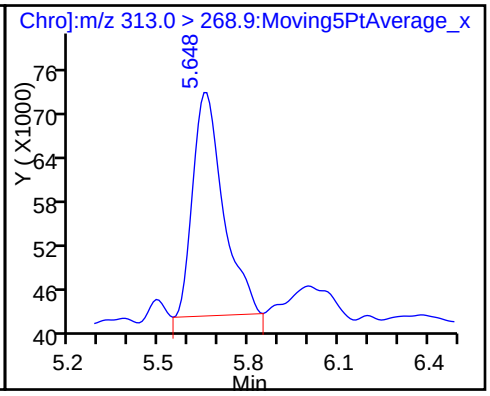
5 Perfluorobutanesulfonic acid



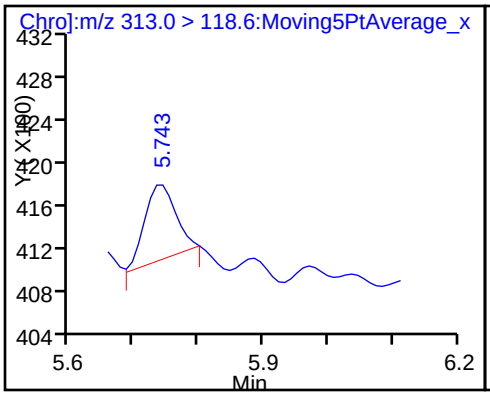
* 6 13C2 PFHxA (IS)



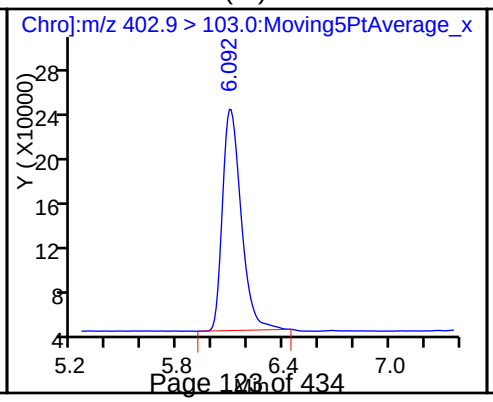
7 Perfluorohexanoic acid



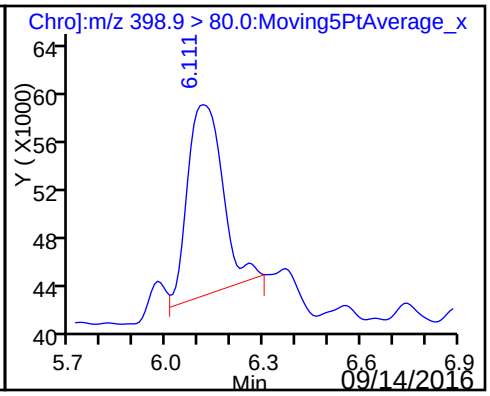
7 Perfluorohexanoic acid



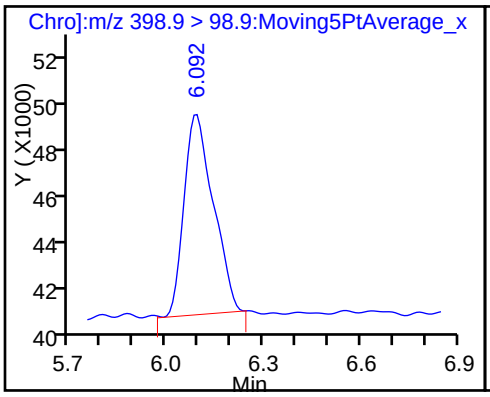
* 9 18O2 PFHxS (IS)



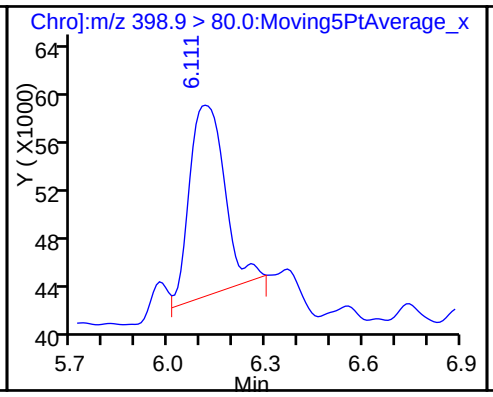
10 Perfluorohexane Sulfonate



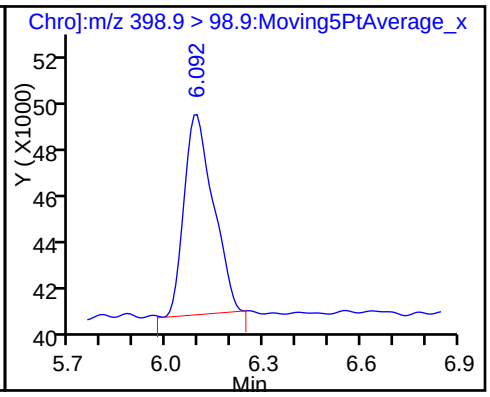
10 Perfluorohexane Sulfonate



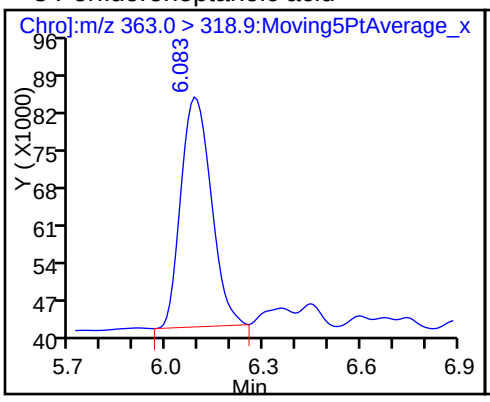
11 Perfluorohexanesulfonic acid



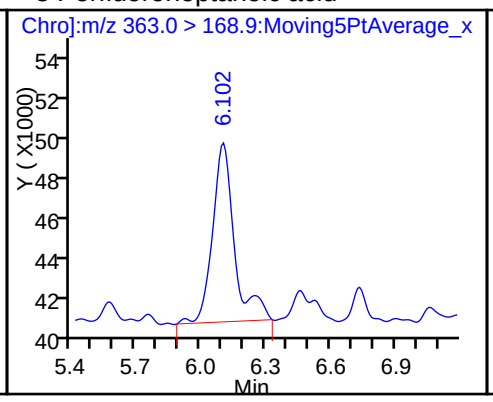
11 Perfluorohexanesulfonic acid



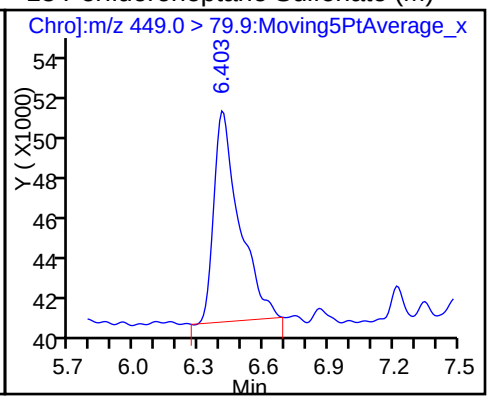
8 Perfluoroheptanoic acid



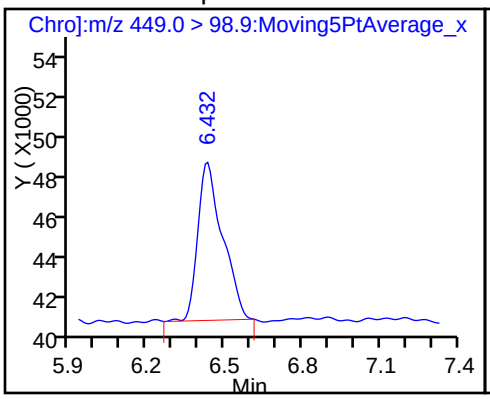
8 Perfluoroheptanoic acid



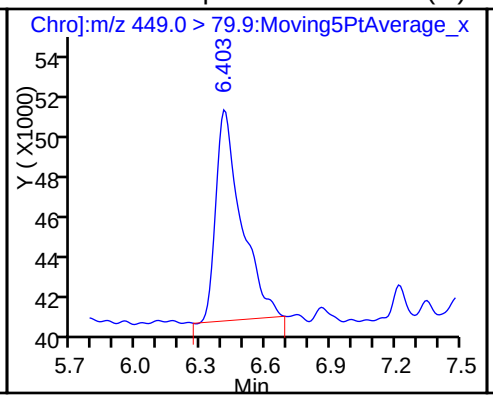
13 Perfluoroheptane Sulfonate (M)



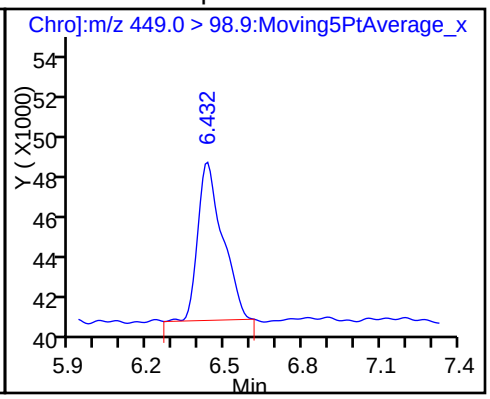
13 Perfluoroheptane Sulfonate



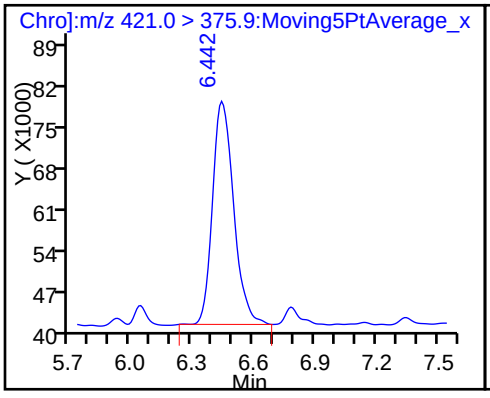
12 Perfluoroheptanesulfonic Acid (M)



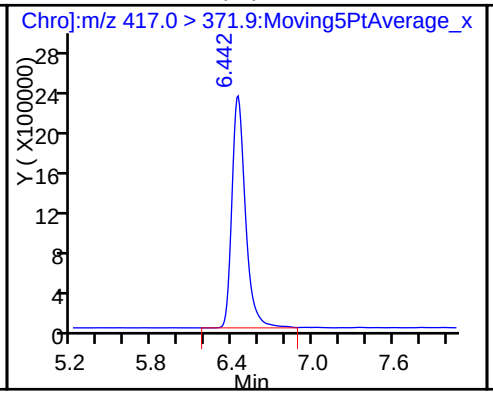
12 Perfluoroheptanesulfonic Acid



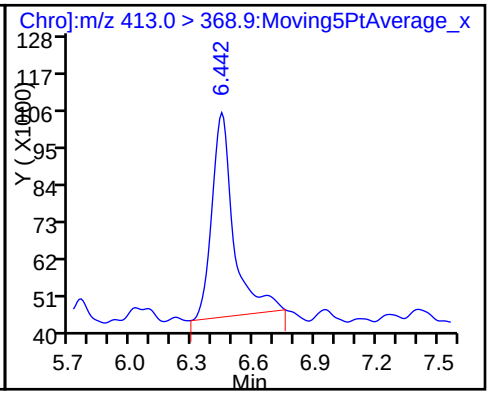
$ 14 13C8 PFOA



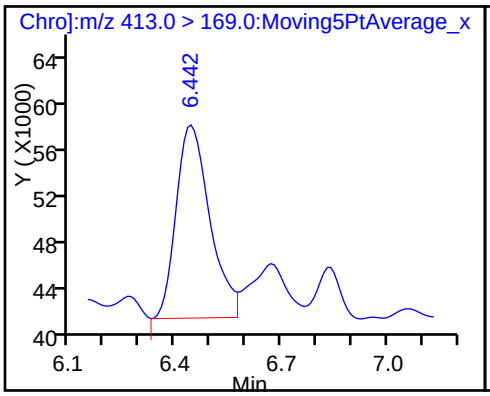
* 15 13C4 PFOA (IS)



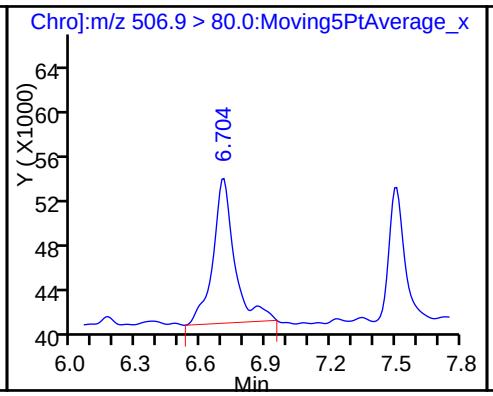
16 Perfluorooctanoic acid



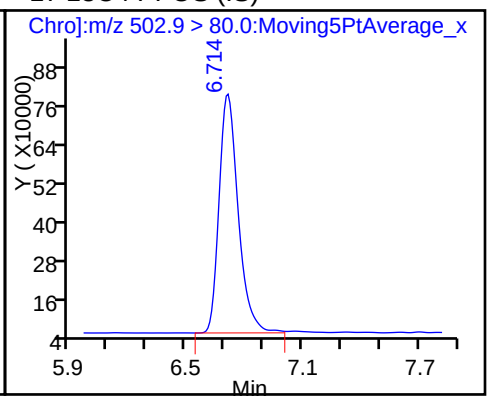
16 Perfluorooctanoic acid



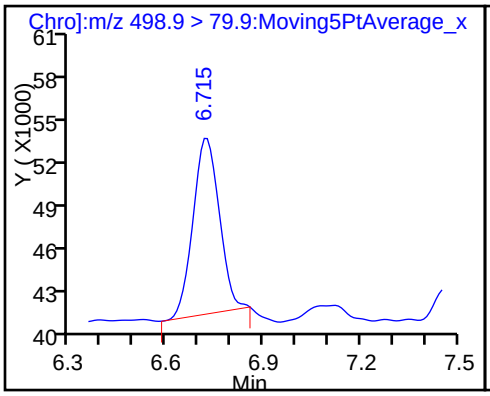
$ 18 13C8 PFOS



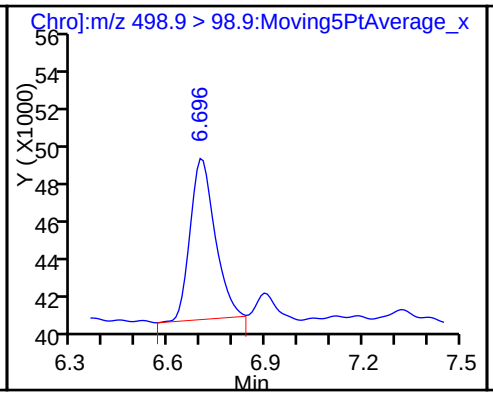
* 17 13C4 PFOS (IS)



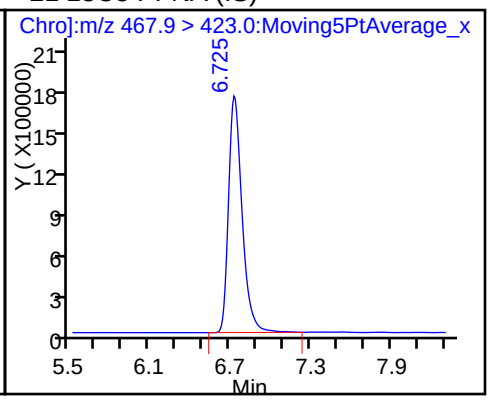
19 Perfluorooctane sulfonic acid



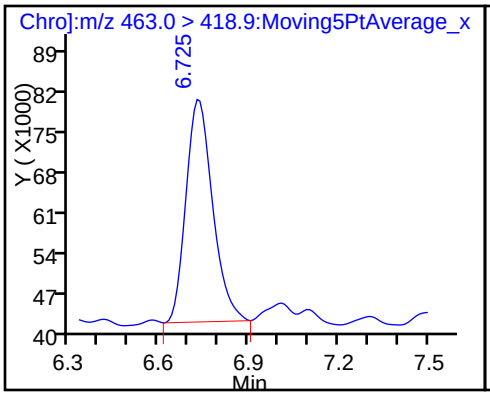
19 Perfluorooctane sulfonic acid



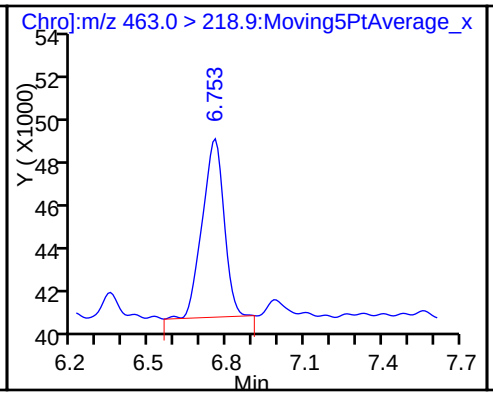
* 21 13C5 PFNA (IS)



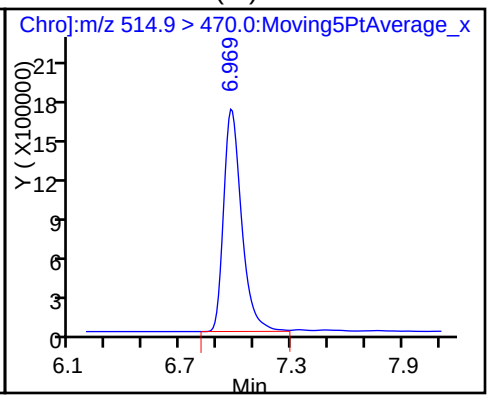
20 Perfluorononanoic acid



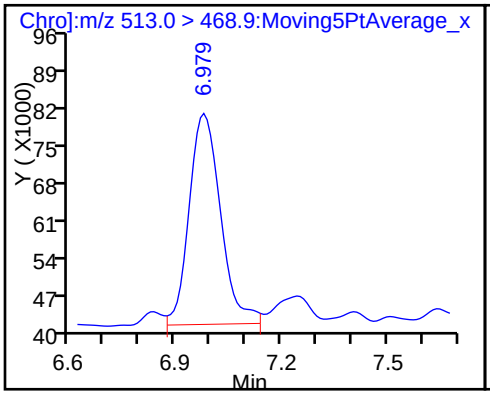
20 Perfluorononanoic acid



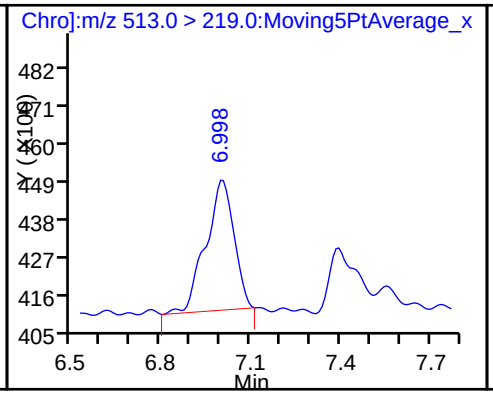
* 22 13C2 PFDA (IS)



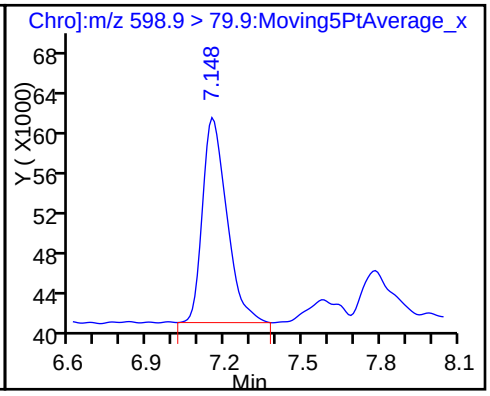
23 Perfluorodecanoic acid



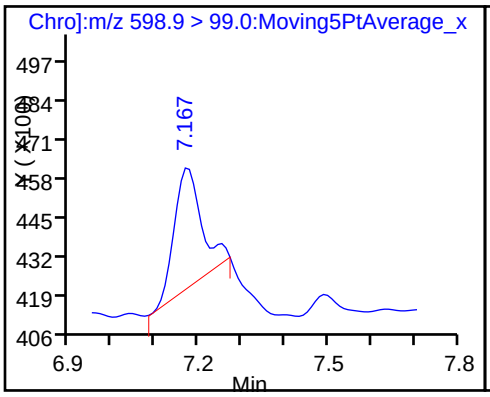
23 Perfluorodecanoic acid



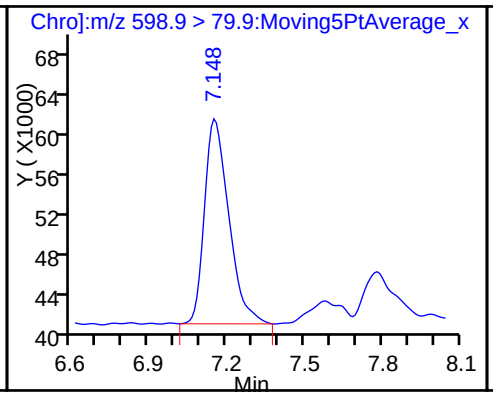
24 Perfluorodecane Sulfonic acid



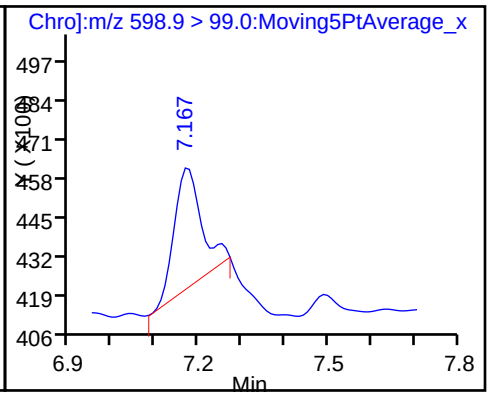
24 Perfluorodecane Sulfonic acid



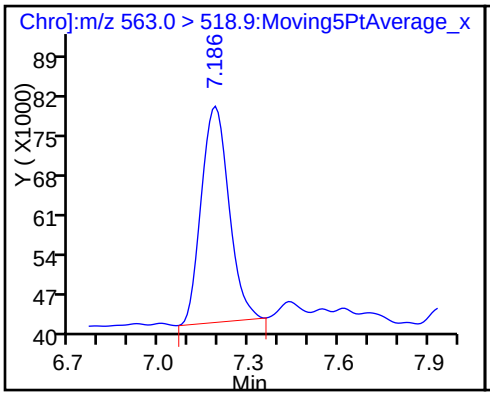
25 Perfluorodecane Sulfonate



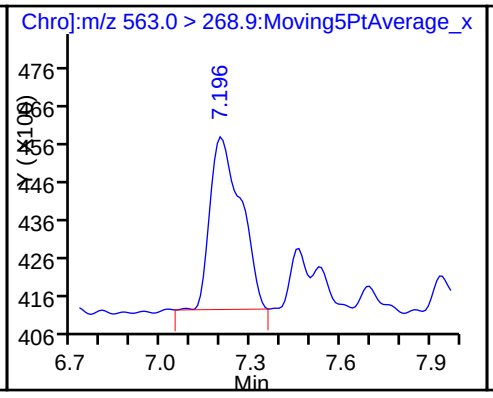
25 Perfluorodecane Sulfonate



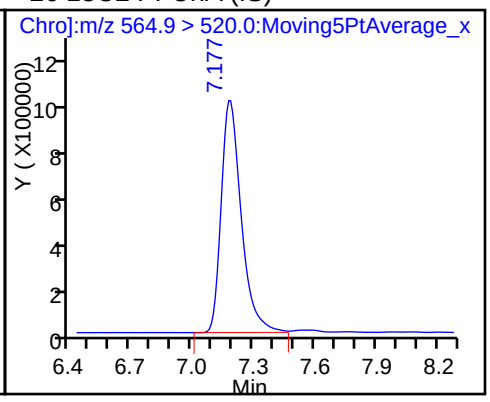
27 Perfluoroundecanoic acid



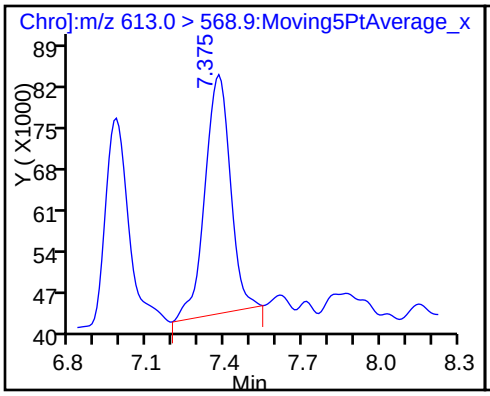
27 Perfluoroundecanoic acid



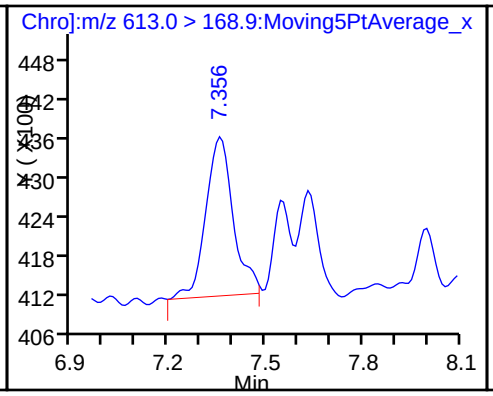
* 26 13C2 PFUnA (IS)



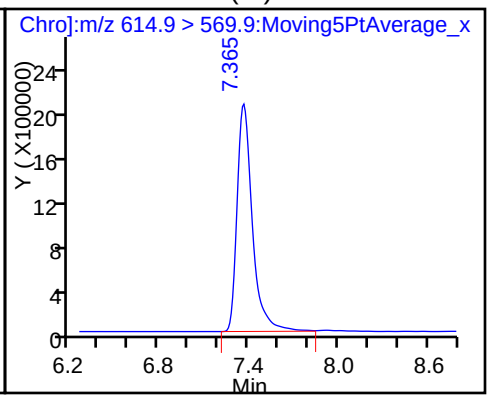
29 Perfluorododecanoic acid



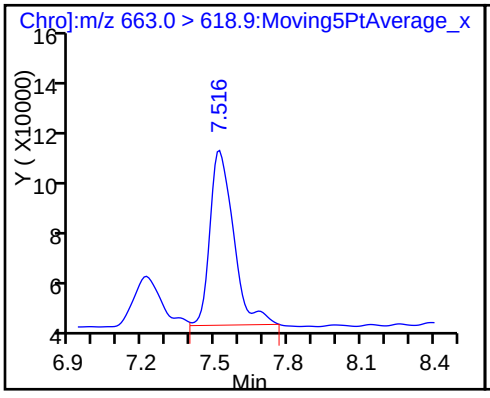
29 Perfluorododecanoic acid



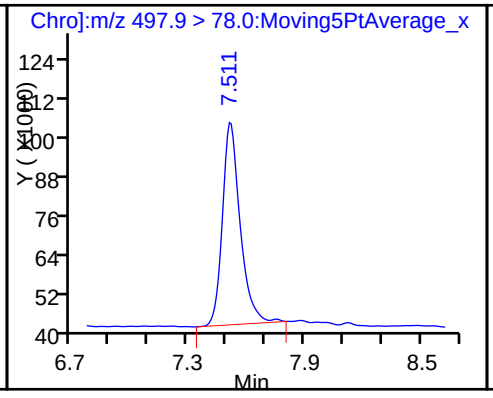
* 28 13C2 PFDoA (IS)



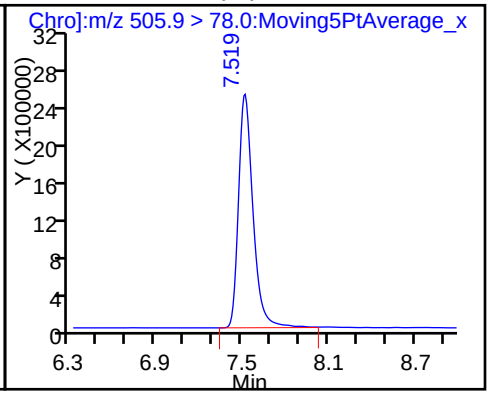
30 Perfluorotridecanoic acid



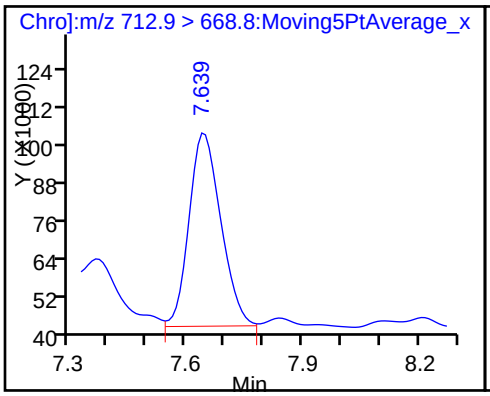
32 Perfluorooctane Sulfonamide



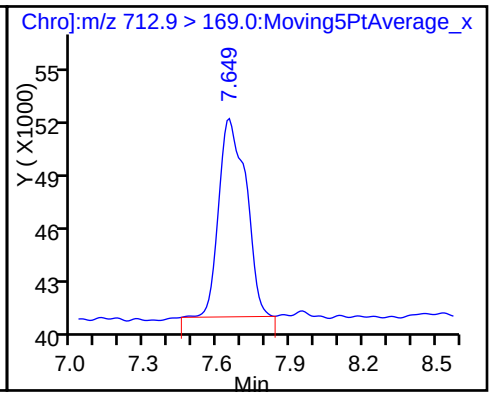
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



Manual Integration/User Assign Peak Report

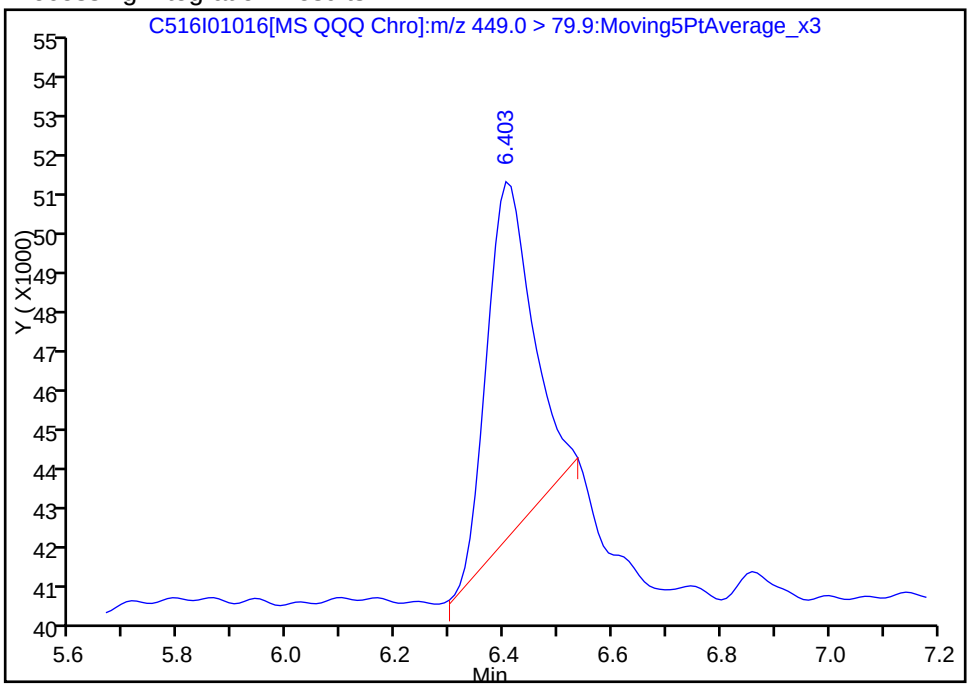
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01016.d				
Injection Date:	01-Sep-2016 10:55:16	Instrument ID:	LC_LCMS5		
Lims ID:	STD0002				
Client ID:					
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

13 Perfluoroheptane Sulfonate, CAS: STL01836

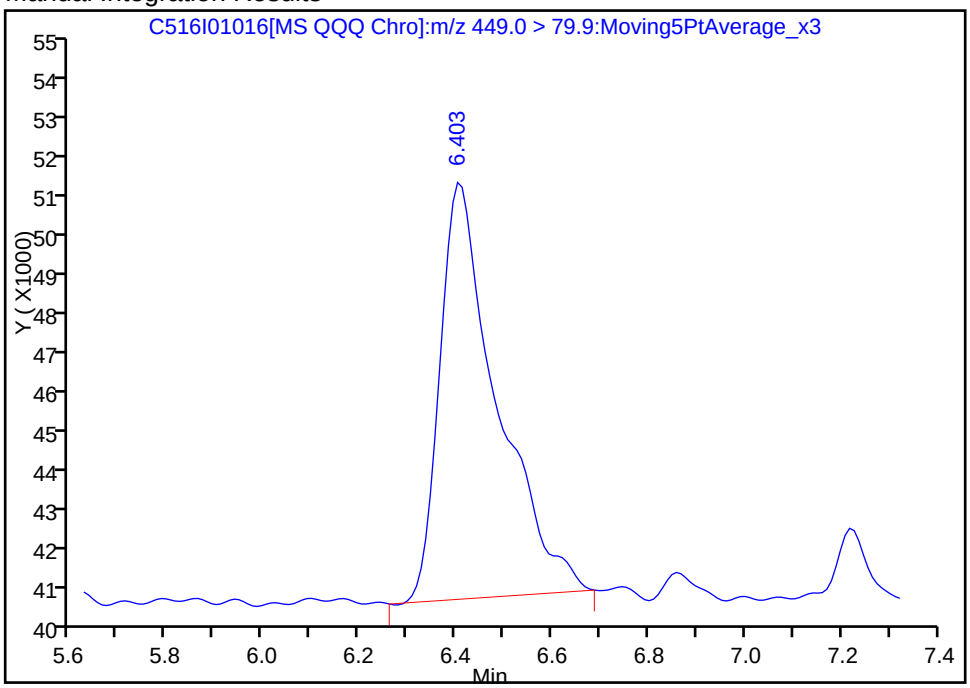
Processing Integration Results

RT: 6.40
Area: 51838
Amount: 0.176553
Amount Units: ug/L



Manual Integration Results

RT: 6.40
Area: 85490
Amount: 0.184250
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 10:40:40
Audit Action: Manually Integrated
Audit Reason: Baseline

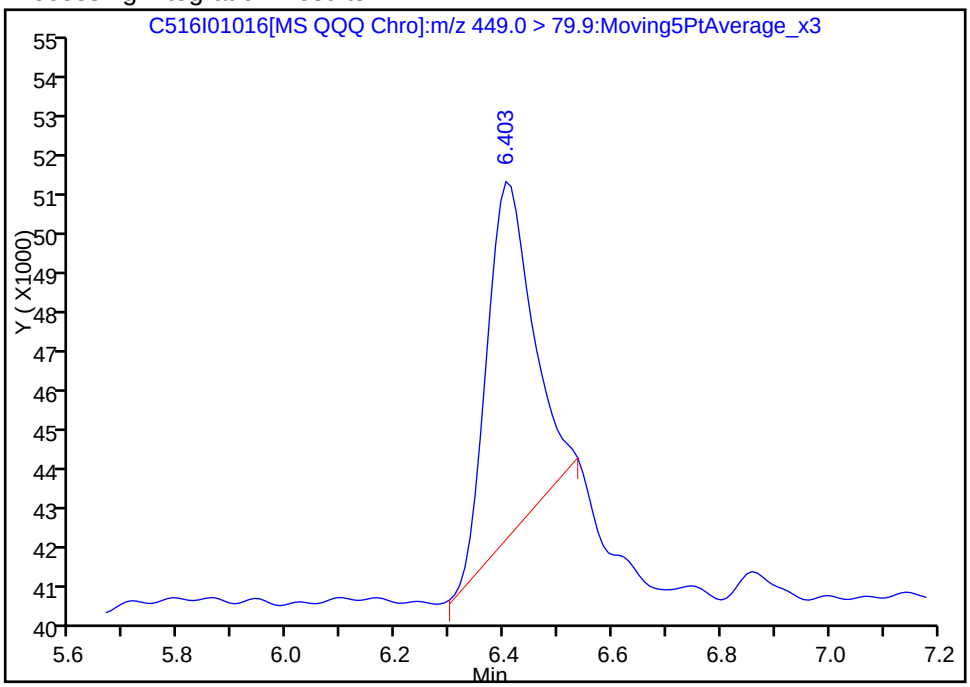
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01016.d
Injection Date: 01-Sep-2016 10:55:16 Instrument ID: LC_LCMS5
Lims ID: STD0002
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

12 Perfluoroheptanesulfonic Acid, CAS: 375-92-8

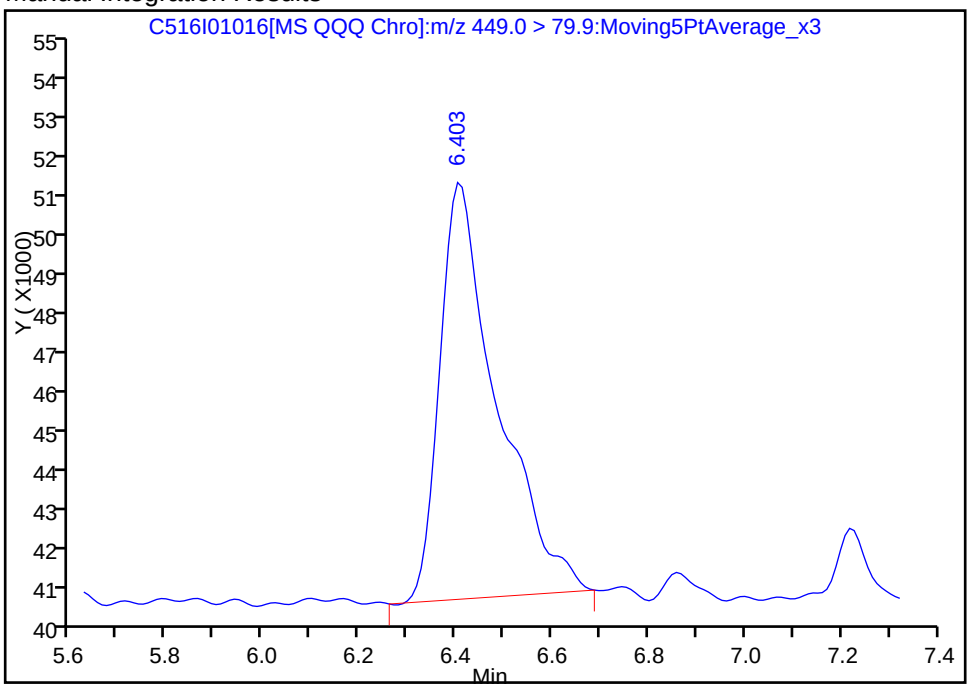
Processing Integration Results

RT: 6.40
Area: 51838
Amount: 0.176553
Amount Units: ug/L



Manual Integration Results

RT: 6.40
Area: 85490
Amount: 0.184250
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 10:40:40
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01017.d
Lims ID: STD0005
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 01-Sep-2016 11:07:35 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0005, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:03 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:40:56

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.010	4.276	-0.266		13102779	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.001	4.276	-0.275	0.998	712107	0.5653			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.090	5.308	-0.218	0.897	640986	0.5429			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.421	-0.208	0.853	252687	0.3850			
298.9 > 98.9	5.222	5.421	-0.199	0.855	84455		2.99(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.421	-0.208	0.853	252687	0.3850			
298.9 > 98.9	5.222	5.421	-0.199	0.855	84455		2.99(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.885	-0.209		9533787	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.885	-0.208	1.000	469372	0.5086			
313.0 > 118.6	5.667	5.885	-0.218	0.998	5271		89.05(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.301	-0.180	1.002	285485	0.4837			R
398.9 > 98.9	6.111	6.301	-0.190	1.000	105965		2.69(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.301	-0.180	1.002	285485	0.4837			
398.9 > 98.9	6.111	6.301	-0.190	1.000	105965		2.69(1.85-1.85)		
8 Perfluoroheptanoic acid									R
363.0 > 318.9	6.112	6.301	-0.189	0.947	628524	0.4945			R
363.0 > 168.9	6.102	6.301	-0.199	0.946	193719		3.24(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.310	-0.199		1382618	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.432	6.631	-0.199	0.957	248542	0.4894			
449.0 > 98.9	6.422	6.631	-0.209	0.955	89910		2.76(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.432	6.631	-0.199	0.957	248542	0.4894			
449.0 > 98.9	6.422	6.631	-0.209	0.955	89910		2.76(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.451	6.641	-0.190	1.000	765475	0.5369			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.641	-0.190		14714193	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.641	-0.180	1.002	741430	0.4332			
413.0 > 169.0	6.452	6.641	-0.189	1.000	250920		2.95(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.894	-0.170		4806425	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.903	-0.180	1.000	151819	0.4327			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.734	6.904	-0.170	1.001	186796	0.4344			
498.9 > 98.9	6.705	6.904	-0.199	0.997	91945		2.03(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.914	-0.170		11641683	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.914	-0.170	1.000	605760	0.5031			
463.0 > 218.9	6.725	6.914	-0.189	0.997	76667		7.90(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	7.149	-0.171		11230363	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.979	7.149	-0.170	1.000	519575	0.4619			R
513.0 > 219.0	6.979	7.149	-0.170	1.000	57823		8.99(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.328	-0.161	1.066	219098	0.3957			
598.9 > 99.0	7.176	7.328	-0.152	1.067	69579		3.15(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.328	-0.161	1.066	219098	0.3957			
598.9 > 99.0	7.176	7.328	-0.152	1.067	69579		3.15(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.347	-0.161	1.000	478266	0.4554			R
563.0 > 268.9	7.196	7.347	-0.151	1.001	61710		7.75(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.357	-0.171		6865207	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.526	-0.161		14606940	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.526	-0.161	1.000	694761	0.4895			
613.0 > 168.9	7.394	7.526	-0.132	1.004	69726		9.96(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.535	7.668	-0.133	1.023	906994	0.4432			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.699	-0.180		16964643	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.700	-0.180	1.000	861583	0.4749			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.658	7.800	-0.142	1.040	695346	0.4441			
712.9 > 169.0	7.658	7.800	-0.142	1.040	99455		6.99(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	25.00	Units: uL

Report Date: 02-Sep-2016 11:52:04 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01017.d

Injection Date: 01-Sep-2016 11:07:35 Instrument ID: LC_LCMS5

Lims ID: STD0005

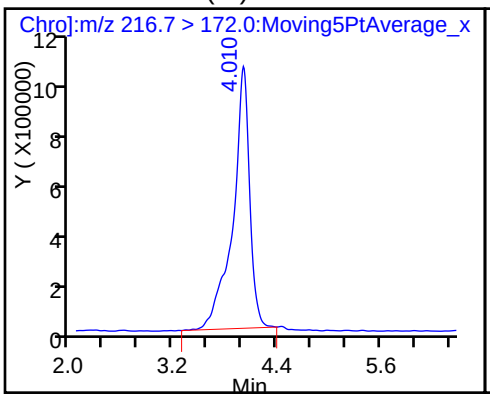
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4

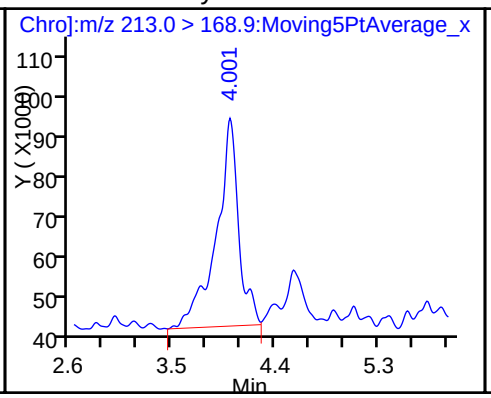
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

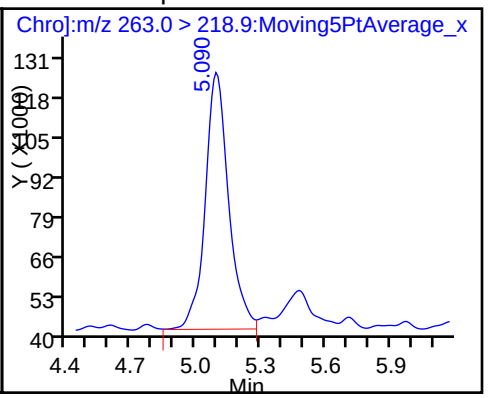
* 1 13C4 PFBA (IS)



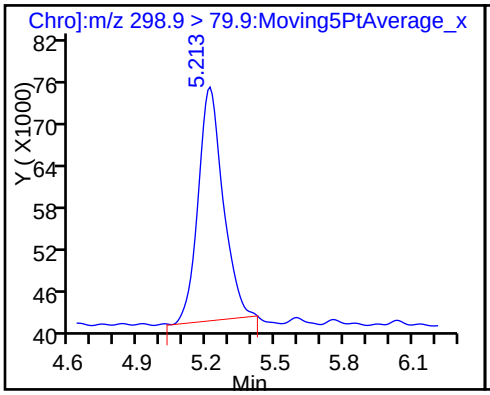
2 Perfluorobutyric acid



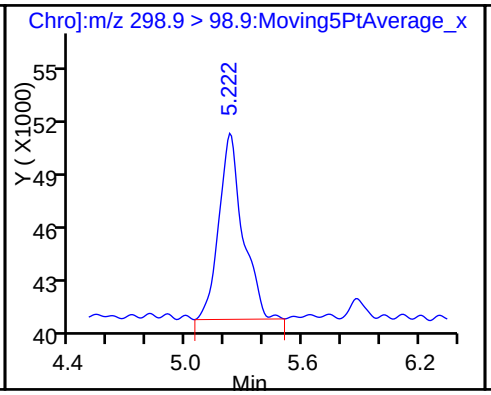
3 Perfluoropentanoic acid



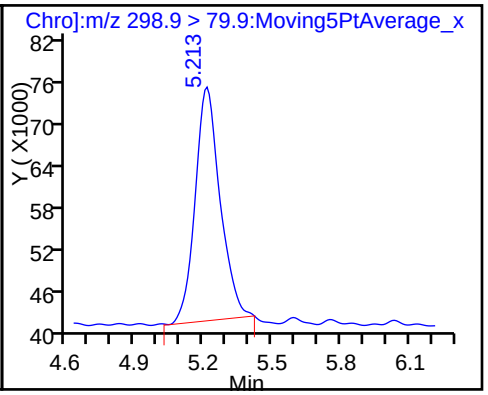
4 Perfluorobutane Sulfonate



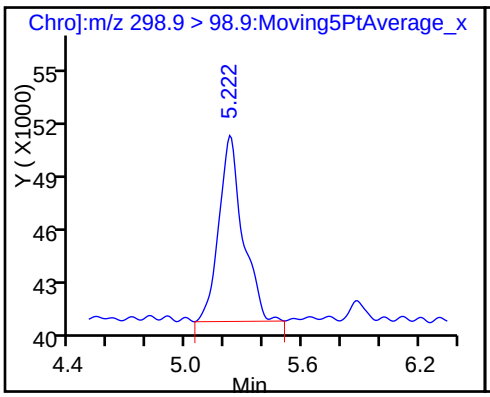
4 Perfluorobutane Sulfonate



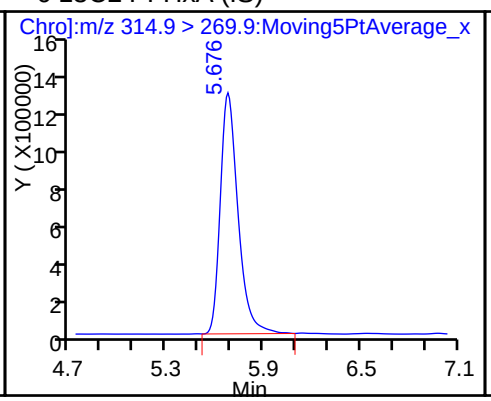
5 Perfluorobutanesulfonic acid



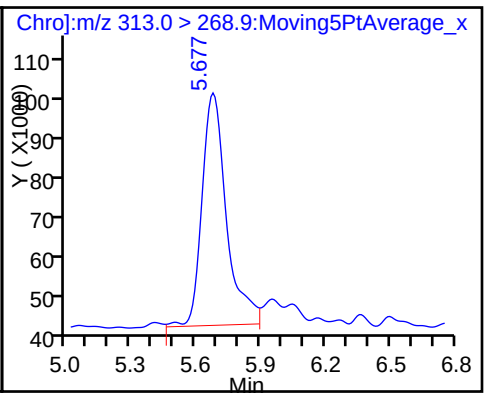
5 Perfluorobutanesulfonic acid



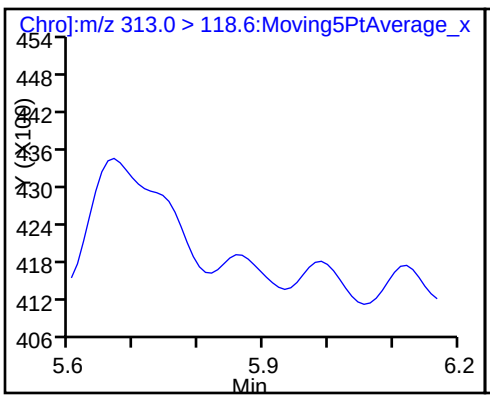
* 6 13C2 PFHxA (IS)



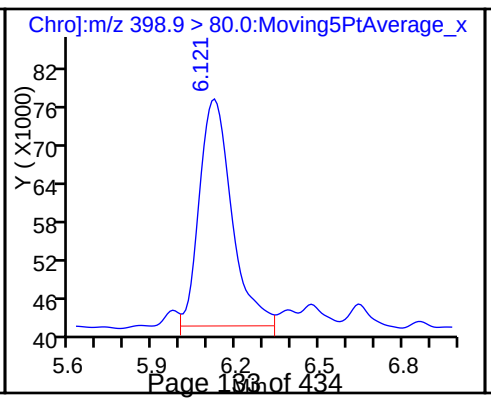
7 Perfluorohexanoic acid



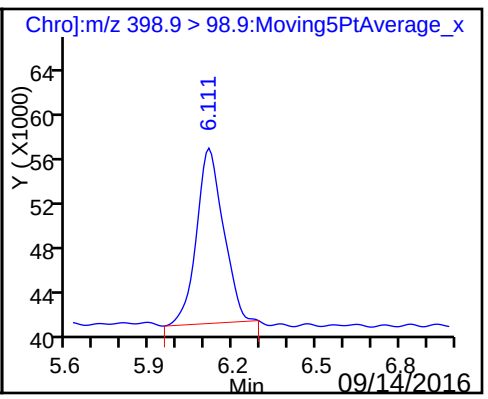
7 Perfluorohexanoic acid



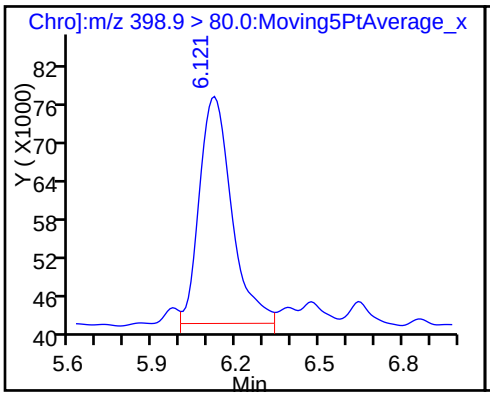
10 Perfluorohexane Sulfonate



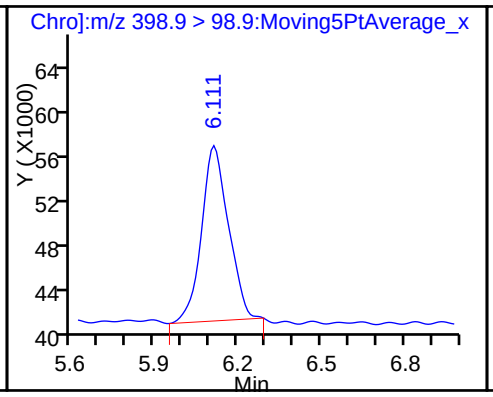
10 Perfluorohexane Sulfonate



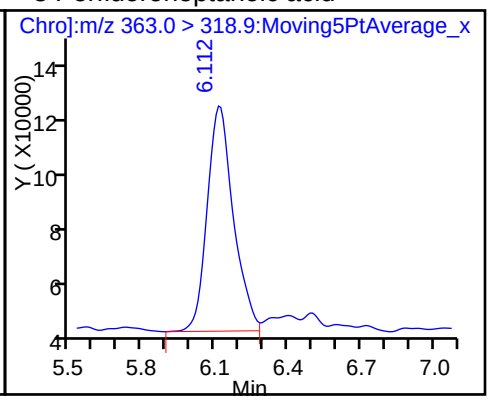
11 Perfluorohexanesulfonic acid



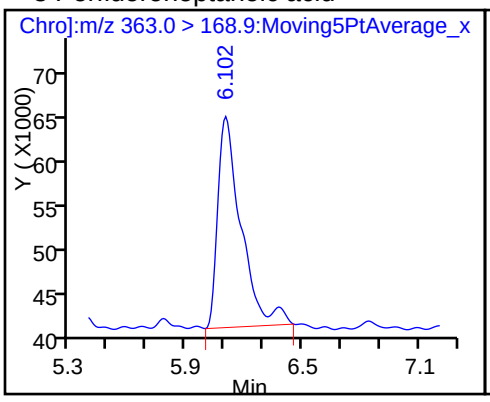
11 Perfluorohexanesulfonic acid



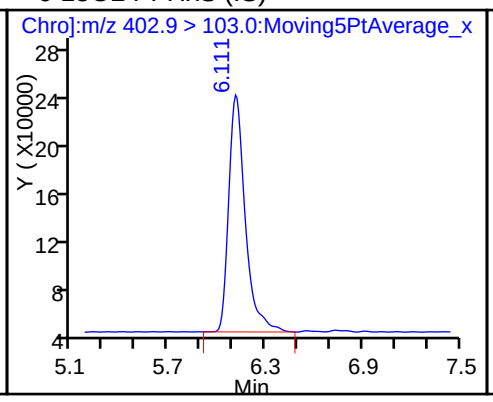
8 Perfluoroheptanoic acid



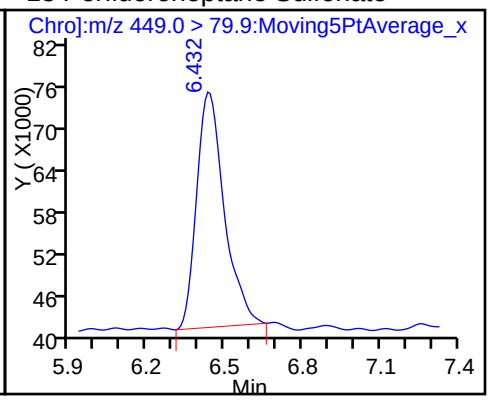
8 Perfluoroheptanoic acid



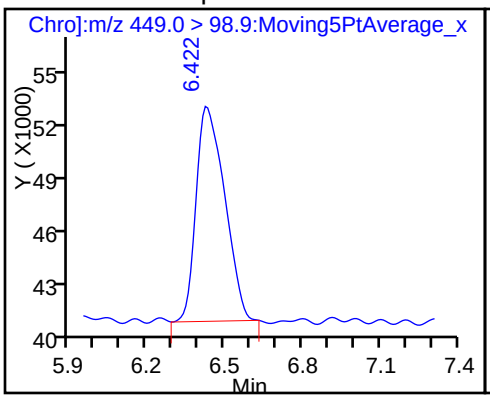
* 9 18O2 PFHxS (IS)



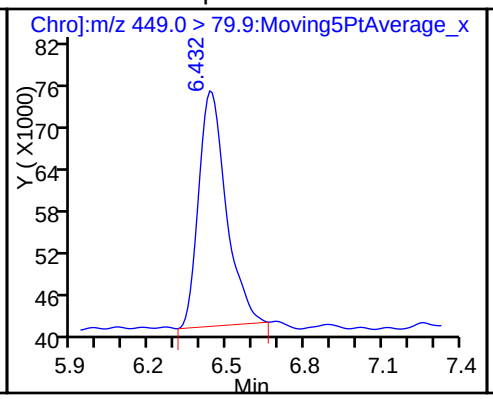
13 Perfluoroheptane Sulfonate



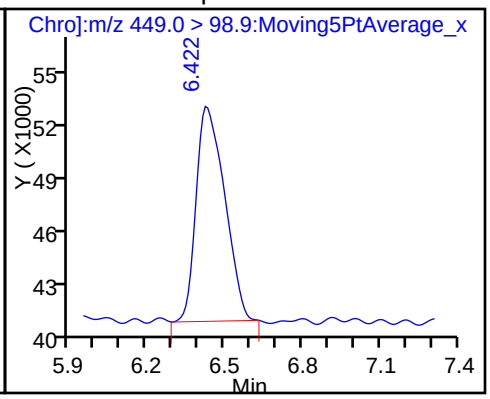
13 Perfluoroheptane Sulfonate



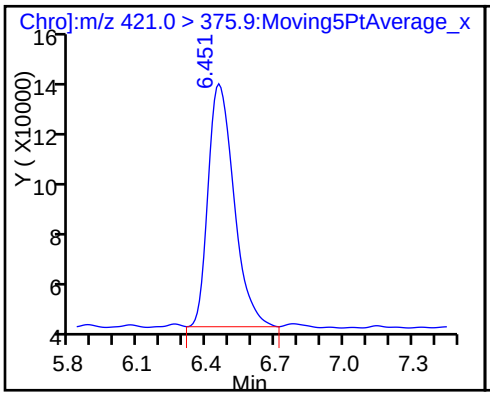
12 Perfluoroheptanesulfonic Acid



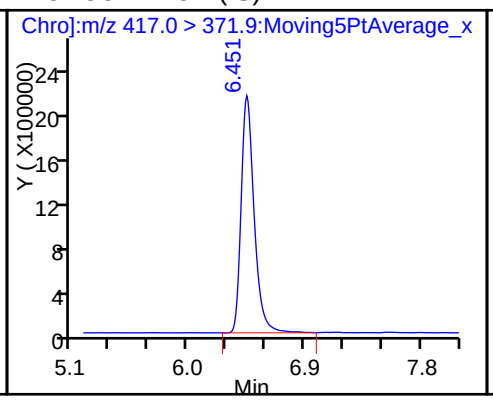
12 Perfluoroheptanesulfonic Acid



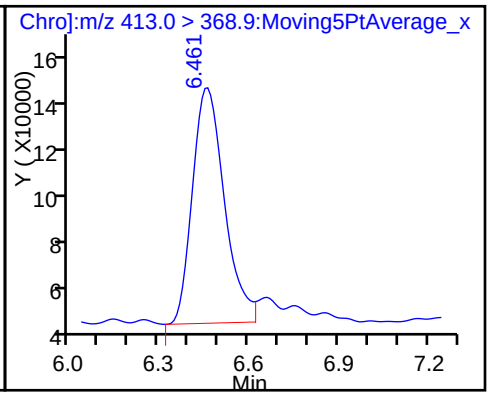
$ 14 13C8 PFOA



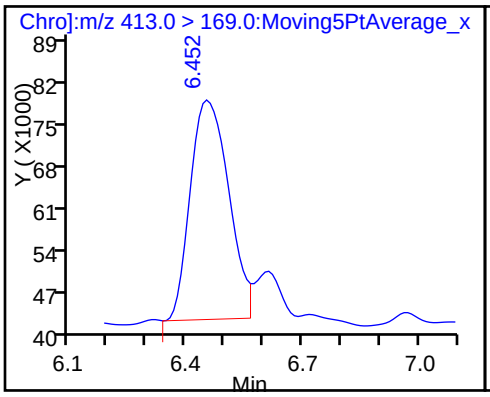
* 15 13C4 PFOA (IS)



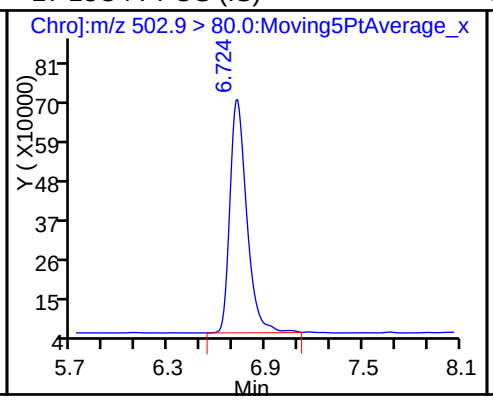
16 Perfluorooctanoic acid



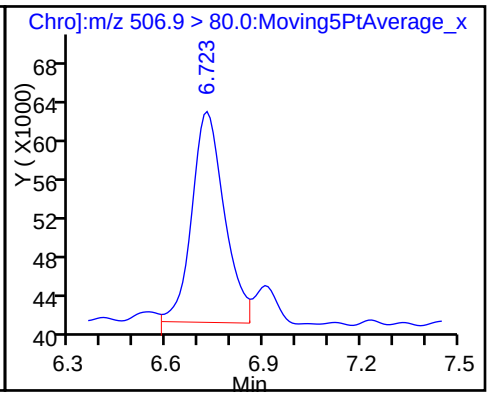
16 Perfluorooctanoic acid



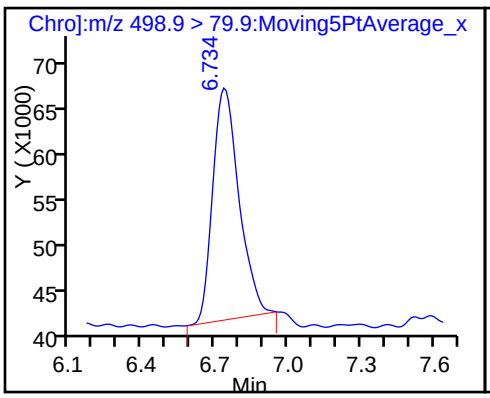
* 17 13C4 PFOS (IS)



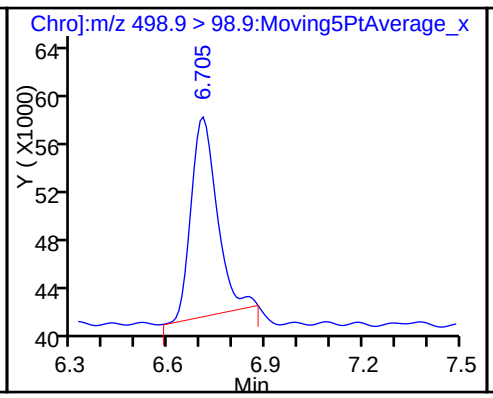
$ 18 13C8 PFOS



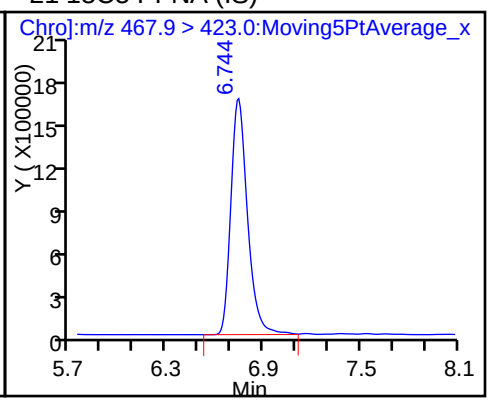
19 Perfluorooctane sulfonic acid



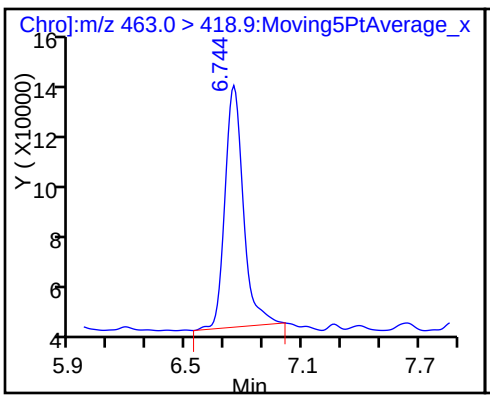
19 Perfluorooctane sulfonic acid



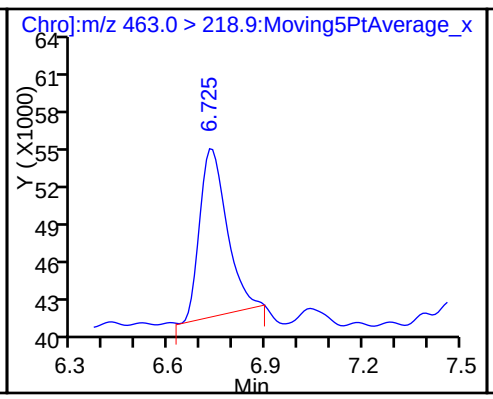
* 21 13C5 PFNA (IS)



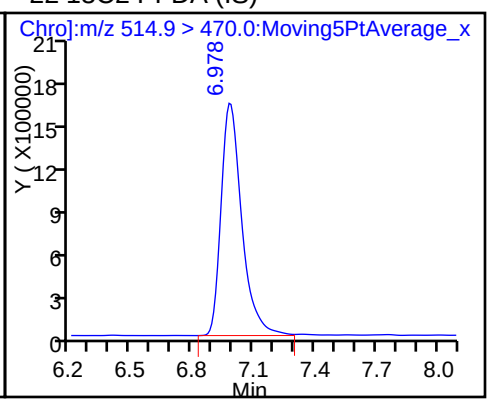
20 Perfluorononanoic acid



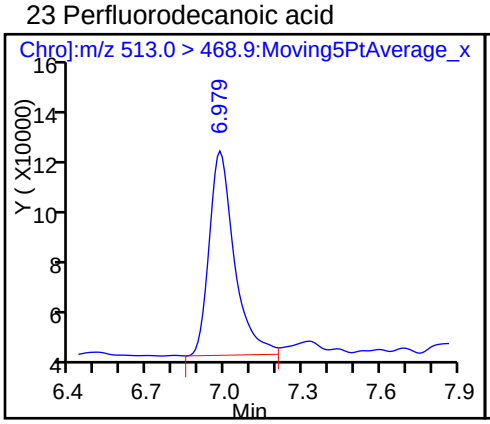
20 Perfluorononanoic acid



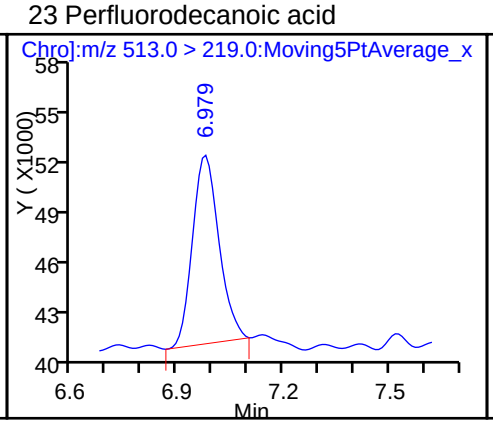
* 22 13C2 PFDA (IS)



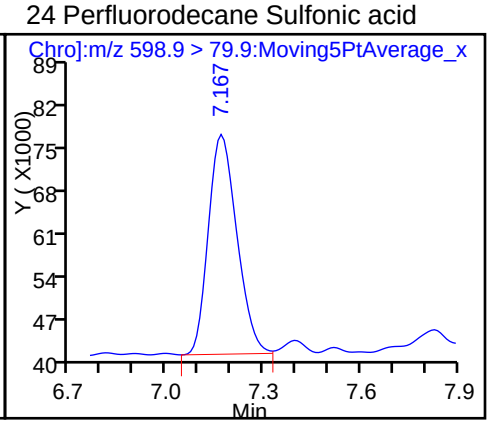
23 Perfluorodecanoic acid



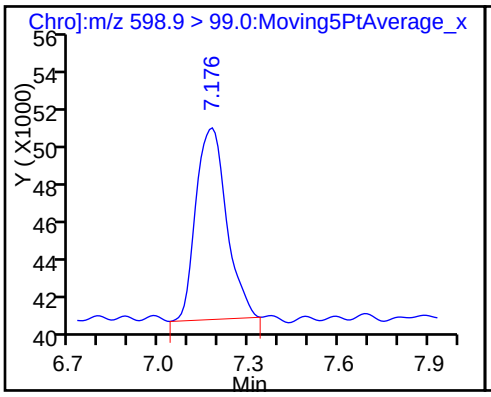
23 Perfluorodecanoic acid



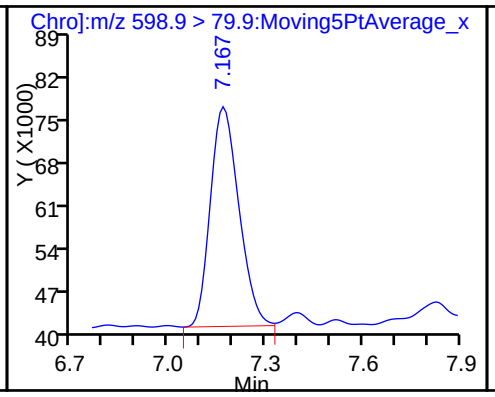
24 Perfluorodecane Sulfonic acid



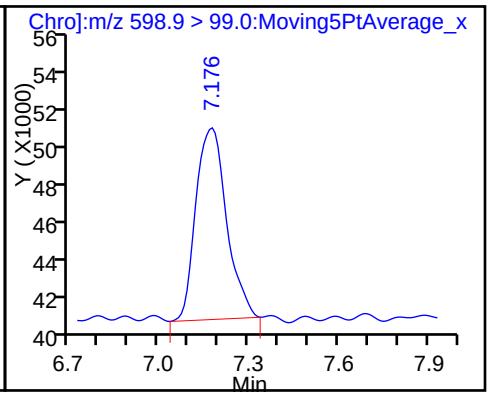
24 Perfluorodecane Sulfonic acid



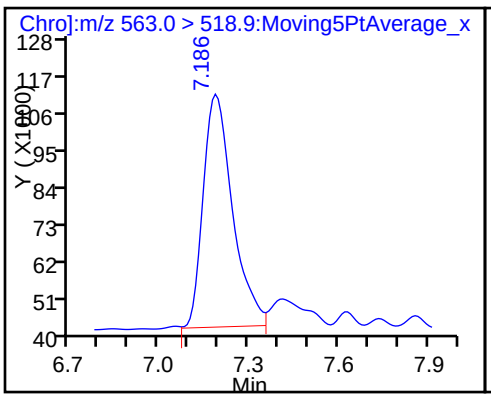
25 Perfluorodecane Sulfonate



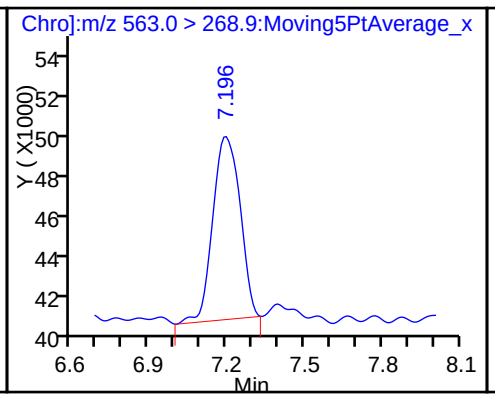
25 Perfluorodecane Sulfonate



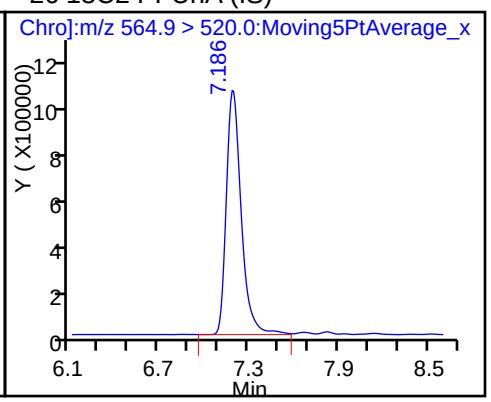
27 Perfluoroundecanoic acid



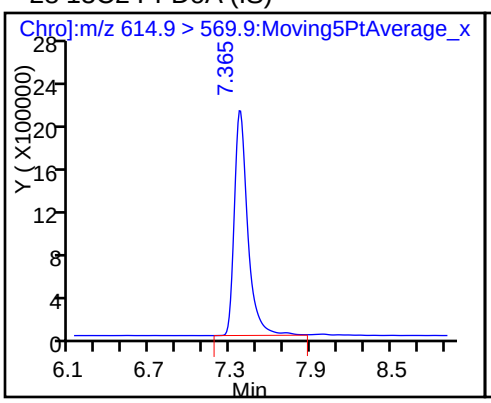
27 Perfluoroundecanoic acid



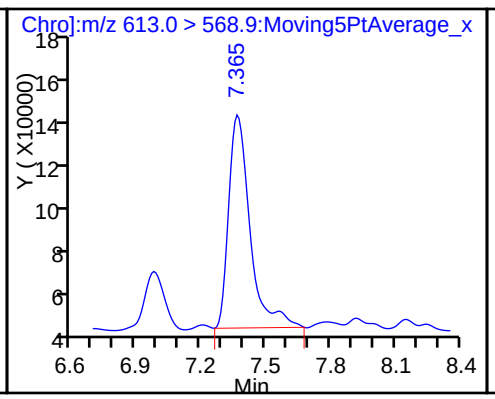
* 26 13C2 PFUnA (IS)



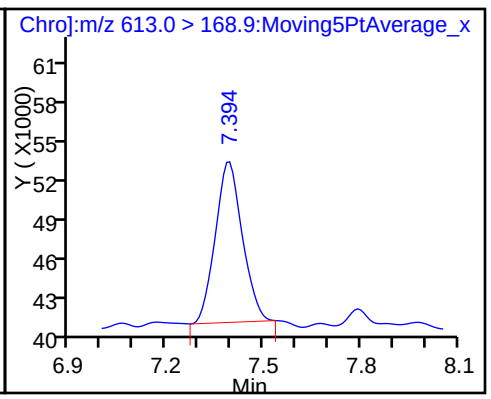
* 28 13C2 PFDoA (IS)



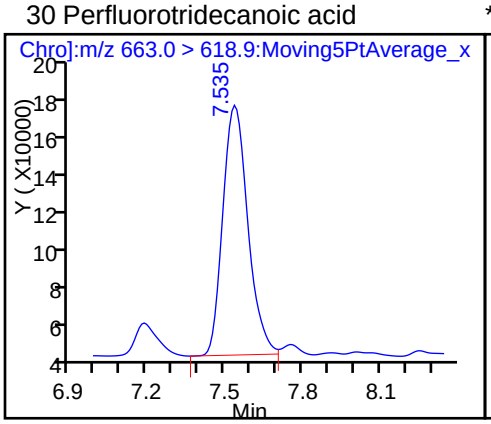
29 Perfluorododecanoic acid



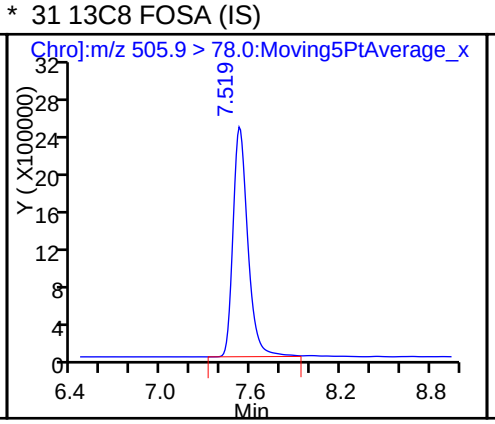
29 Perfluorododecanoic acid



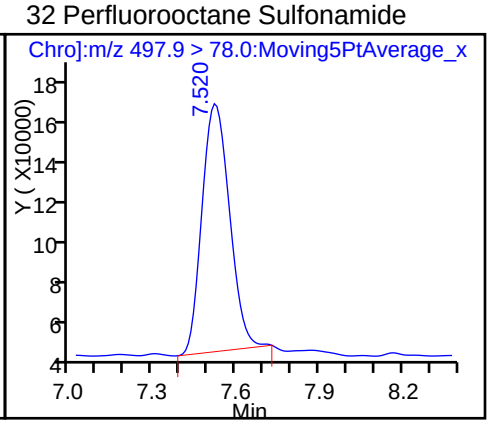
30 Perfluorotridecanoic acid



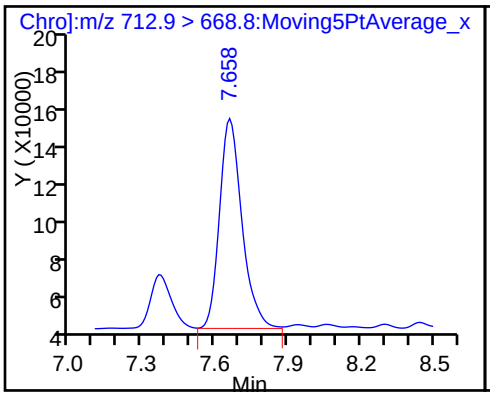
* 31 13C8 FOSA (IS)



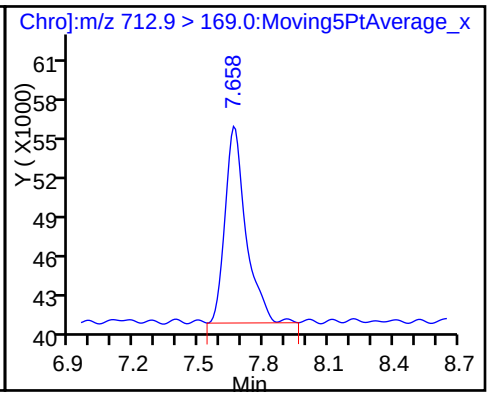
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01018.d
Lims ID: STD0010
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 01-Sep-2016 11:19:54 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0010, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:08 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:41:13

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	4.276	-0.275		13414046	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.020	4.276	-0.256	1.005	1265156	0.9798			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.081	5.308	-0.227	0.897	1071032	0.9496			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.203	5.421	-0.218	0.851	679417	1.13			R
298.9 > 98.9	5.194	5.421	-0.227	0.850	163746		4.15(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.203	5.421	-0.218	0.851	679417	1.13			
298.9 > 98.9	5.194	5.421	-0.227	0.850	163746		4.15(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.667	5.885	-0.218		9629040	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.667	5.885	-0.218	1.000	921156	1.03			
313.0 > 118.6	5.648	5.885	-0.237	0.997	33579		27.43(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.301	-0.190	1.000	588104	1.08			R
398.9 > 98.9	6.121	6.301	-0.180	1.002	196665		2.99(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.301	-0.190	1.000	588104	1.08			
398.9 > 98.9	6.121	6.301	-0.180	1.002	196665		2.99(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.301	-0.199	0.947	1454204	1.13			
363.0 > 168.9	6.102	6.301	-0.199	0.947	316681		4.59(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.310	-0.199		1285155	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.631	-0.190	0.958	521954	1.05			
449.0 > 98.9	6.441	6.631	-0.190	0.958	126728		4.12(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.631	-0.190	0.958	521954	1.05			
449.0 > 98.9	6.441	6.631	-0.190	0.958	126728		4.12(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.641	-0.199	1.000	1210205	0.9547			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.641	-0.199		15102988	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.641	-0.199	1.000	1671542	1.05			
413.0 > 169.0	6.452	6.641	-0.189	1.002	553449		3.02(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.894	-0.170		4507368	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.903	-0.180	1.000	297271	1.01			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.904	-0.189	0.999	454948	1.01			R
498.9 > 98.9	6.715	6.904	-0.189	0.999	132448		3.43(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.914	-0.180		11597515	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.914	-0.180	1.000	1260645	1.04			
463.0 > 218.9	6.744	6.914	-0.170	1.001	133894		9.42(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	7.149	-0.161		10724470	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.979	7.149	-0.170	0.999	1147452	1.10			
513.0 > 219.0	6.979	7.149	-0.170	0.999	99662		11.51(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.328	-0.161	1.066	463863	0.9506			
598.9 > 99.0	7.167	7.328	-0.161	1.066	142806		3.25(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.328	-0.161	1.066	463863	0.9506			
598.9 > 99.0	7.167	7.328	-0.161	1.066	142806		3.25(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.196	7.347	-0.151	1.000	997089	1.07			R
563.0 > 268.9	7.186	7.347	-0.161	0.999	119149		8.37(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.196	7.357	-0.161		6708290	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.375	7.526	-0.151		14070682	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.526	-0.161	0.999	1440999	1.05			
613.0 > 168.9	7.365	7.526	-0.161	0.999	145760		9.89(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.526	7.668	-0.142	1.021	2002045	1.08			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.699	-0.170		16399751	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.700	-0.180	0.999	1815022	1.06			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.658	7.800	-0.142	1.038	1458639	1.02			
712.9 > 169.0	7.668	7.800	-0.132	1.040	221447		6.59(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	50.00	Units: uL

Report Date: 02-Sep-2016 11:52:09 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01018.d

Injection Date: 01-Sep-2016 11:19:54 Instrument ID: LC_LCMS5

Lims ID: STD0010

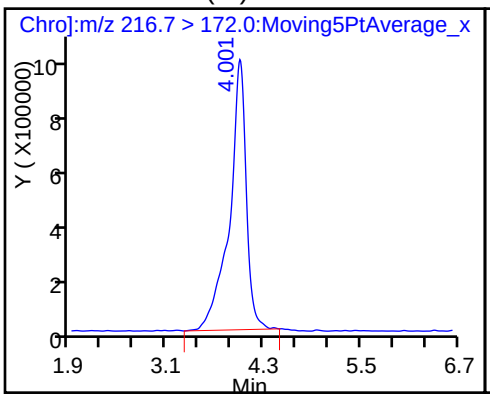
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

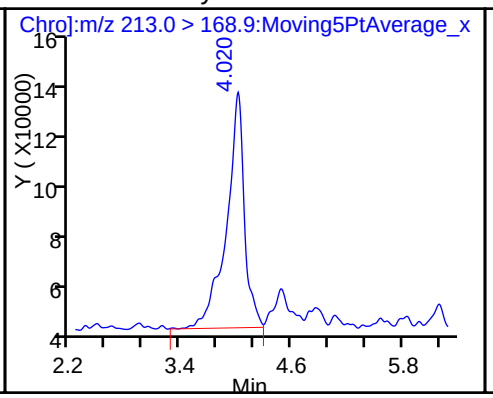
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

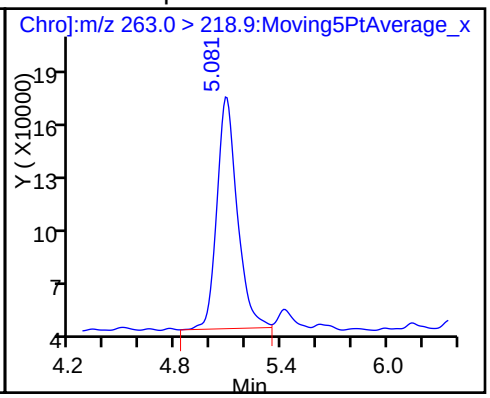
* 1 13C4 PFBA (IS)



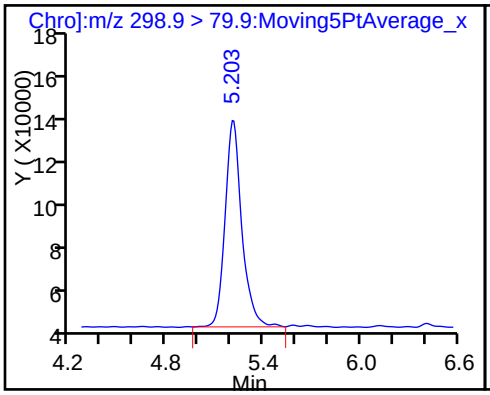
2 Perfluorobutyric acid



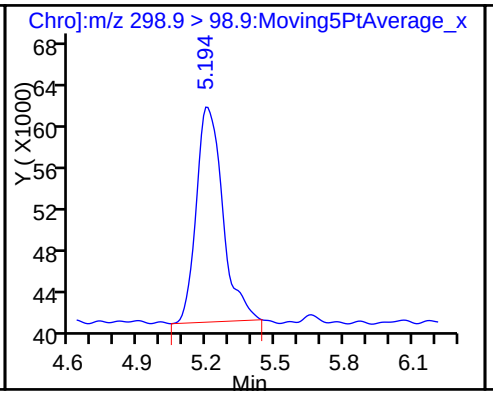
3 Perfluoropentanoic acid



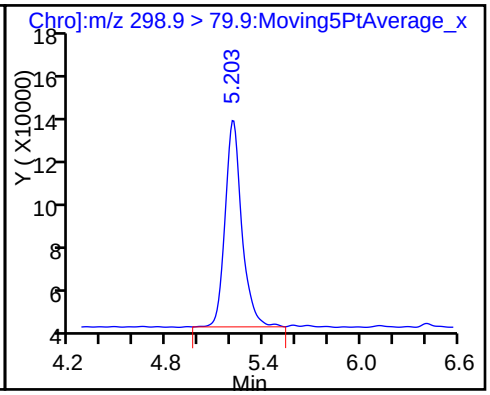
4 Perfluorobutane Sulfonate



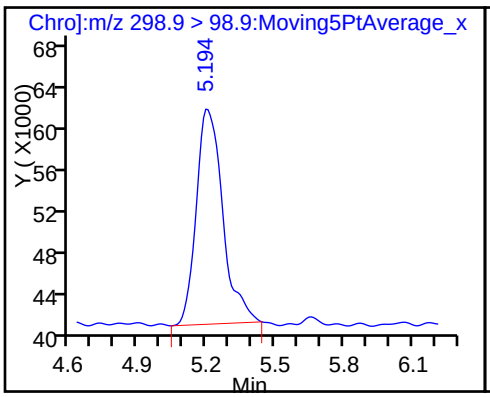
4 Perfluorobutane Sulfonate



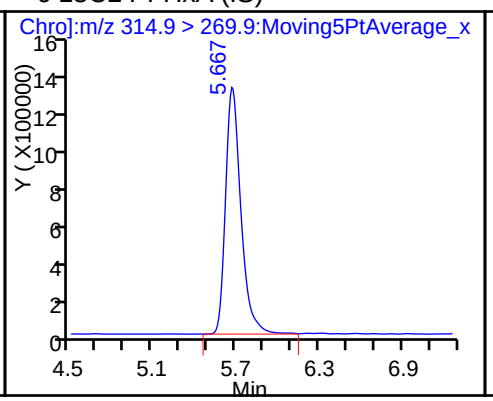
5 Perfluorobutanesulfonic acid



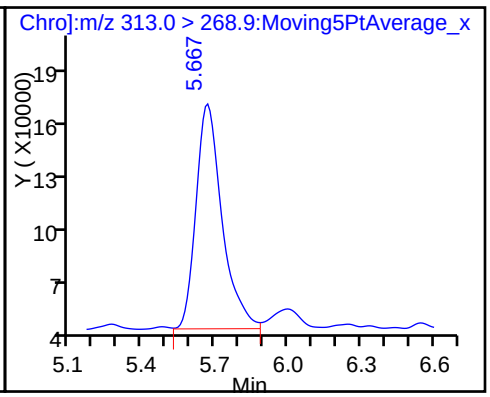
5 Perfluorobutanesulfonic acid



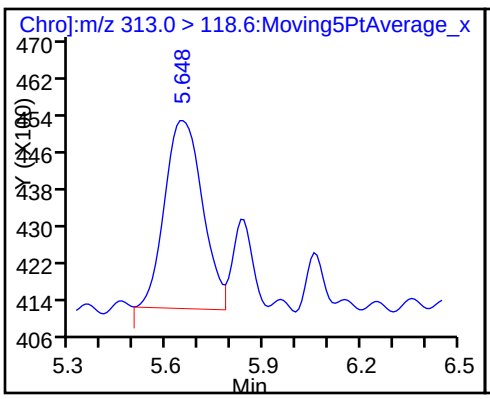
* 6 13C2 PFHxA (IS)



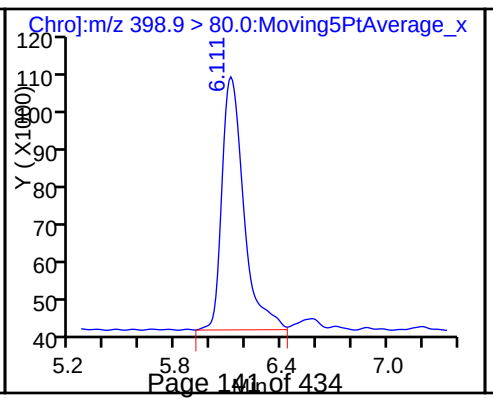
7 Perfluorohexanoic acid



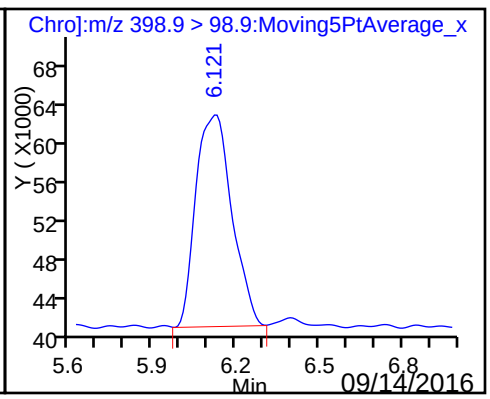
7 Perfluorohexanoic acid



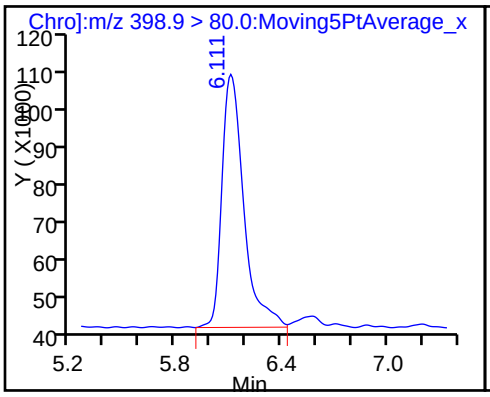
10 Perfluorohexane Sulfonate



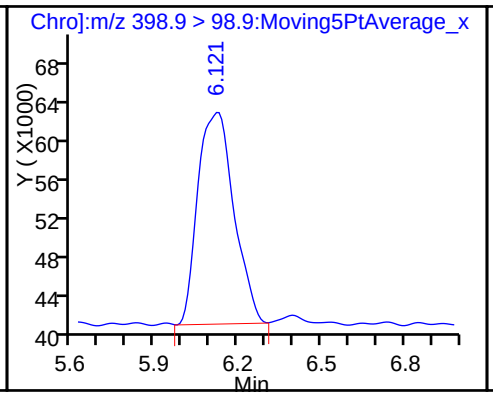
10 Perfluorohexane Sulfonate



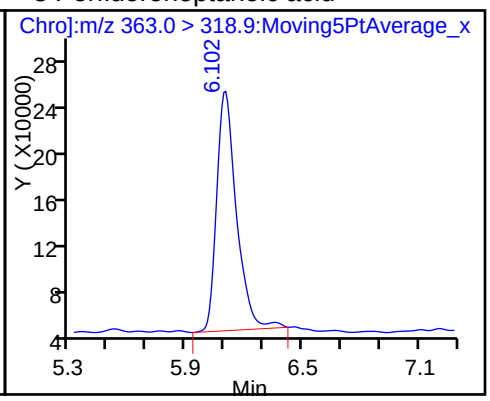
11 Perfluorohexanesulfonic acid



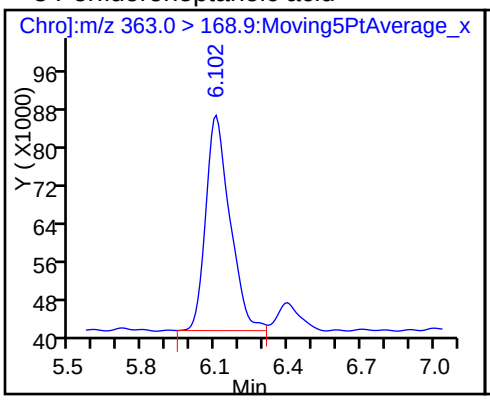
11 Perfluorohexanesulfonic acid



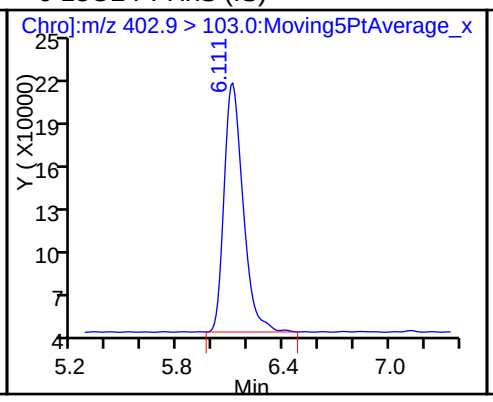
8 Perfluoroheptanoic acid



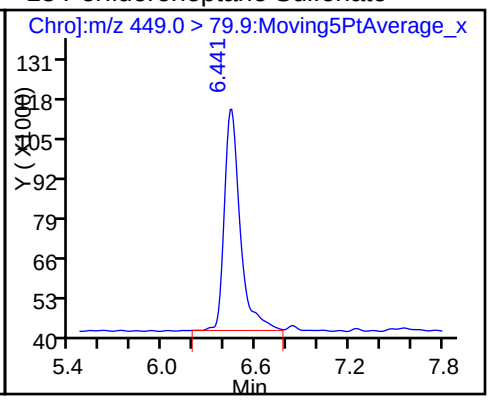
8 Perfluoroheptanoic acid



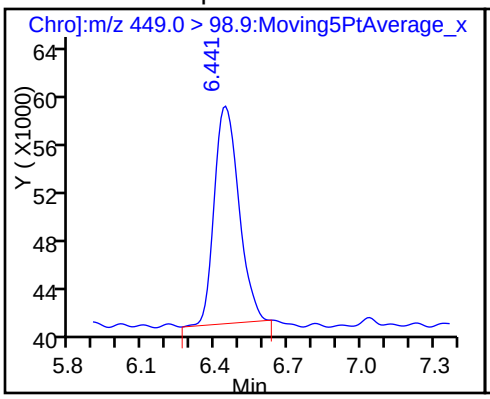
* 9 18O2 PFHxS (IS)



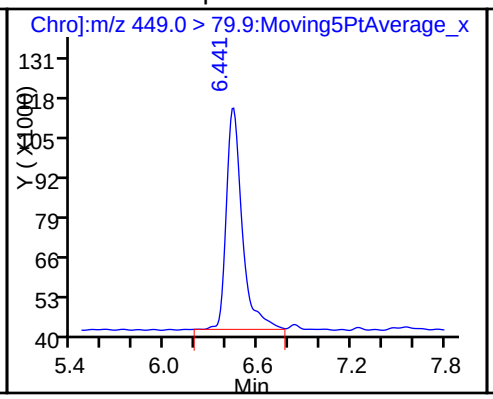
13 Perfluoroheptane Sulfonate



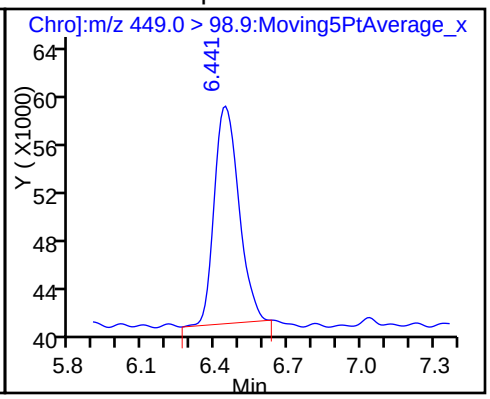
13 Perfluoroheptane Sulfonate



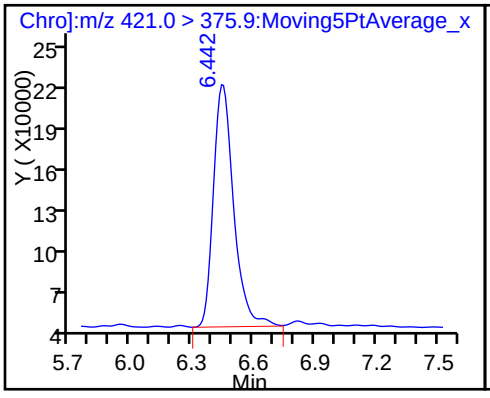
12 Perfluoroheptanesulfonic Acid



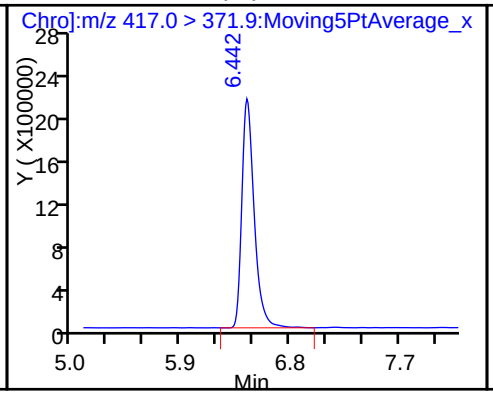
12 Perfluoroheptanesulfonic Acid



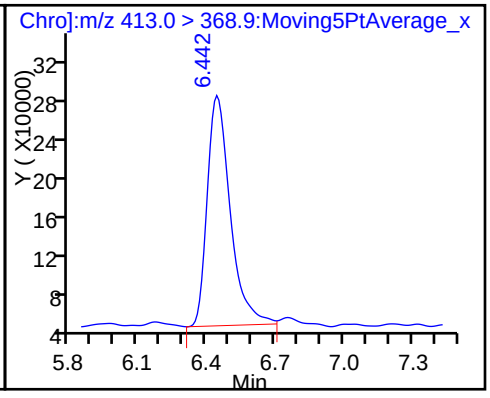
$ 14 13C8 PFOA



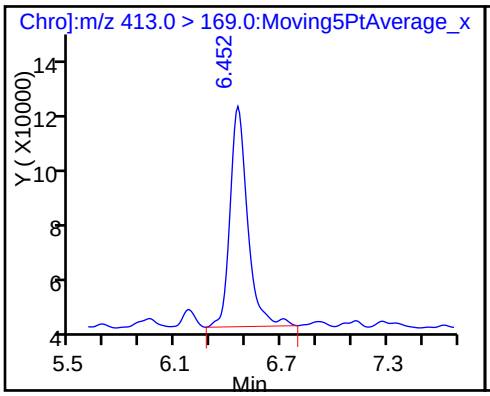
* 15 13C4 PFOA (IS)



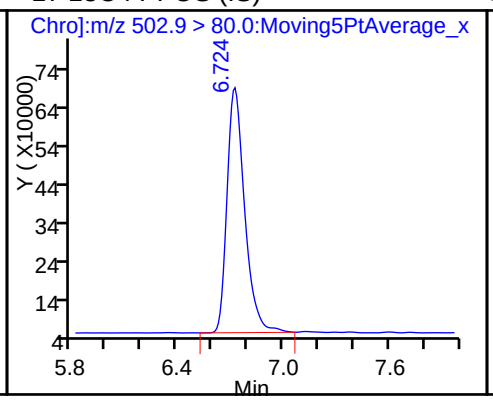
16 Perfluorooctanoic acid



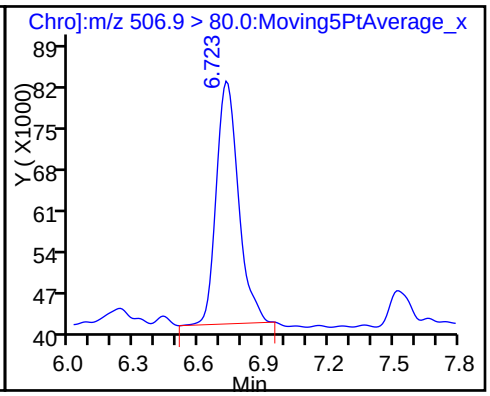
16 Perfluorooctanoic acid



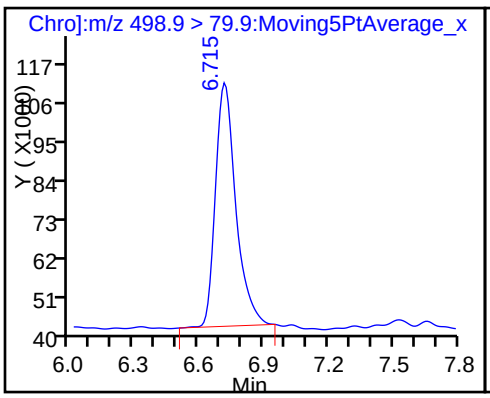
* 17 13C4 PFOS (IS)



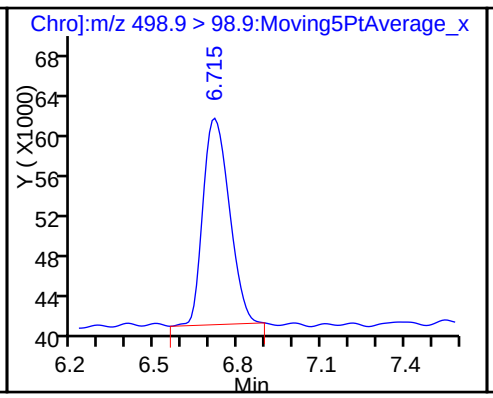
$ 18 13C8 PFOS



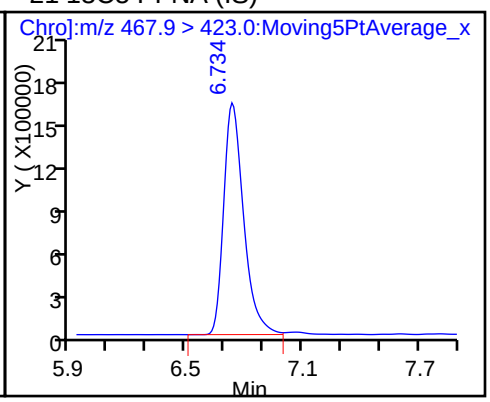
19 Perfluorooctane sulfonic acid



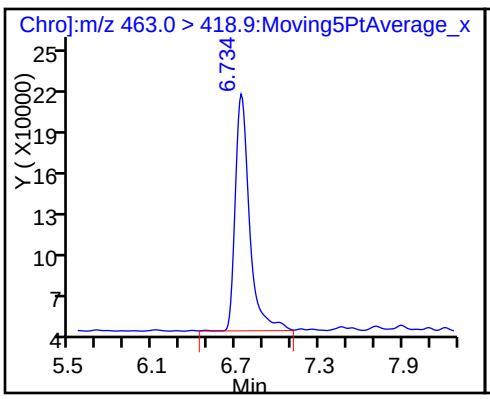
19 Perfluorooctane sulfonic acid



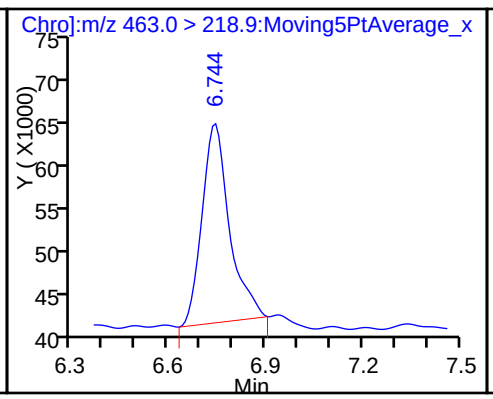
* 21 13C5 PFNA (IS)



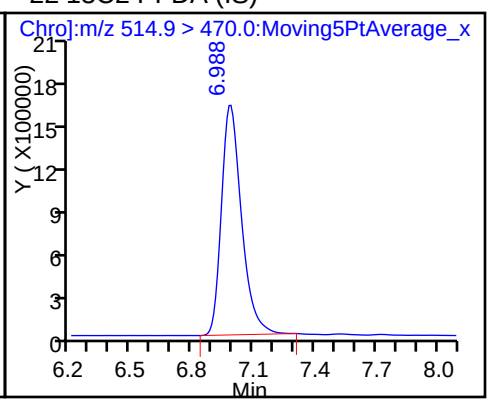
20 Perfluorononanoic acid



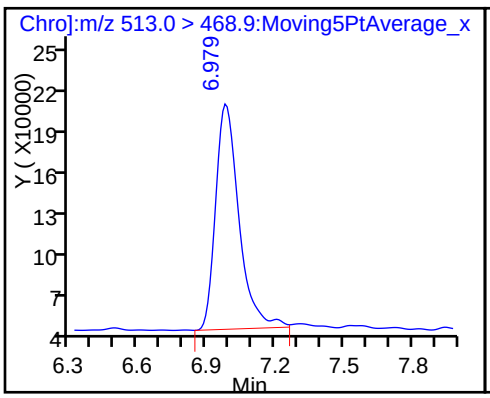
20 Perfluorononanoic acid



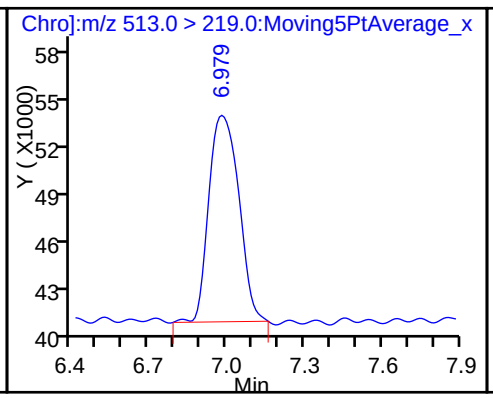
* 22 13C2 PFDA (IS)



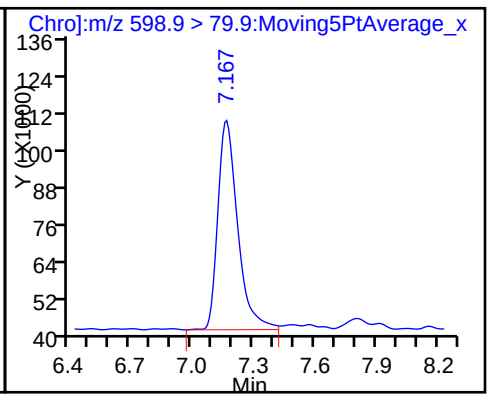
23 Perfluorodecanoic acid



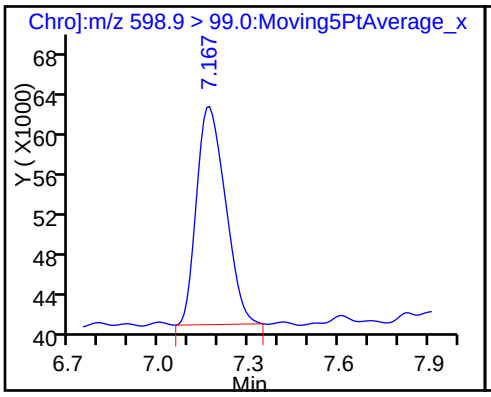
23 Perfluorodecanoic acid



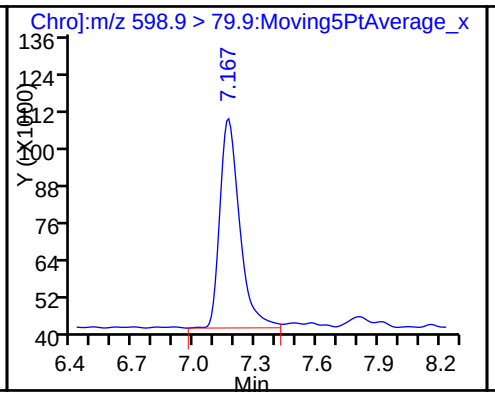
24 Perfluorodecane Sulfonic acid



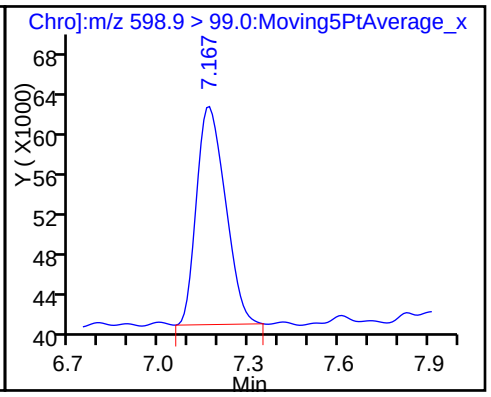
24 Perfluorodecane Sulfonic acid



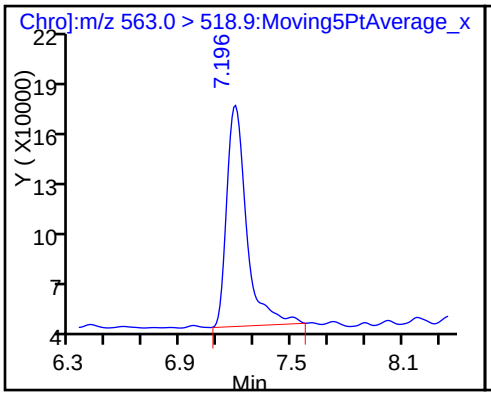
25 Perfluorodecane Sulfonate



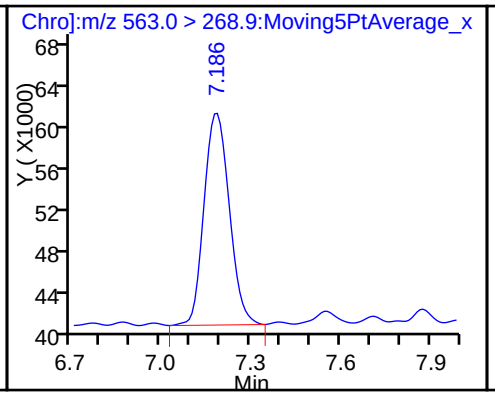
25 Perfluorodecane Sulfonate



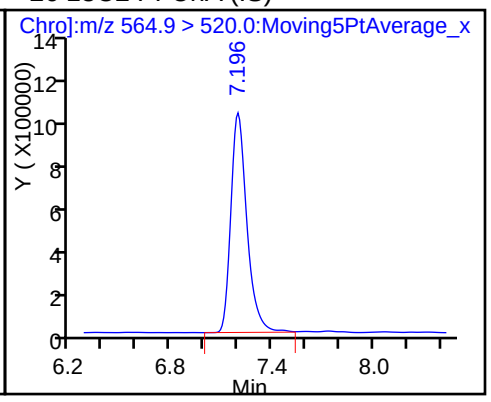
27 Perfluoroundecanoic acid



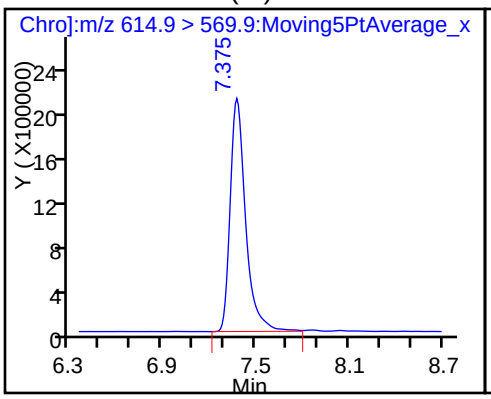
27 Perfluoroundecanoic acid



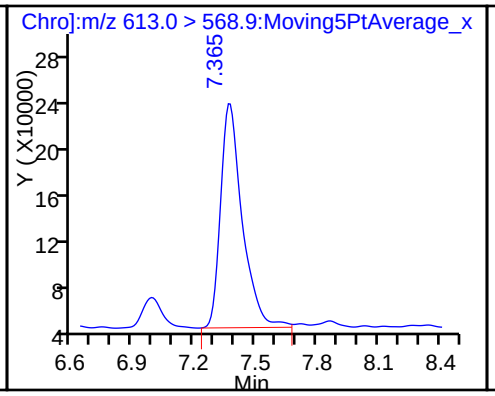
* 26 13C2 PFUnA (IS)



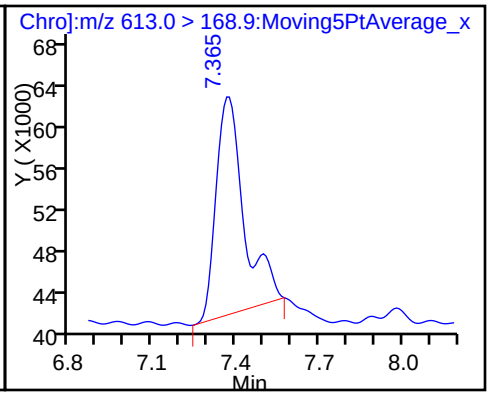
* 28 13C2 PFDoA (IS)



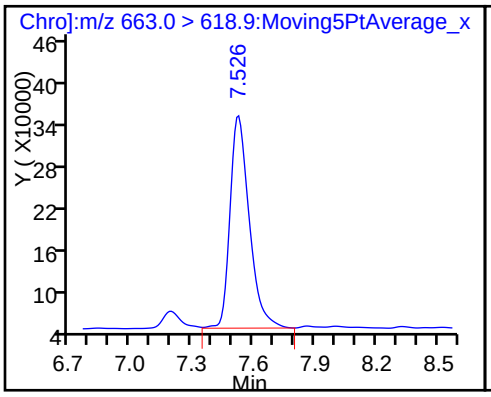
29 Perfluorododecanoic acid



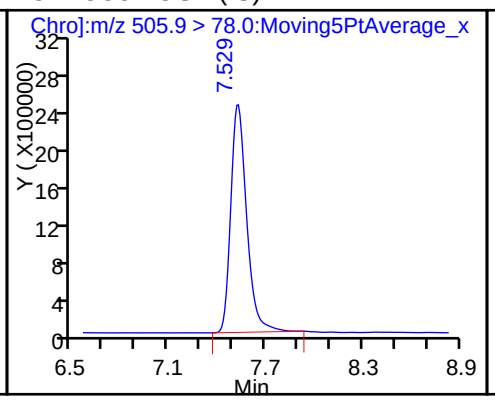
29 Perfluorododecanoic acid



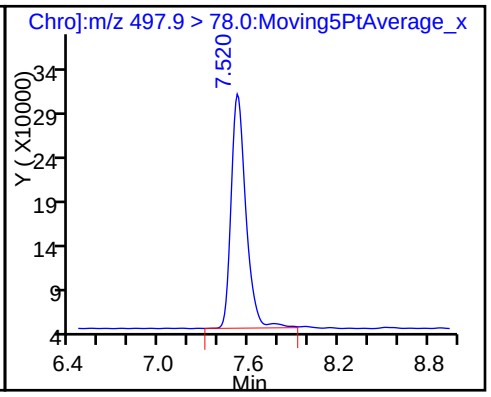
30 Perfluorotridecanoic acid



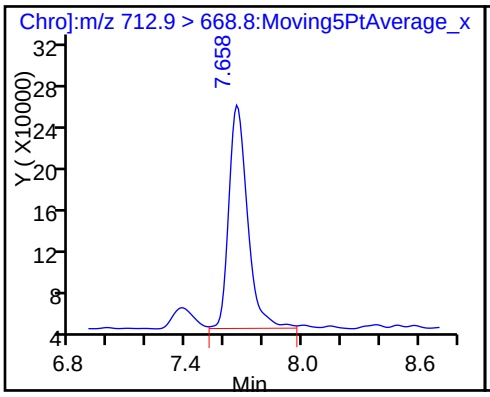
* 31 13C8 FOSA (IS)



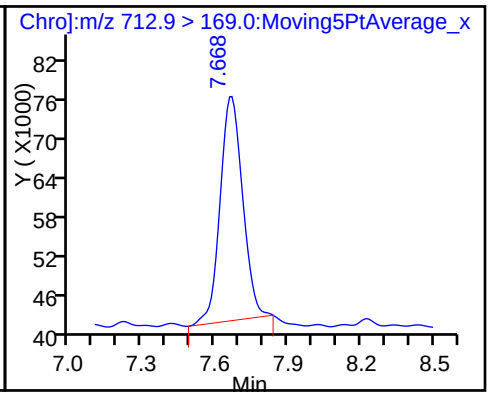
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01019.d
Lims ID: STD0020
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 01-Sep-2016 11:32:13 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0020, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:12 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:38:08

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.058	0.0		13271971	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.068	4.068	0.0	1.002	2607159	2.04			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.109	0.0	0.900	2195290	1.99			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.232	5.232	0.0	0.856	1141745	1.74			R
298.9 > 98.9	5.232	5.232	0.0	0.856	337088		3.39(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.232	5.232	0.0	0.856	1141745	1.74			
298.9 > 98.9	5.232	5.232	0.0	0.856	337088		3.39(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		9825525	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.686	0.0	1.002	1862676	2.10			
313.0 > 118.6	5.686	5.686	0.0	1.002	55895		33.32(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	1.000	1124374	1.89			R
398.9 > 98.9	6.111	6.111	0.0	1.000	435694		2.58(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	1.000	1124374	1.89			
398.9 > 98.9	6.111	6.111	0.0	1.000	435694		2.58(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.947	2768798	2.17			
363.0 > 168.9	6.112	6.102	0.010	0.949	763432		3.63(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		1404962	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.441	0.0	0.959	1083388	1.96			
449.0 > 98.9	6.441	6.441	0.0	0.959	298008		3.64(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.441	0.0	0.959	1083388	1.96			
449.0 > 98.9	6.441	6.441	0.0	0.959	298008		3.64(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.442	0.0	1.000	2850136	2.56			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.442	0.0		15146582	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.442	0.0	1.000	3469106	2.27			
413.0 > 169.0	6.442	6.442	0.0	1.000	946611		3.66(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.714	0.0		4910565	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.723	0.0	1.001	657593	2.15			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.715	0.0	1.000	1035672	2.04			R
498.9 > 98.9	6.724	6.715	0.009	1.001	417634		2.48(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.734	0.0		11578122	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.734	0.0	1.000	2625464	2.15			
463.0 > 218.9	6.734	6.734	0.0	1.000	297270		8.83(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	6.978	0.0		10502012	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.979	6.979	0.0	1.000	2269609	2.26			
513.0 > 219.0	6.979	6.979	0.0	1.000	211522		10.73(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.167	0.0	1.067	963082	1.85			
598.9 > 99.0	7.167	7.167	0.0	1.067	285702		3.37(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.167	0.0	1.067	963082	1.85			
598.9 > 99.0	7.167	7.167	0.0	1.067	285702		3.37(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.186	0.0	1.000	1832257	2.03			R
563.0 > 268.9	7.186	7.186	0.0	1.000	279143		6.56(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.186	0.0		6718665	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.365	0.0		14430674	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.365	0.0	1.000	2908460	2.07			
613.0 > 168.9	7.375	7.365	0.010	1.001	349377		8.32(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.516	7.516	0.0	1.021	3801994	2.04			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.519	0.0		16682451	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.511	0.0	0.999	3520358	2.03			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.649	7.649	0.0	1.038	2992817	2.10			
712.9 > 169.0	7.649	7.649	0.0	1.038	513709		5.83(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_CAL_stock_00033	Amount Added: 100.00	Units: uL

Report Date: 02-Sep-2016 11:52:13 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01019.d

Injection Date: 01-Sep-2016 11:32:13 Instrument ID: LC_LCMS5

Lims ID: STD0020

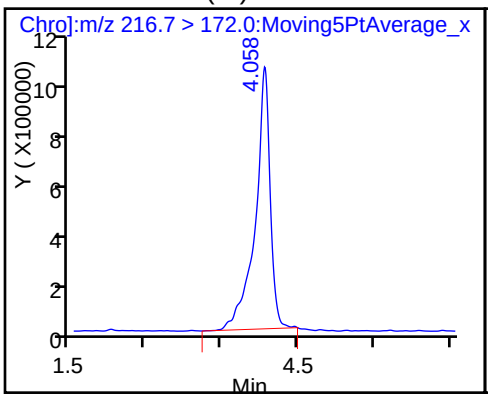
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6

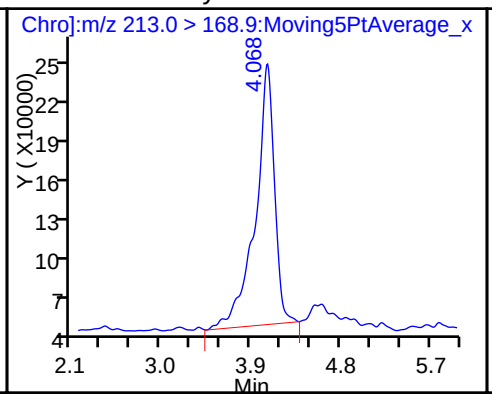
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

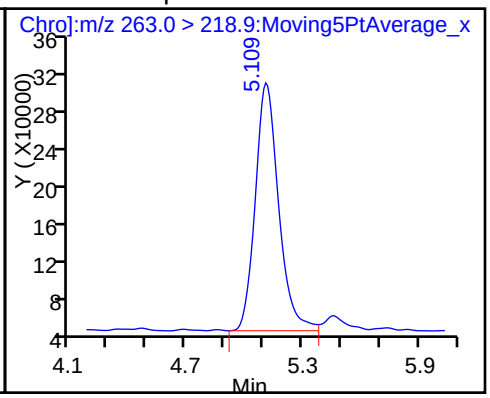
* 1 13C4 PFBA (IS)



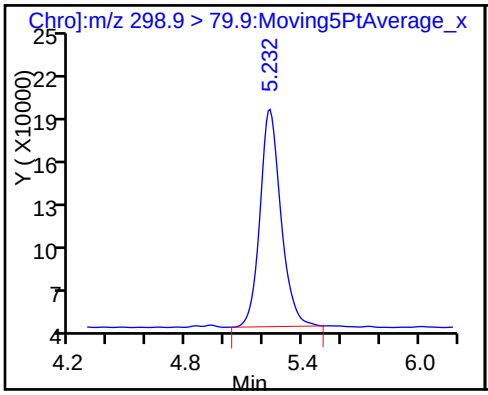
2 Perfluorobutyric acid



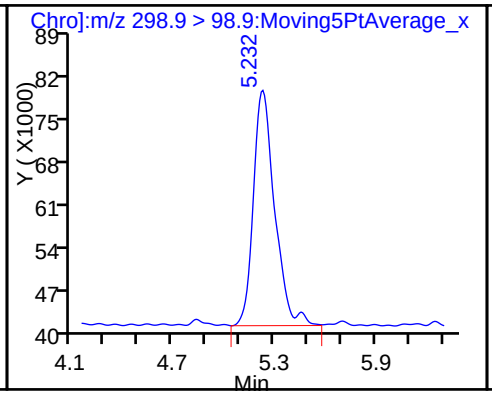
3 Perfluoropentanoic acid



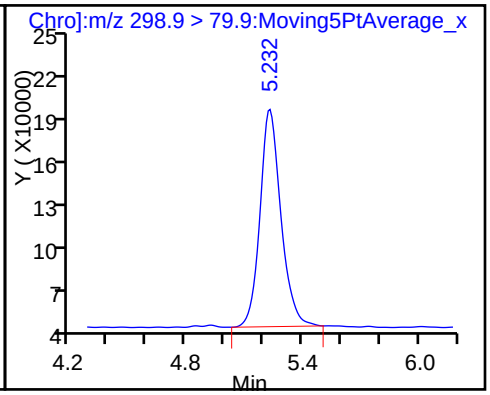
4 Perfluorobutane Sulfonate



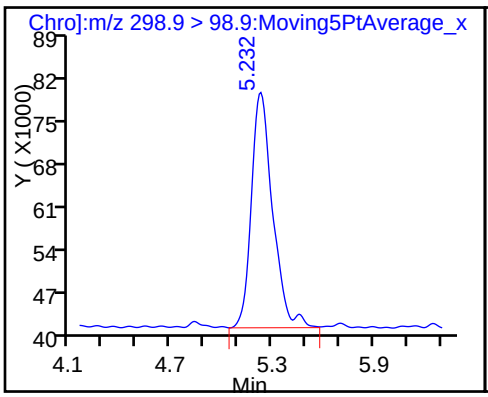
4 Perfluorobutane Sulfonate



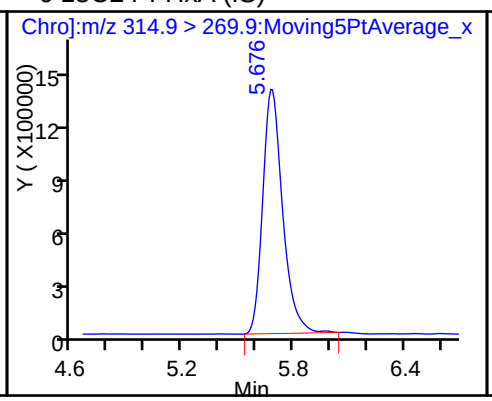
5 Perfluorobutanesulfonic acid



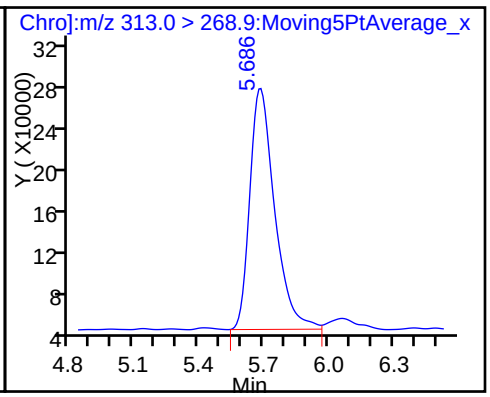
5 Perfluorobutanesulfonic acid



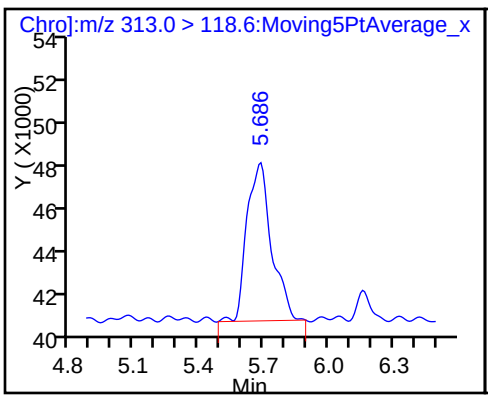
* 6 13C2 PFHxA (IS)



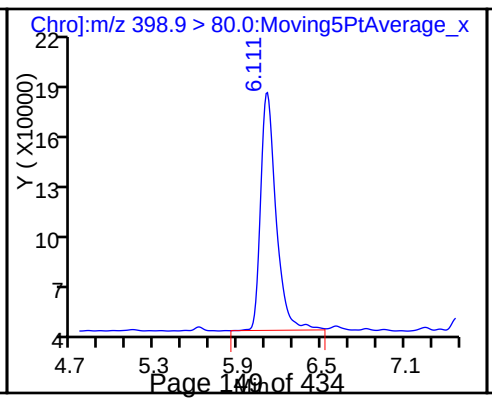
7 Perfluorohexanoic acid



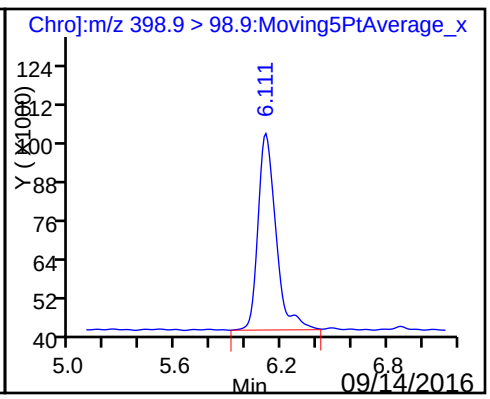
7 Perfluorohexanoic acid



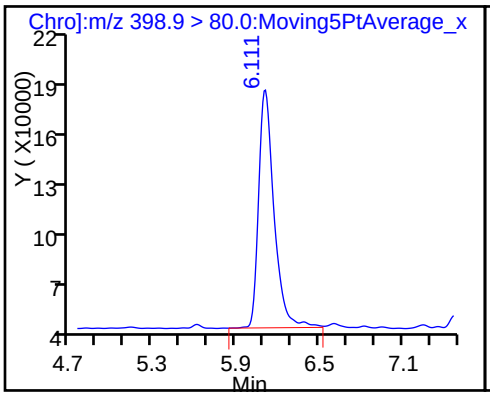
10 Perfluorohexane Sulfonate



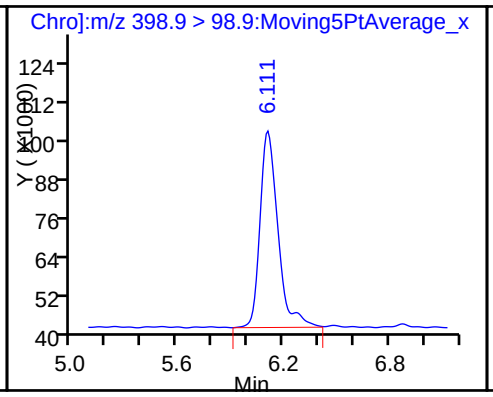
10 Perfluorohexane Sulfonate



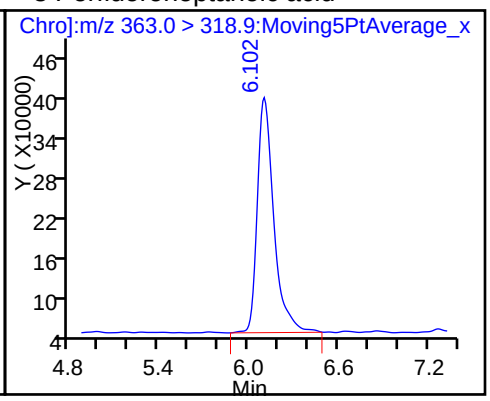
11 Perfluorohexanesulfonic acid



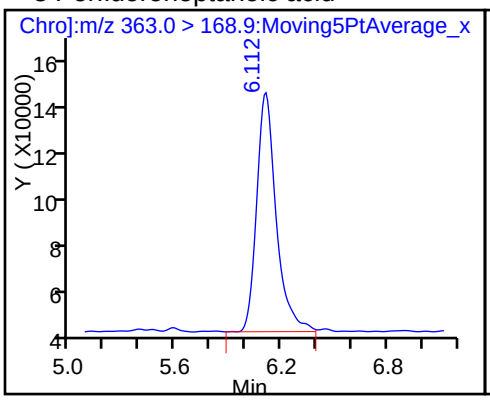
11 Perfluorohexanesulfonic acid



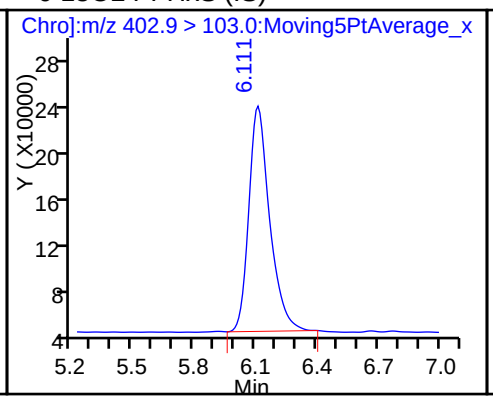
8 Perfluoroheptanoic acid



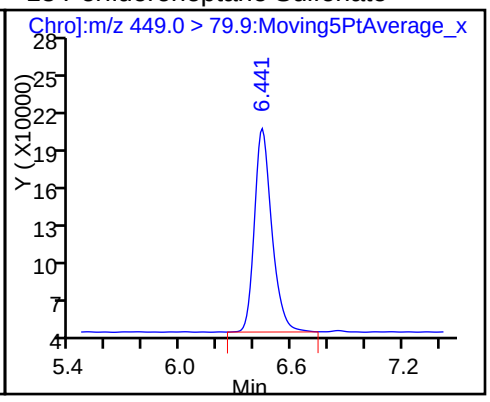
8 Perfluoroheptanoic acid



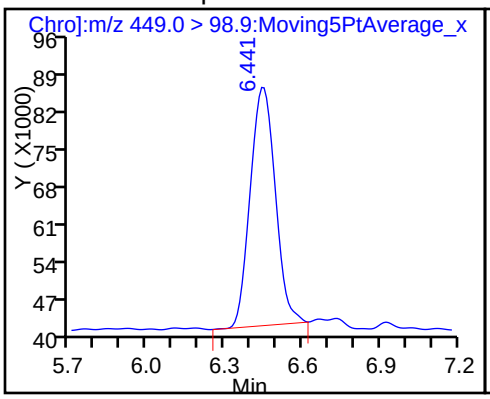
* 9 18O2 PFHxS (IS)



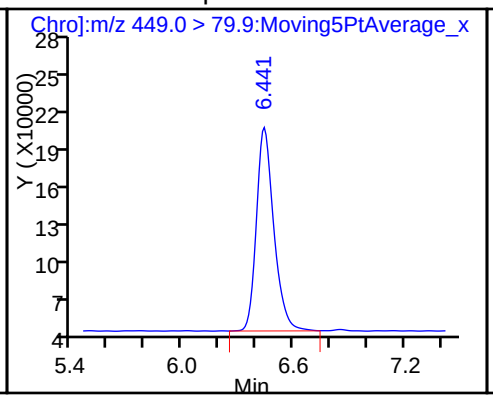
13 Perfluoroheptane Sulfonate



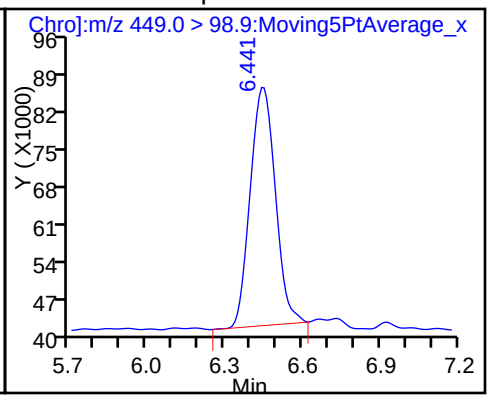
13 Perfluoroheptane Sulfonate



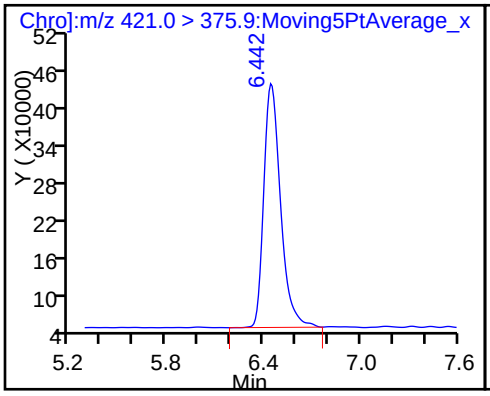
12 Perfluoroheptanesulfonic Acid



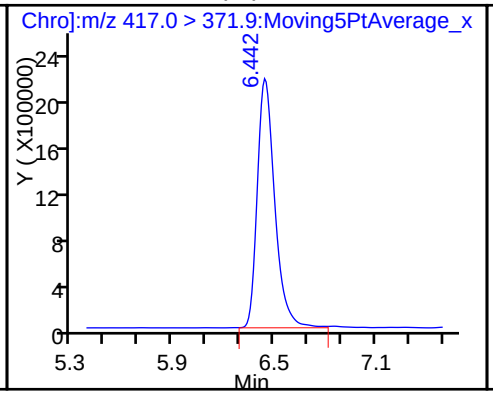
12 Perfluoroheptanesulfonic Acid



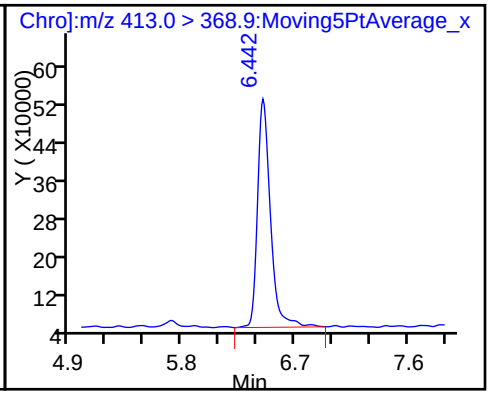
$ 14 13C8 PFOA



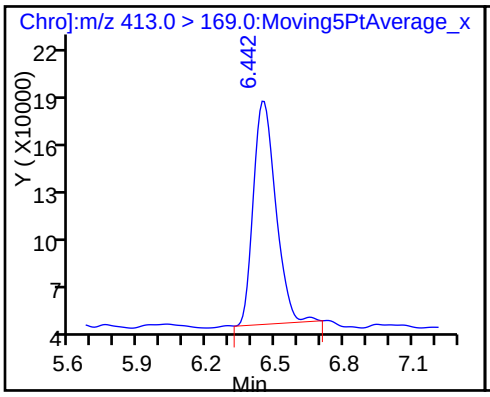
* 15 13C4 PFOA (IS)



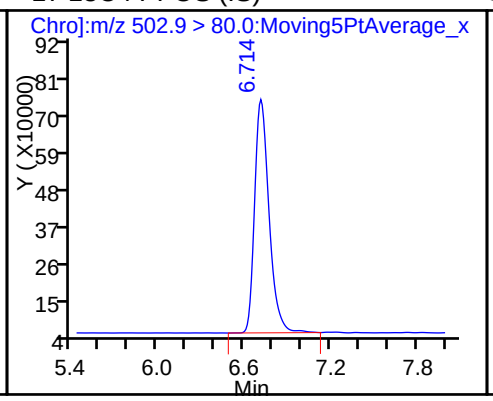
16 Perfluorooctanoic acid



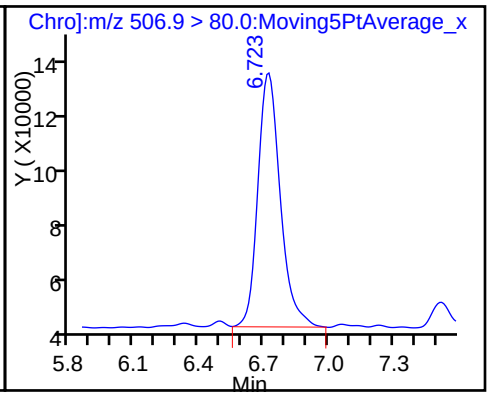
16 Perfluorooctanoic acid



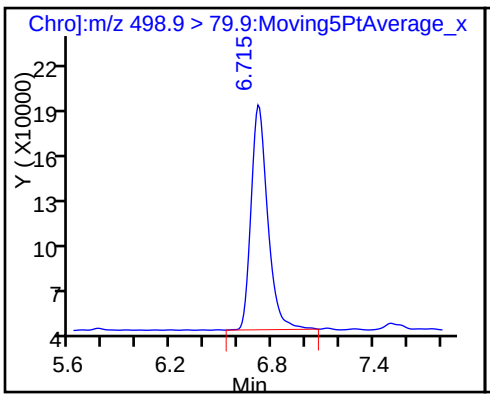
* 17 13C4 PFOS (IS)



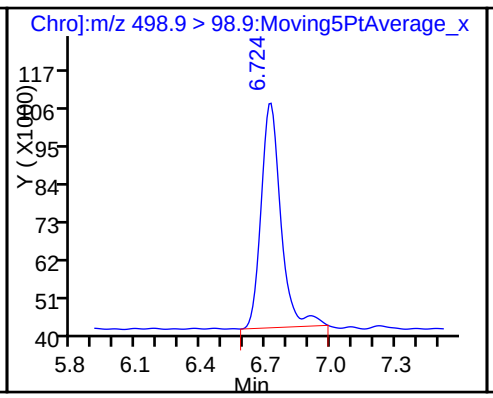
$ 18 13C8 PFOS



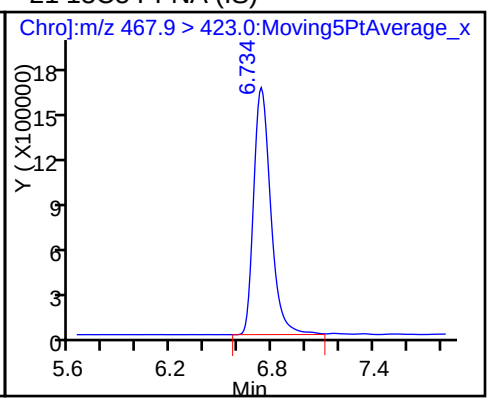
19 Perfluorooctane sulfonic acid



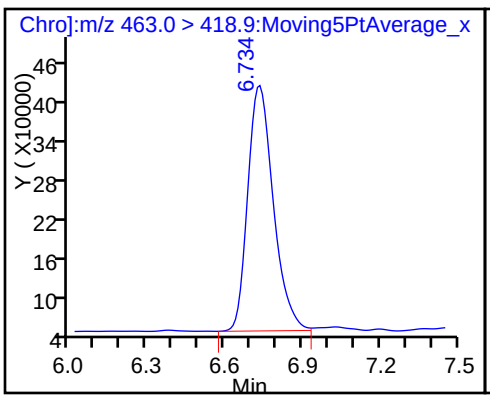
19 Perfluorooctane sulfonic acid



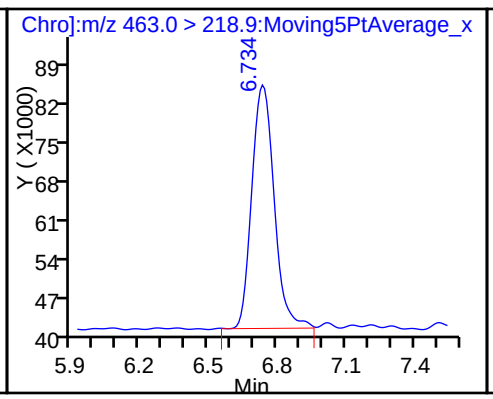
* 21 13C5 PFNA (IS)



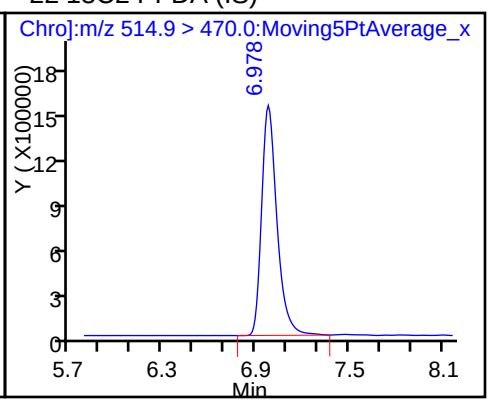
20 Perfluorononanoic acid



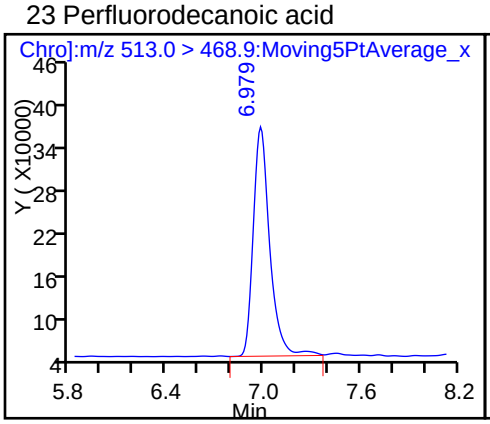
20 Perfluorononanoic acid



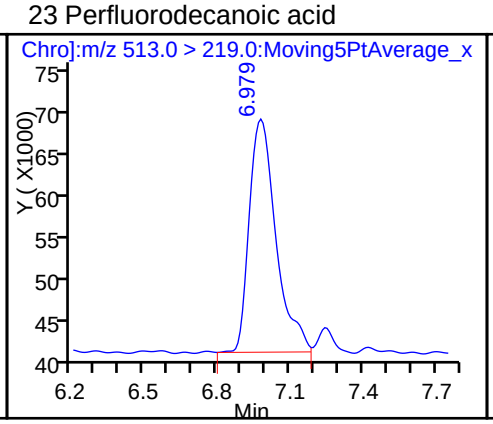
* 22 13C2 PFDA (IS)



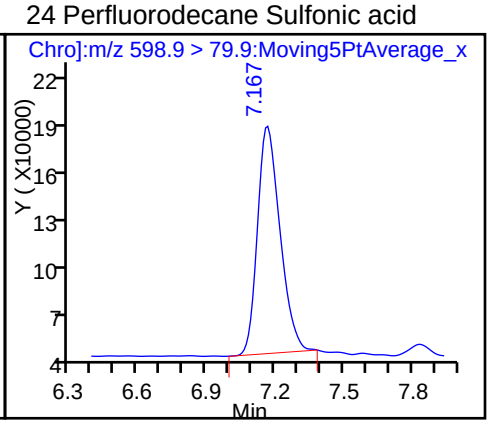
23 Perfluorodecanoic acid



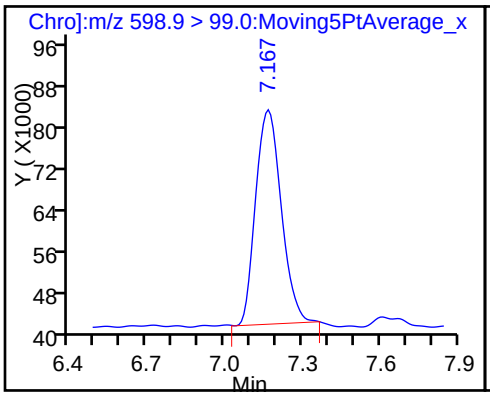
23 Perfluorodecanoic acid



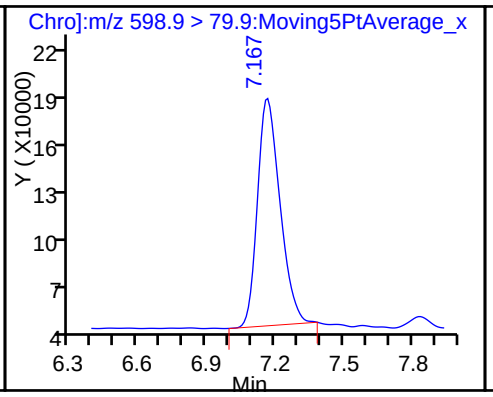
24 Perfluorodecane Sulfonic acid



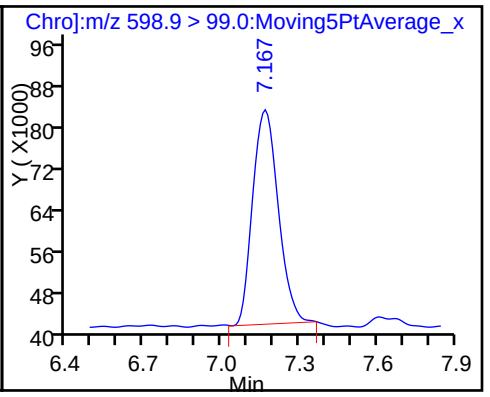
24 Perfluorodecane Sulfonic acid



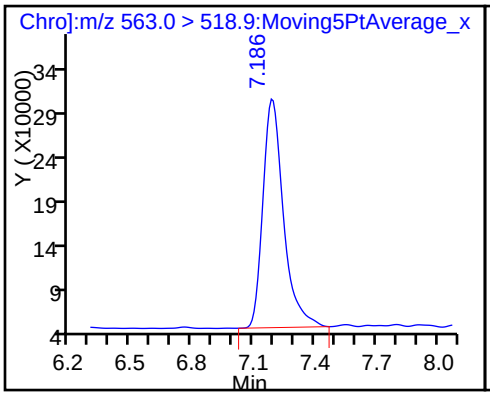
25 Perfluorodecane Sulfonate



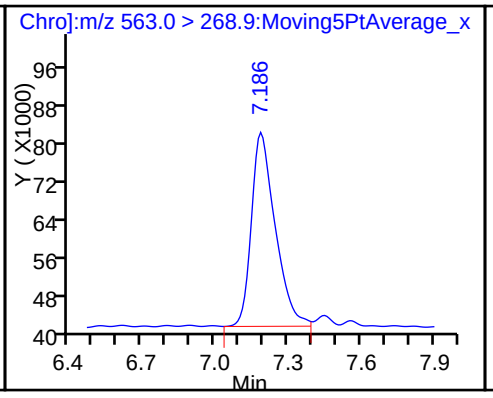
25 Perfluorodecane Sulfonate



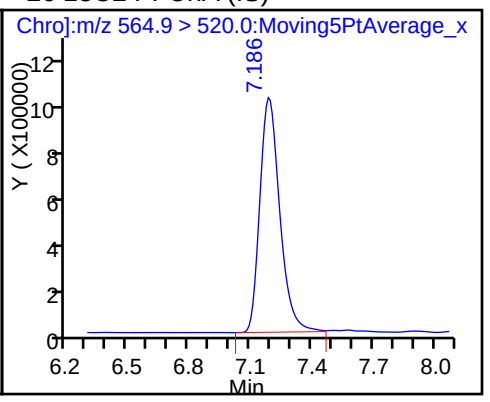
27 Perfluoroundecanoic acid



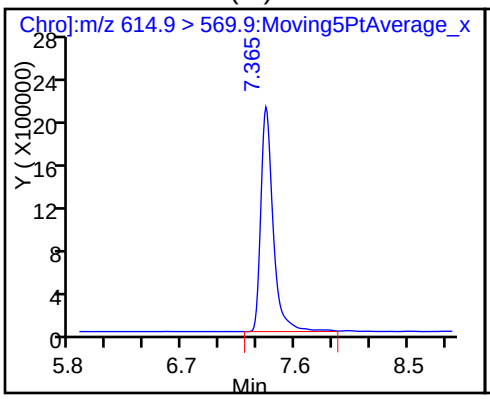
27 Perfluoroundecanoic acid



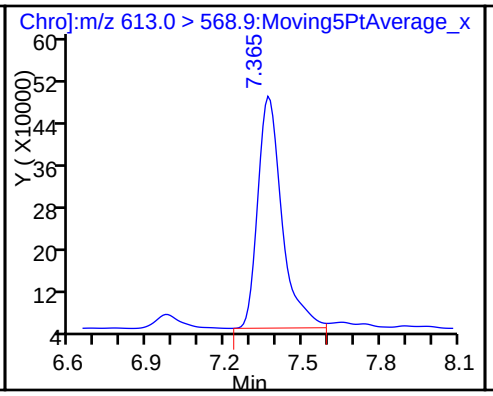
* 26 13C2 PFUnA (IS)



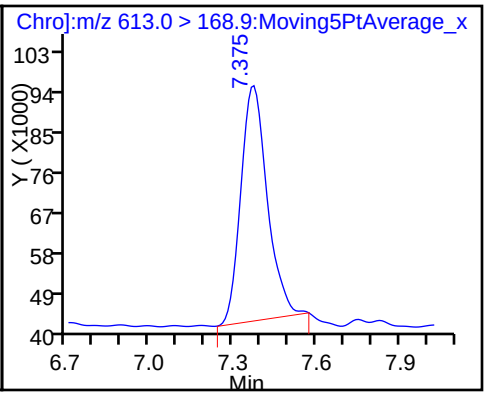
* 28 13C2 PFDoA (IS)



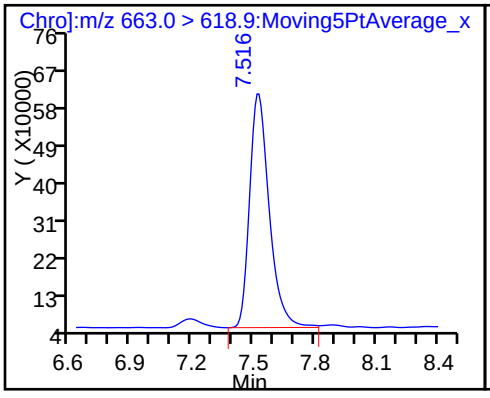
29 Perfluorododecanoic acid



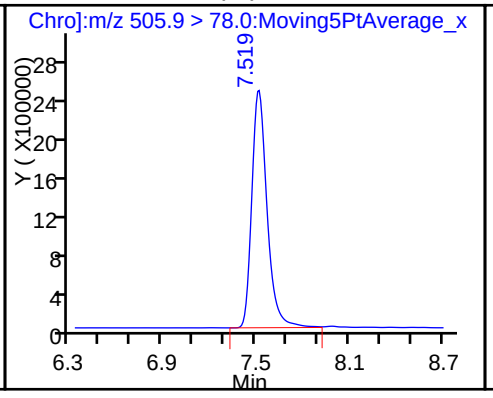
29 Perfluorododecanoic acid



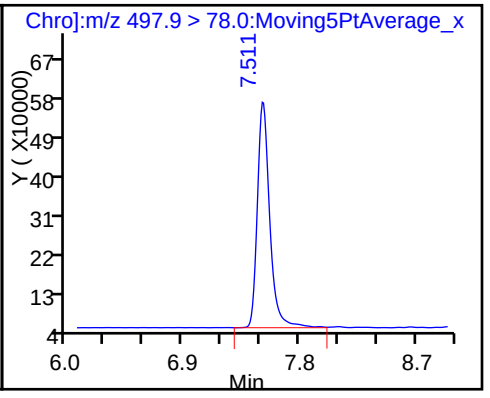
30 Perfluorotridecanoic acid



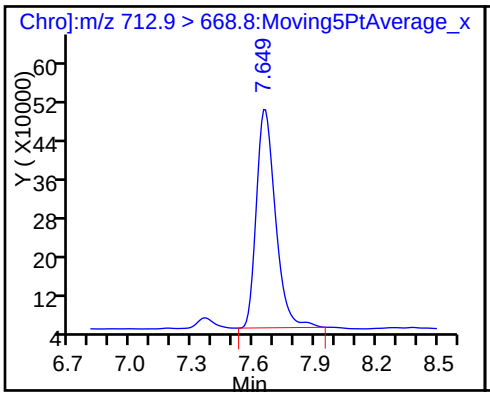
* 31 13C8 FOSA (IS)



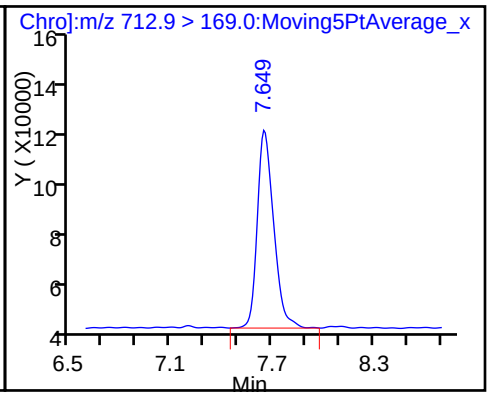
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01020.d
Lims ID: STD0050
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 01-Sep-2016 11:44:32 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0050, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:16 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:38:22

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.048	4.058	-0.010		14615072	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.049	4.068	-0.019	1.000	6654790	4.72			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.100	5.109	-0.009	0.898	5467867	4.70			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.222	5.232	-0.010	0.855	2685289	3.94			
298.9 > 98.9	5.213	5.232	-0.019	0.853	832704		3.22(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.222	5.232	-0.010	0.855	2685289	3.94			
298.9 > 98.9	5.213	5.232	-0.019	0.853	832704		3.22(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		10583415	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.667	5.686	-0.019	0.998	4495592	4.76			
313.0 > 118.6	5.677	5.686	-0.009	1.000	87114		51.61(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	1.000	2967617	4.80			R
398.9 > 98.9	6.102	6.111	-0.009	0.998	864038		3.43(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	1.000	2967617	4.80			
398.9 > 98.9	6.102	6.111	-0.009	0.998	864038		3.43(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.947	6648694	4.86			
363.0 > 168.9	6.102	6.102	0.0	0.947	1664645		3.99(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		1461737	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.441	0.0	0.959	2541992	4.48			
449.0 > 98.9	6.441	6.441	0.0	0.959	841893		3.02(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.441	0.0	0.959	2541992	4.48			
449.0 > 98.9	6.441	6.441	0.0	0.959	841893		3.02(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.442	0.0	1.000	7100681	6.26			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.442	0.0		16257567	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.442	0.0	1.000	8176935	5.09			
413.0 > 169.0	6.442	6.442	0.0	1.000	2790561		2.93(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.714	0.0		4973154	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.714	6.723	-0.009	1.000	1411484	4.67			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.724	6.715	0.009	1.001	2395297	4.56			R
498.9 > 98.9	6.724	6.715	0.009	1.001	972437		2.46(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.734	0.0		12401277	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.734	0.0	1.000	6259116	4.78			
463.0 > 218.9	6.725	6.734	-0.009	0.999	872767		7.17(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	6.978	0.0		12096712	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.979	6.979	0.0	1.000	5263939	4.57			
513.0 > 219.0	6.969	6.979	-0.010	0.999	476117		11.06(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.167	0.0	1.067	2646264	5.10			
598.9 > 99.0	7.167	7.167	0.0	1.067	866457		3.05(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.167	0.0	1.067	2646264	5.10			
598.9 > 99.0	7.167	7.167	0.0	1.067	866457		3.05(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.186	0.0	1.000	4589716	5.01			R
563.0 > 268.9	7.186	7.186	0.0	1.000	508858		9.02(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.186	0.0		6993794	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.365	0.0		15439495	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.365	0.0	1.000	6879432	4.58			
613.0 > 168.9	7.365	7.365	0.0	1.000	844226		8.15(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.526	7.516	0.010	1.022	9277562	4.72			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.519	-0.009		17363615	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.511	0.0	1.000	8682703	4.83			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.649	7.649	0.0	1.038	7435175	4.93			
712.9 > 169.0	7.649	7.649	0.0	1.038	1184746		6.28(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00084	Amount Added:	10.00	Units: uL

Report Date: 02-Sep-2016 11:52:16 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01020.d

Injection Date: 01-Sep-2016 11:44:32 Instrument ID: LC_LCMS5

Lims ID: STD0050

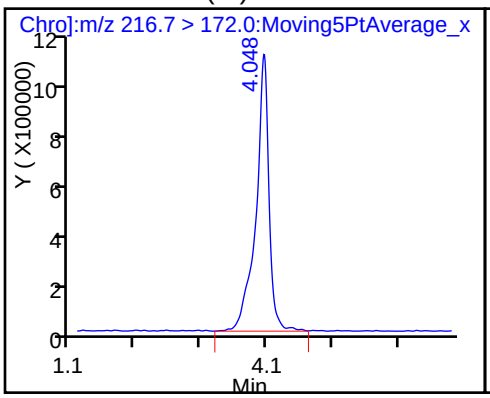
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 7

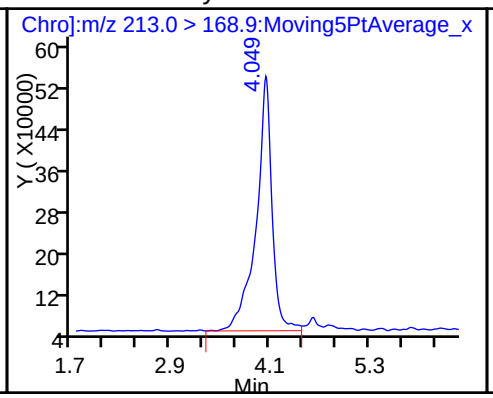
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

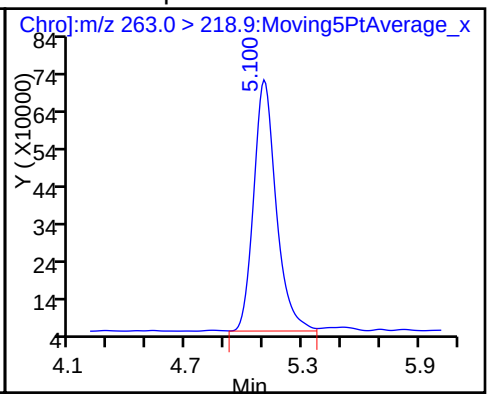
* 1 13C4 PFBA (IS)



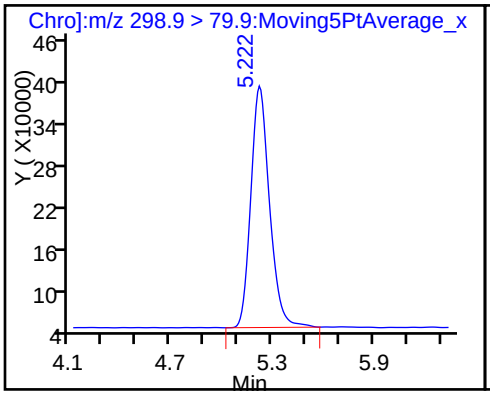
2 Perfluorobutyric acid



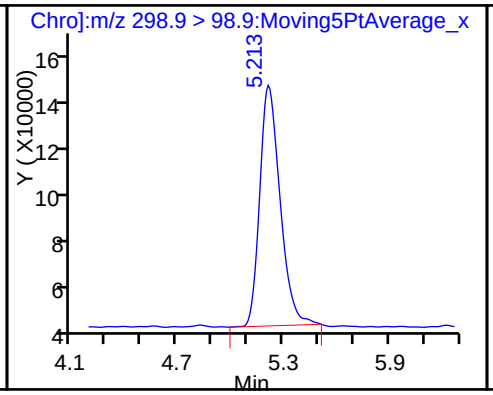
3 Perfluoropentanoic acid



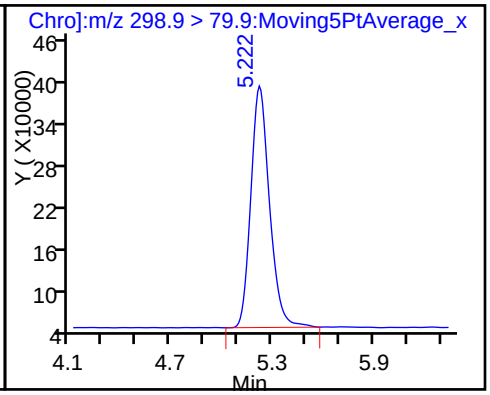
4 Perfluorobutane Sulfonate



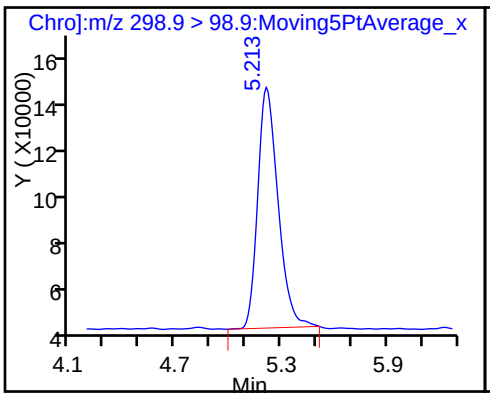
4 Perfluorobutane Sulfonate



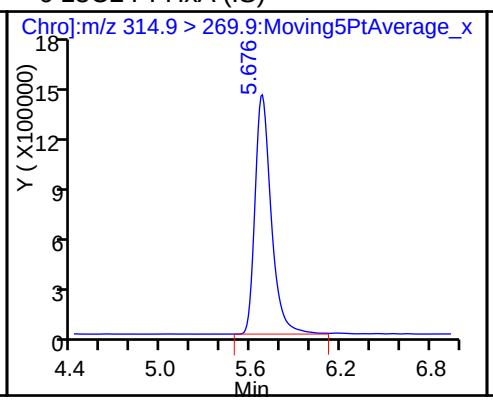
5 Perfluorobutanesulfonic acid



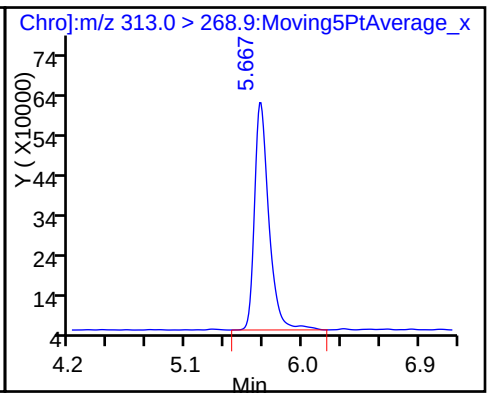
5 Perfluorobutanesulfonic acid



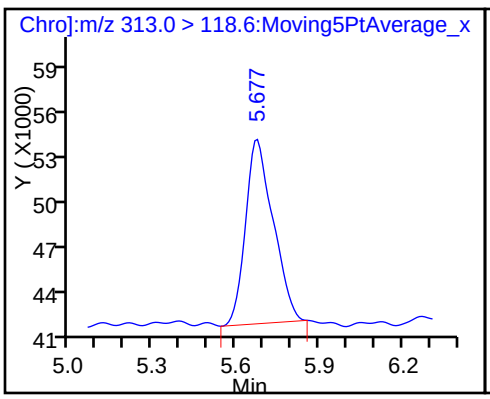
* 6 13C2 PFHxA (IS)



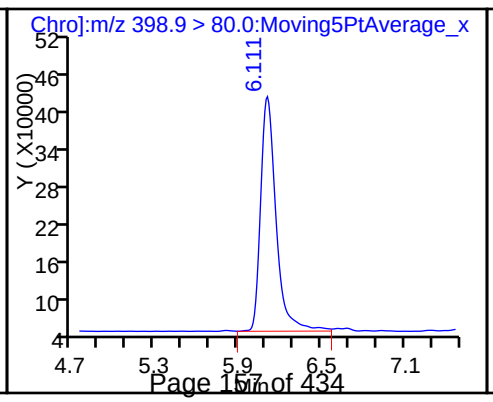
7 Perfluorohexanoic acid



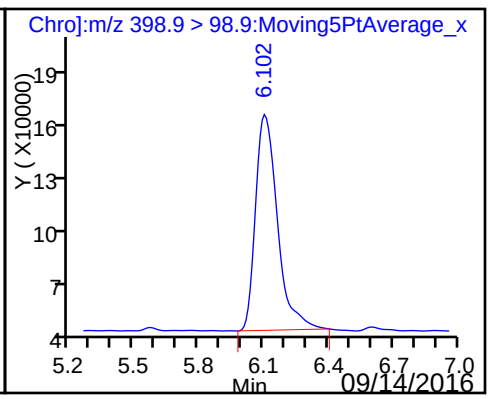
7 Perfluorohexanoic acid



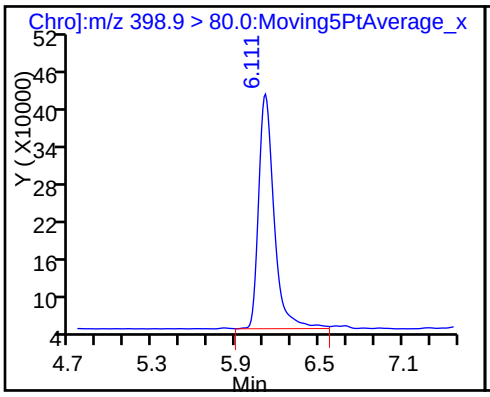
10 Perfluorohexane Sulfonate



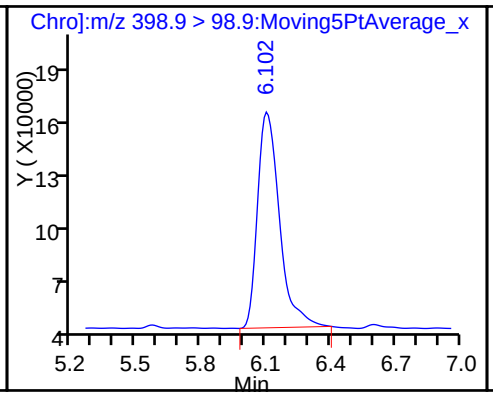
10 Perfluorohexane Sulfonate



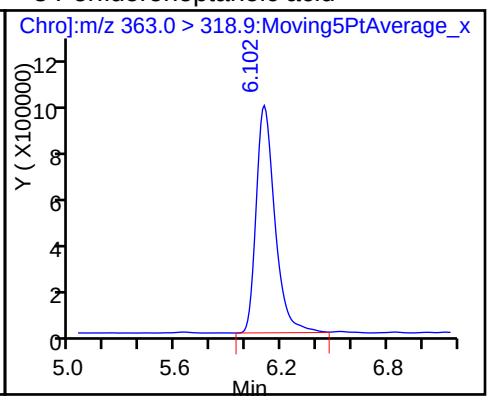
11 Perfluorohexanesulfonic acid



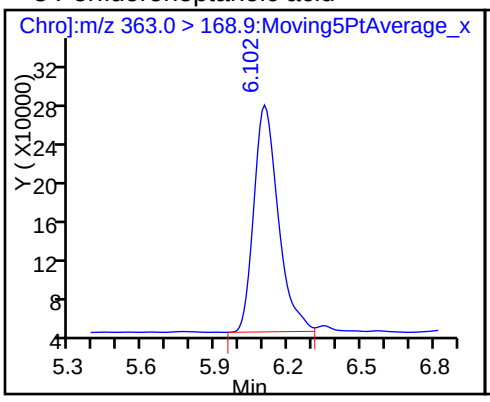
11 Perfluorohexanesulfonic acid



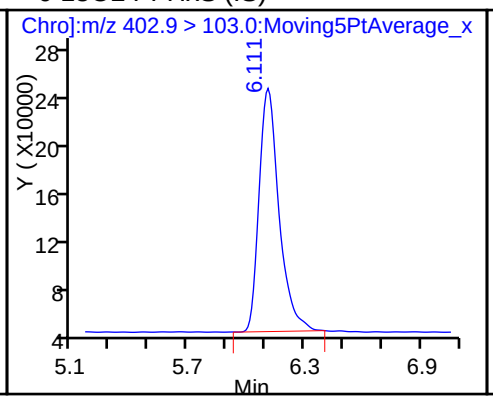
8 Perfluoroheptanoic acid



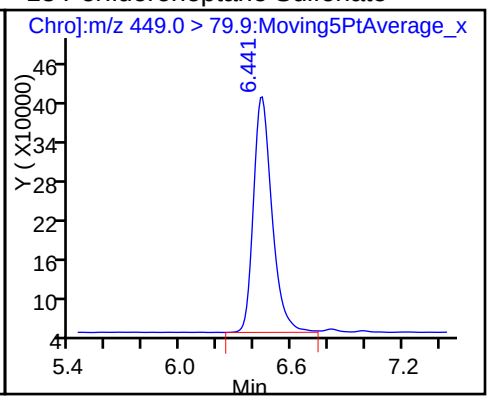
8 Perfluoroheptanoic acid



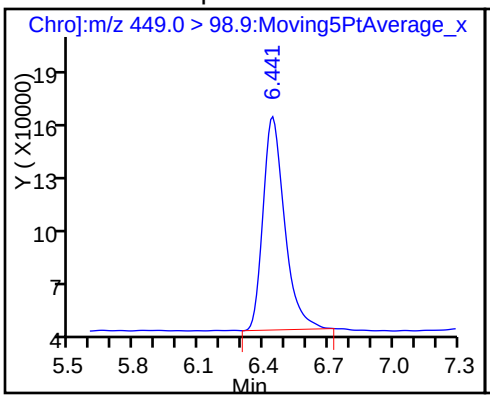
* 9 18O2 PFHxS (IS)



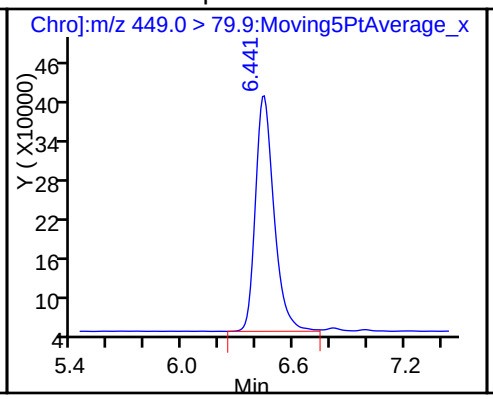
13 Perfluoroheptane Sulfonate



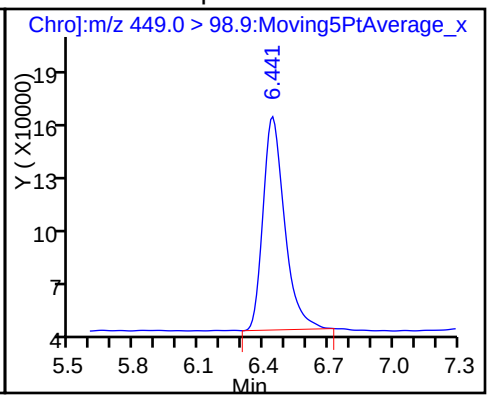
13 Perfluoroheptane Sulfonate



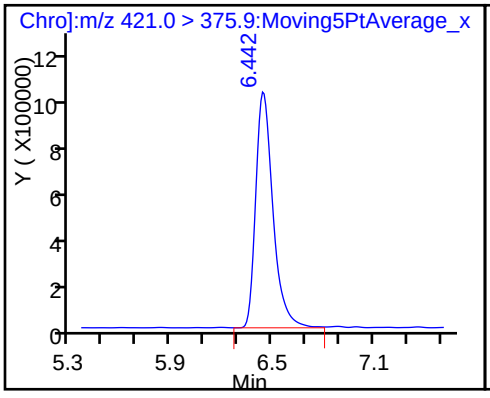
12 Perfluoroheptanesulfonic Acid



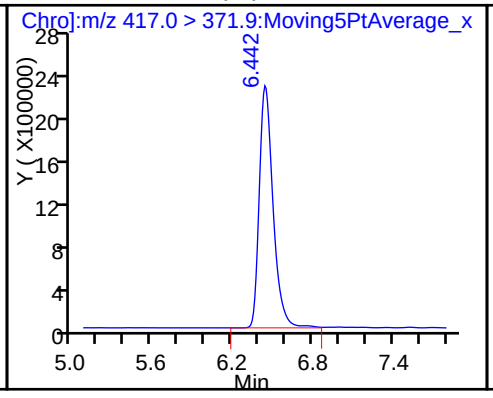
12 Perfluoroheptanesulfonic Acid



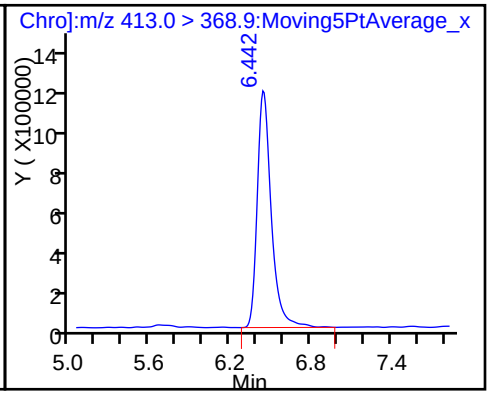
$ 14 13C8 PFOA



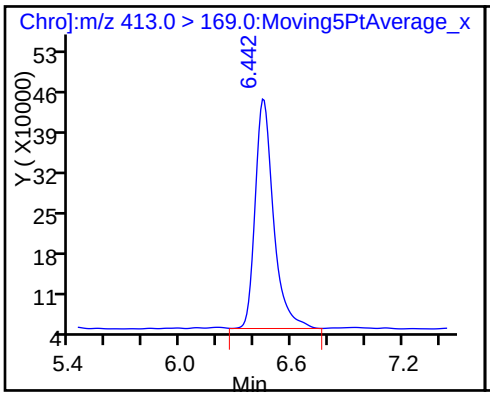
* 15 13C4 PFOA (IS)



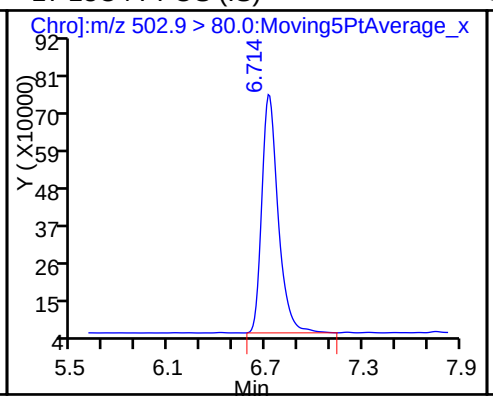
16 Perfluorooctanoic acid



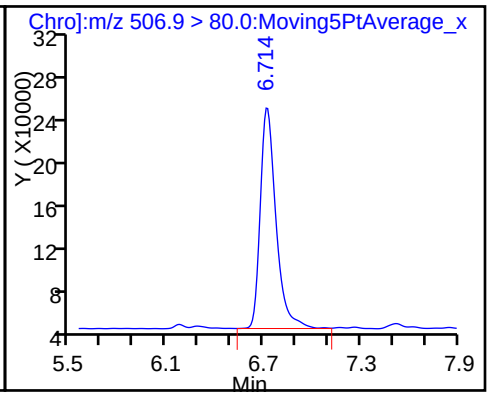
16 Perfluorooctanoic acid



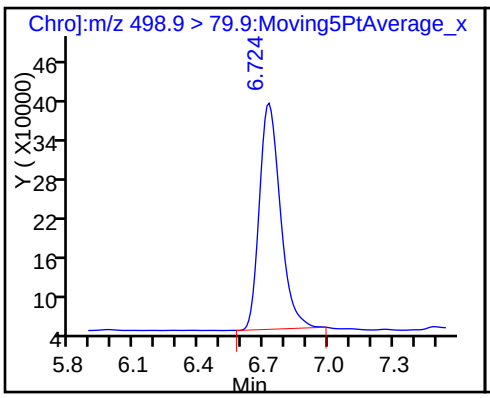
* 17 13C4 PFOS (IS)



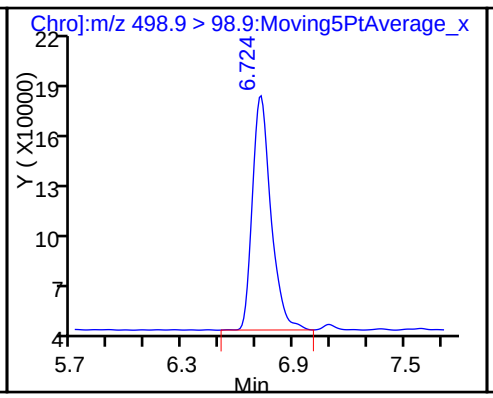
$ 18 13C8 PFOS



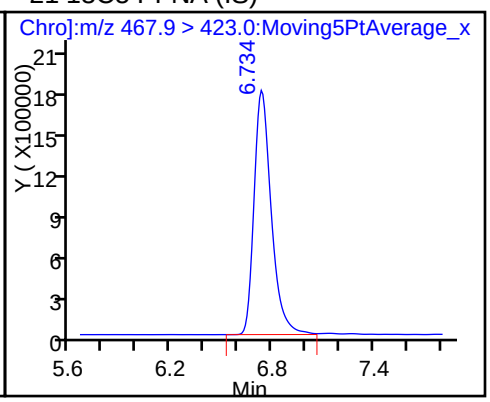
19 Perfluorooctane sulfonic acid



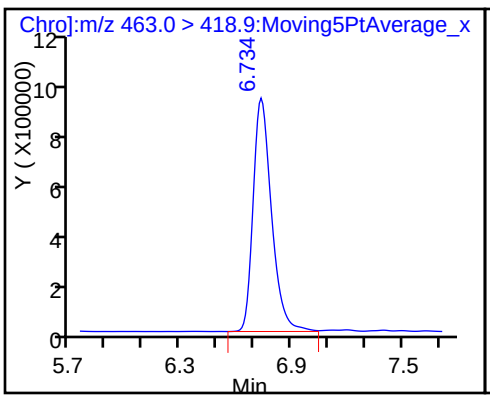
19 Perfluorooctane sulfonic acid



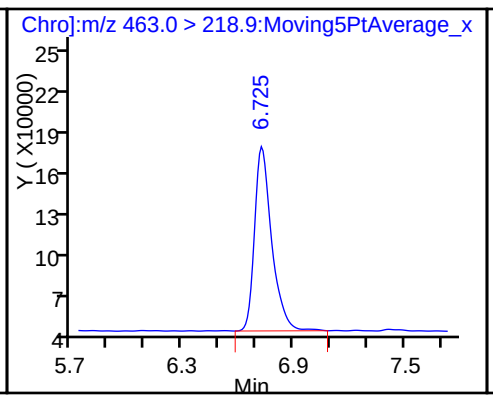
* 21 13C5 PFNA (IS)



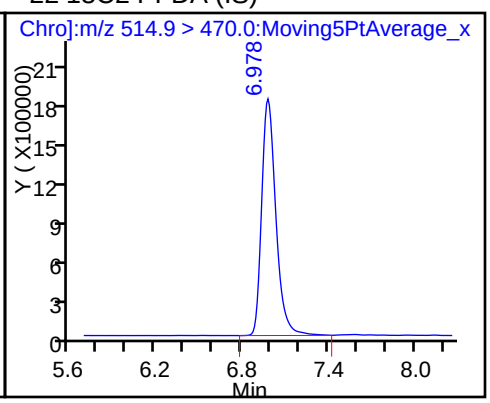
20 Perfluorononanoic acid



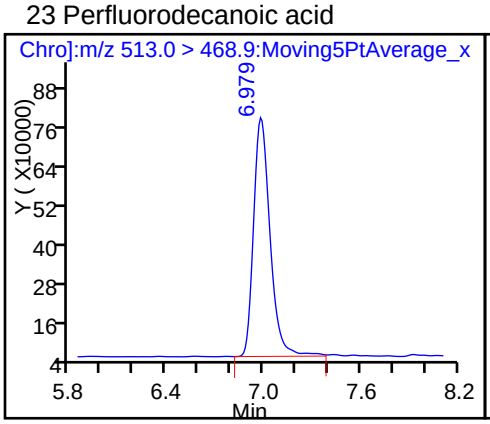
20 Perfluorononanoic acid



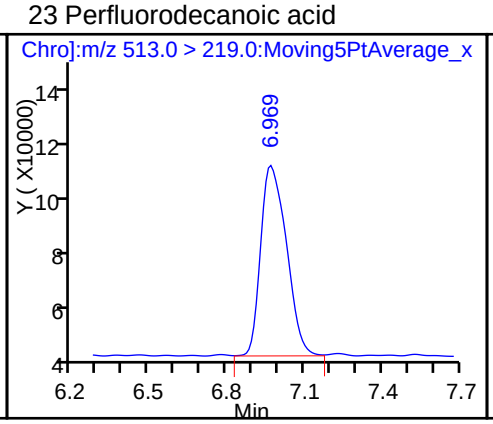
* 22 13C2 PFDA (IS)



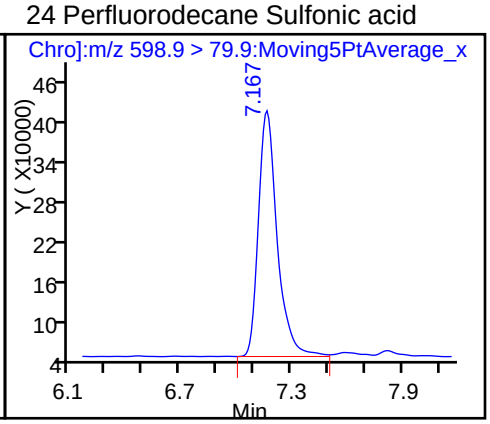
23 Perfluorodecanoic acid



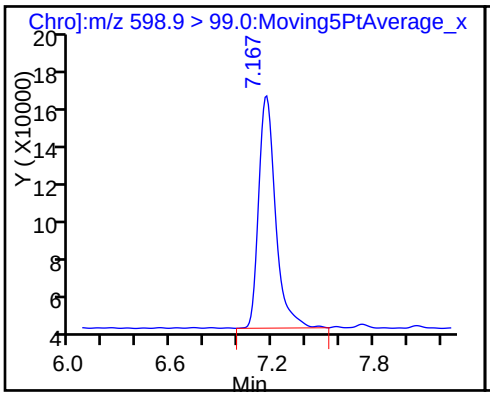
23 Perfluorodecanoic acid



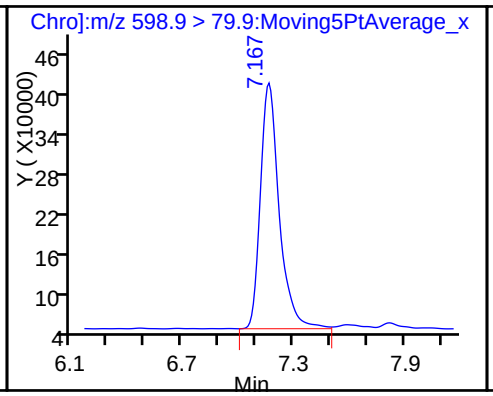
24 Perfluorodecane Sulfonic acid



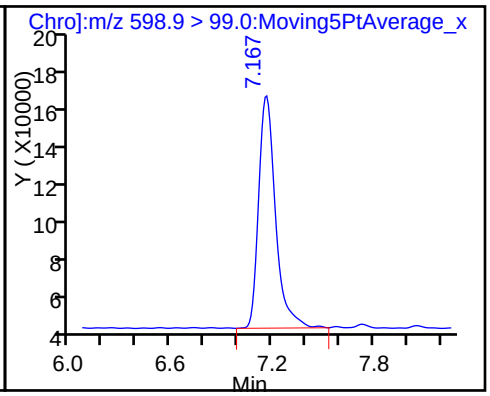
24 Perfluorodecane Sulfonic acid



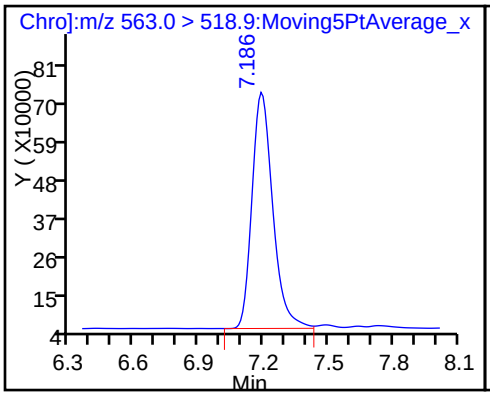
25 Perfluorodecane Sulfonate



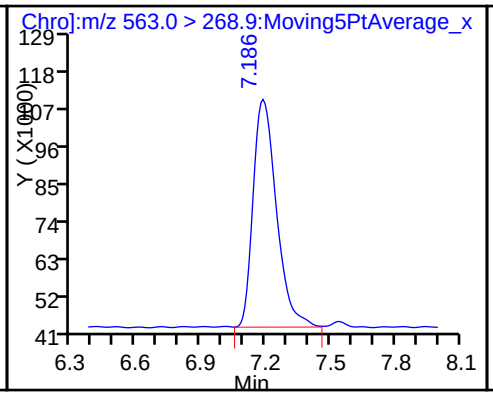
25 Perfluorodecane Sulfonate



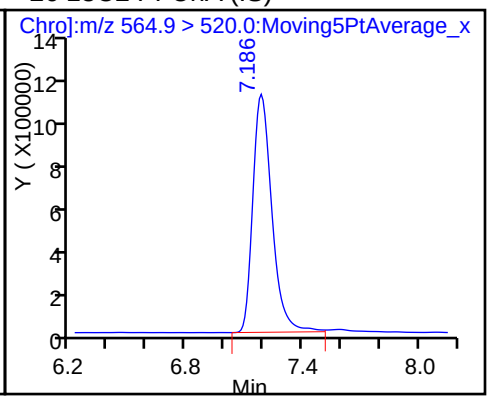
27 Perfluoroundecanoic acid



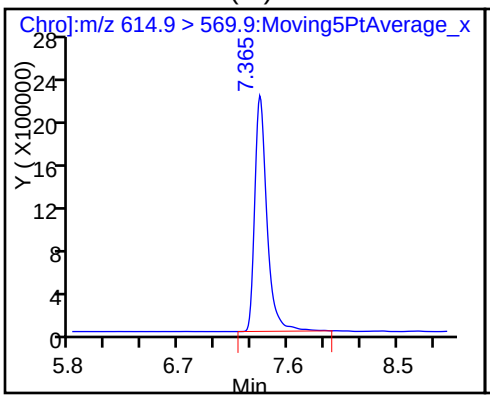
27 Perfluoroundecanoic acid



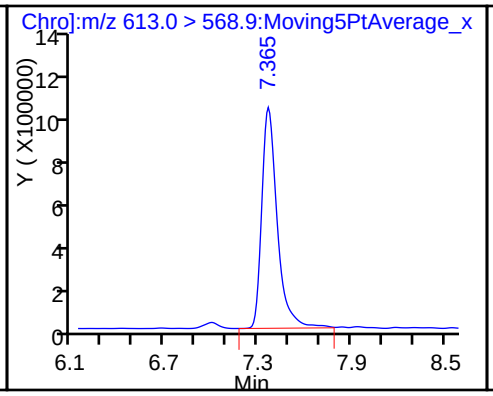
* 26 13C2 PFUnA (IS)



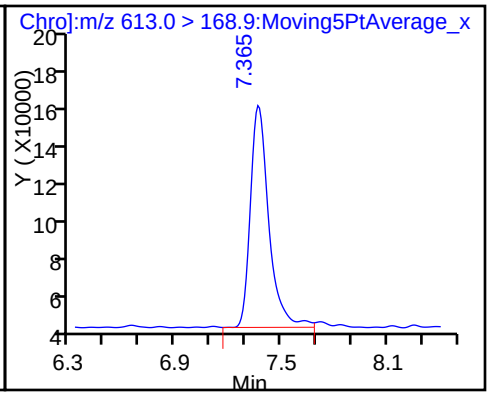
* 28 13C2 PFDoA (IS)



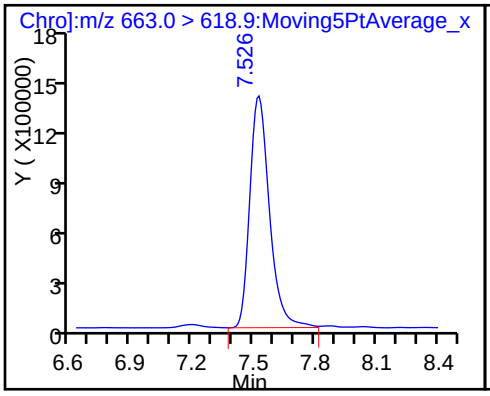
29 Perfluorododecanoic acid



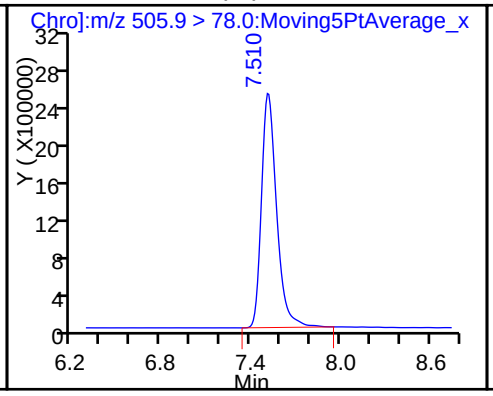
29 Perfluorododecanoic acid



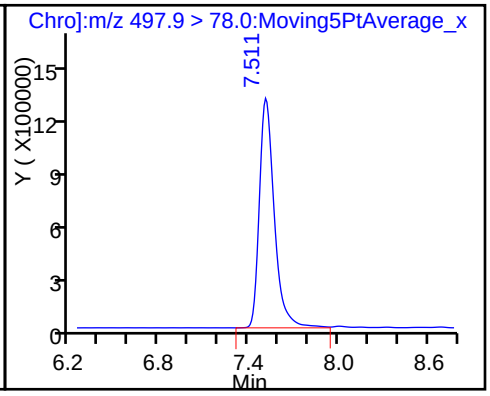
30 Perfluorotridecanoic acid



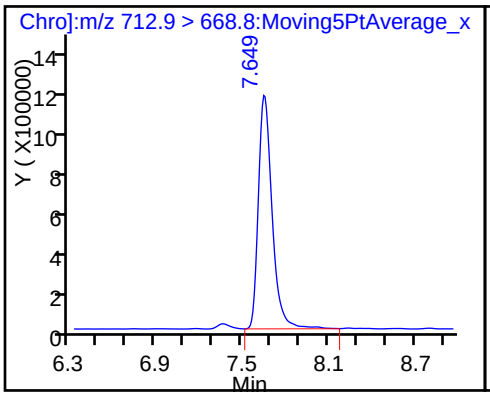
* 31 13C8 FOSA (IS)



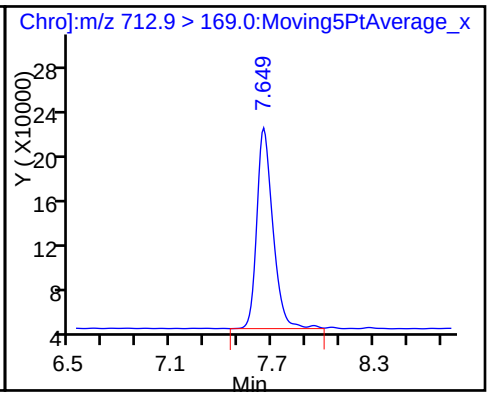
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01021.d
Lims ID: STD0100
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 01-Sep-2016 11:56:50 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0100, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:19 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:38:54

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.058	0.0		13287469	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.058	4.068	-0.010	1.000	12895488	10.1			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.100	5.109	-0.009	0.898	10624114	10.0			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.222	5.232	-0.010	0.855	5156065	8.94			R
298.9 > 98.9	5.222	5.232	-0.010	0.855	1465260		3.52(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.222	5.232	-0.010	0.855	5156065	8.94			
298.9 > 98.9	5.222	5.232	-0.010	0.855	1465260		3.52(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		9731927	10.0			
7 Perfluorohexanoic acid									M
313.0 > 268.9	5.677	5.686	-0.009	1.000	8402668	9.72			M
313.0 > 118.6	5.677	5.686	-0.009	1.000	277320		30.30(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.947	12959988	10.2			
363.0 > 168.9	6.102	6.102	0.0	0.947	3602885		3.60(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		1238740	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.102	6.111	-0.009	0.998	5070334	9.68			
398.9 > 98.9	6.102	6.111	-0.009	0.998	1697643		2.99(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.102	6.111	-0.009	0.998	5070334	9.68			R
398.9 > 98.9	6.102	6.111	-0.009	0.998	1697643		2.99(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.432	6.441	-0.009	0.958	5121961	10.0			
449.0 > 98.9	6.432	6.441	-0.009	0.958	1501560		3.41(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.432	6.441	-0.009	0.958	5121961	10.0			
449.0 > 98.9	6.432	6.441	-0.009	0.958	1501560		3.41(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.442	0.0	1.000	12063143	11.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.442	0.0		15084454	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.442	0.0	1.000	15706871	10.6			
413.0 > 169.0	6.442	6.442	0.0	1.000	5172395		3.04(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.714	0.0		4447527	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.715	0.0	1.000	4994005	10.5			R
498.9 > 98.9	6.715	6.715	0.0	1.000	1846470		2.70(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.714	6.723	-0.009	1.000	2717920	10.2			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.734	0.0		11257567	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.734	0.0	1.000	11860060	9.96			
463.0 > 218.9	6.734	6.734	0.0	1.000	1537033		7.72(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	6.978	0.0		10926044	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.979	6.979	0.0	1.000	10395613	10.0			R
513.0 > 219.0	6.979	6.979	0.0	1.000	1048609		9.91(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.167	0.0	1.067	4806013	10.4			
598.9 > 99.0	7.167	7.167	0.0	1.067	1641410		2.93(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.167	0.0	1.067	4806013	10.4			
598.9 > 99.0	7.167	7.167	0.0	1.067	1641410		2.93(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.186	0.0		6242370	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.186	0.0	1.000	8601057	10.6			R
563.0 > 268.9	7.186	7.186	0.0	1.000	1013974		8.48(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.365	0.0		13617248	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.365	0.0	1.000	13981225	10.6			
613.0 > 168.9	7.375	7.365	0.010	1.001	1567261		8.92(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.511	0.0	1.000	16605818	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.526	7.516	0.010	1.022	19361463	11.2			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.519	-0.009		15995364	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.658	7.649	0.009	1.040	13647994	10.3			
712.9 > 169.0	7.658	7.649	0.009	1.040	2124933		6.42(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC-LCS_00084	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL

Report Date: 02-Sep-2016 11:52:20 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01021.d

Injection Date: 01-Sep-2016 11:56:50 Instrument ID: LC_LCMS5

Lims ID: STD0100

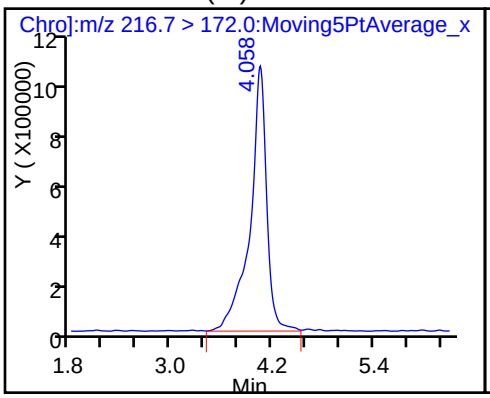
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8

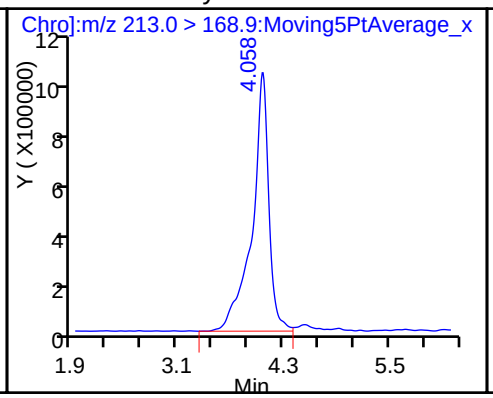
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

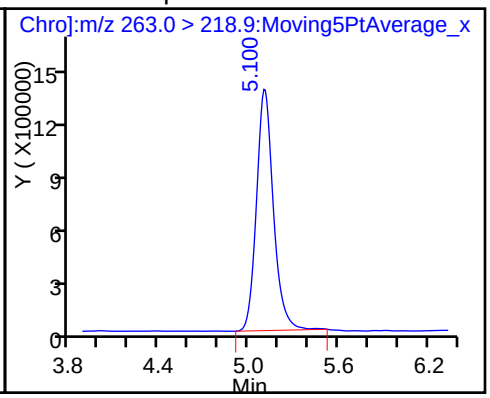
* 1 13C4 PFBA (IS)



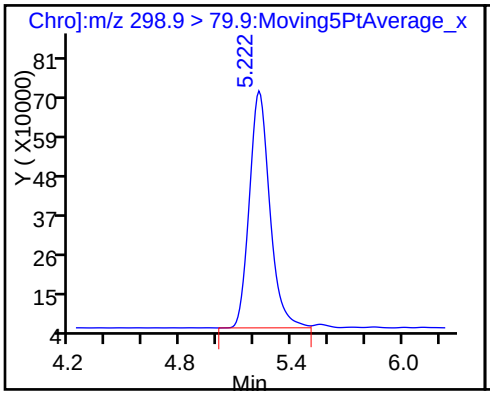
2 Perfluorobutyric acid



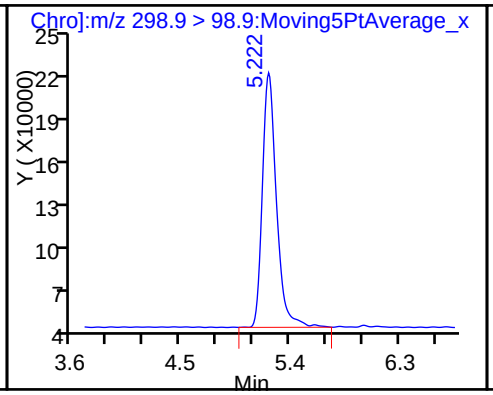
3 Perfluoropentanoic acid



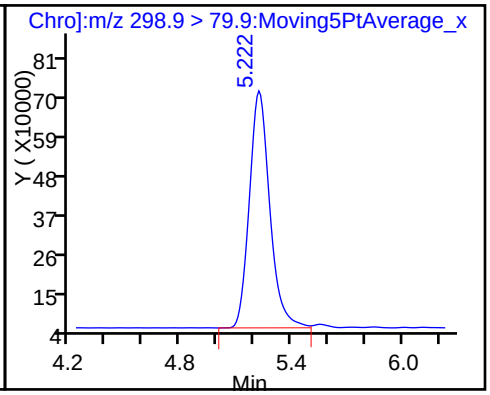
4 Perfluorobutane Sulfonate



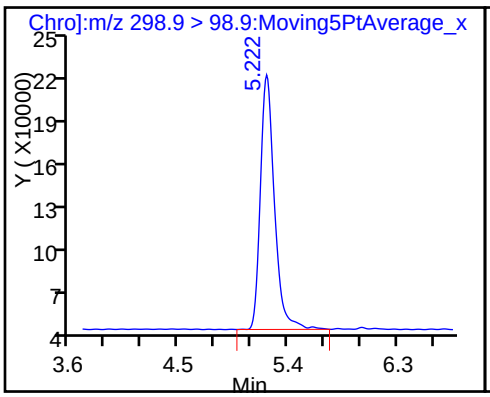
4 Perfluorobutane Sulfonate



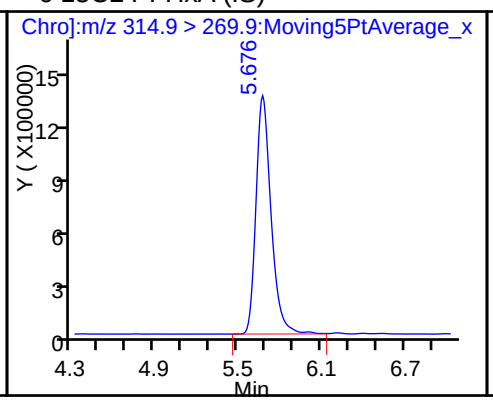
5 Perfluorobutanesulfonic acid



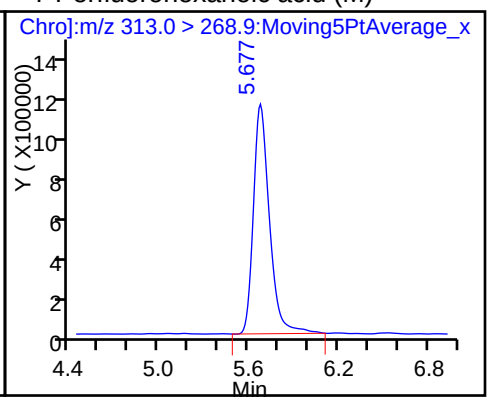
5 Perfluorobutanesulfonic acid



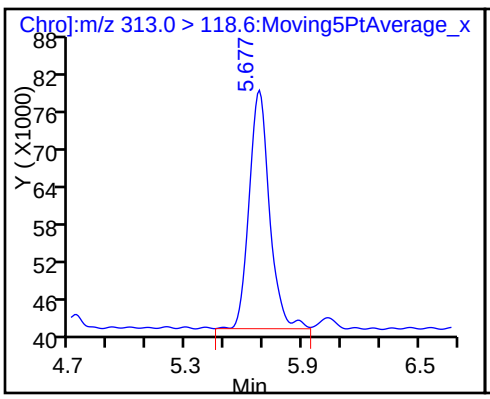
* 6 13C2 PFHxA (IS)



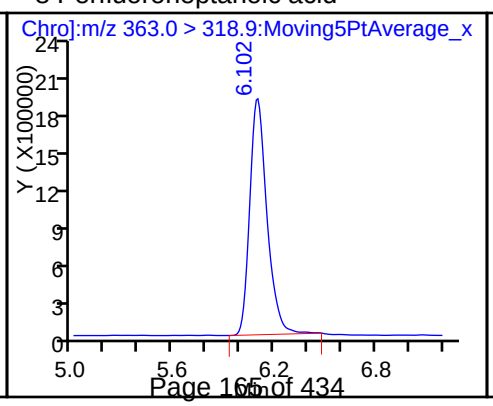
7 Perfluorohexanoic acid (M)



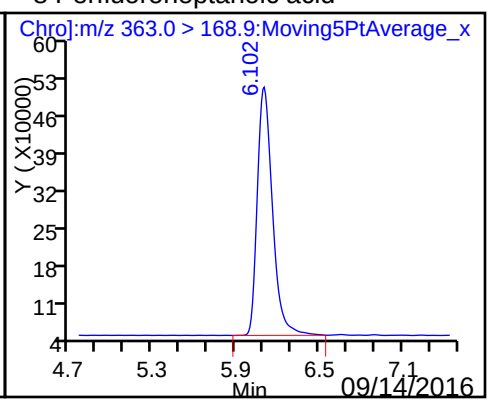
7 Perfluorohexanoic acid



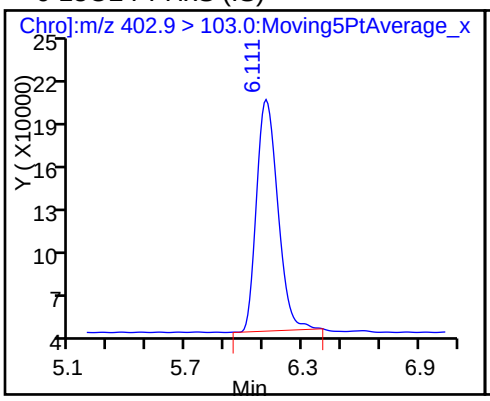
8 Perfluoroheptanoic acid



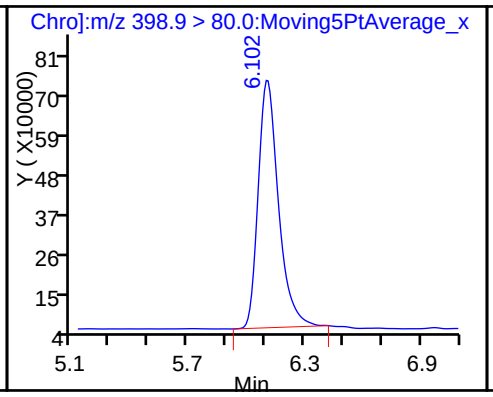
8 Perfluoroheptanoic acid



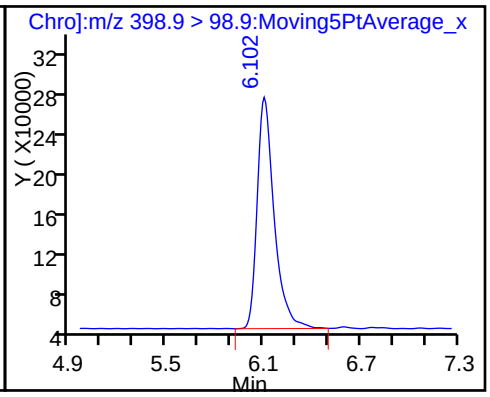
* 9 18O2 PFHxS (IS)



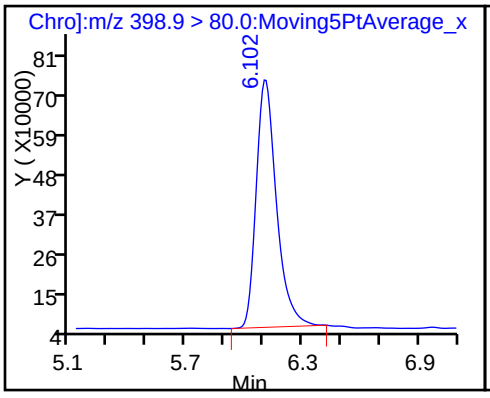
11 Perfluorohexanesulfonic acid



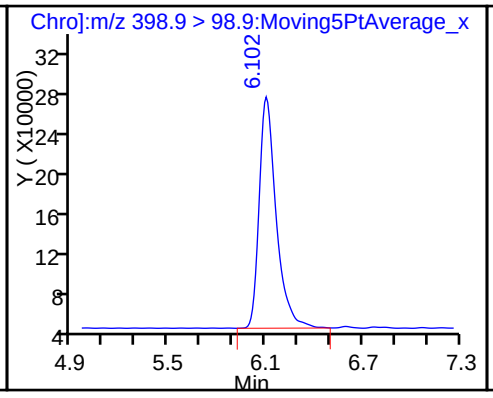
11 Perfluorohexanesulfonic acid



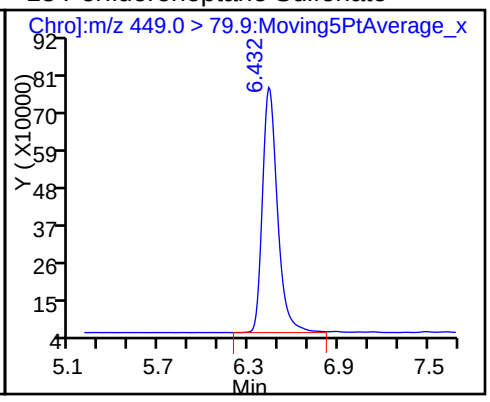
10 Perfluorohexane Sulfonate



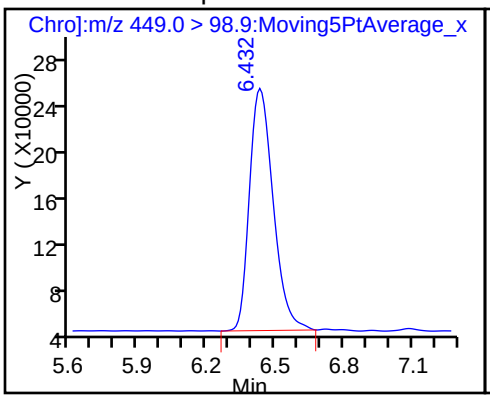
10 Perfluorohexane Sulfonate



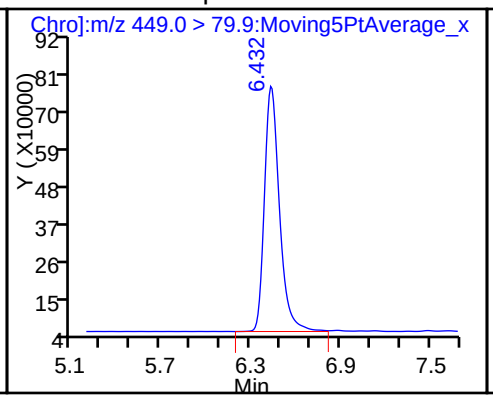
13 Perfluoroheptane Sulfonate



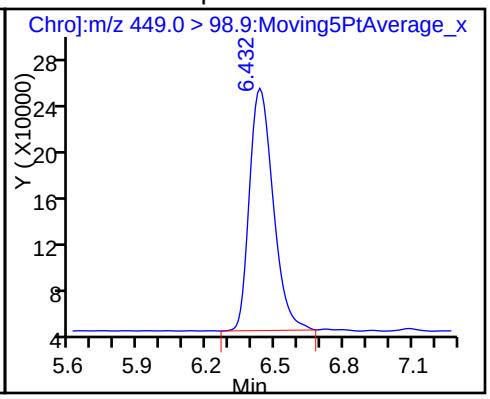
13 Perfluoroheptane Sulfonate



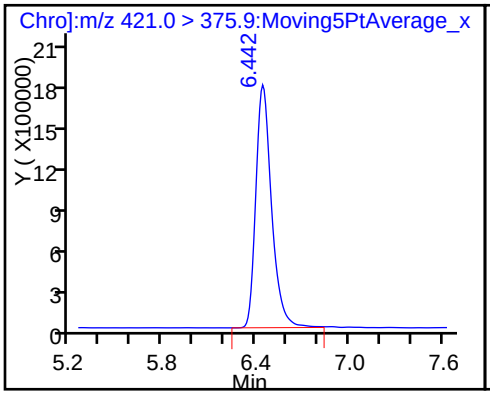
12 Perfluoroheptanesulfonic Acid



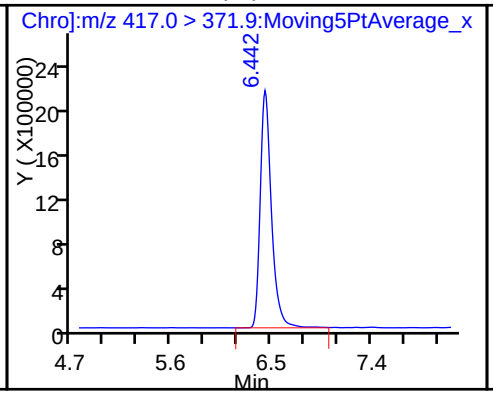
12 Perfluoroheptanesulfonic Acid



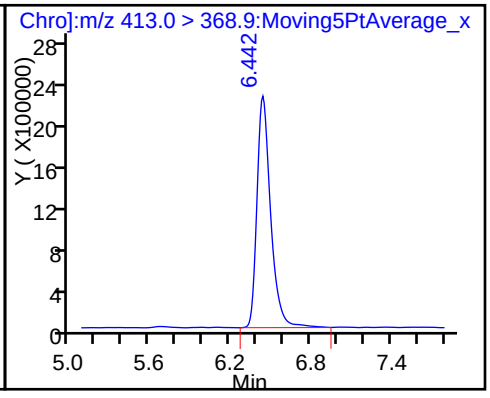
$ 14 13C8 PFOA



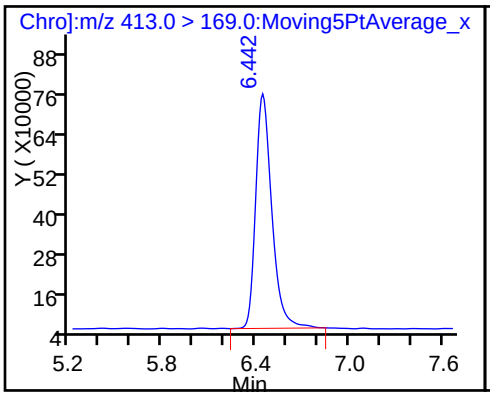
* 15 13C4 PFOA (IS)



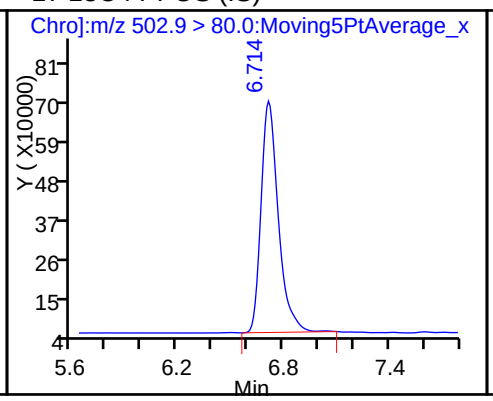
16 Perfluorooctanoic acid



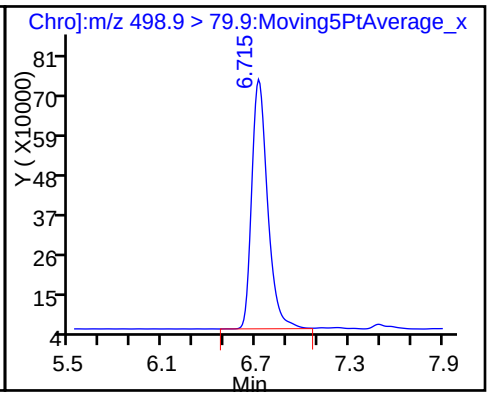
16 Perfluorooctanoic acid



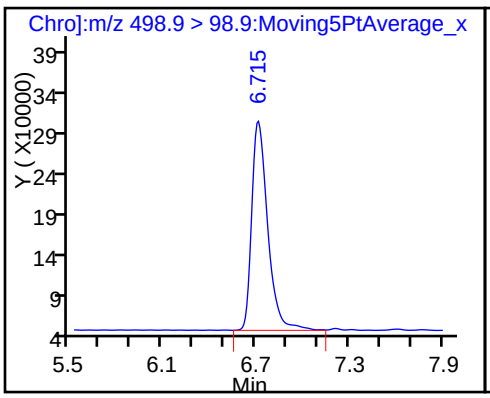
* 17 13C4 PFOS (IS)



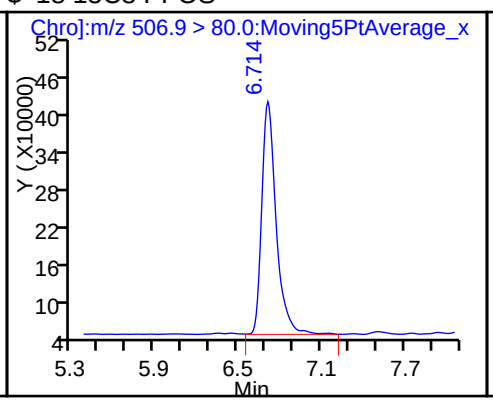
19 Perfluorooctane sulfonic acid



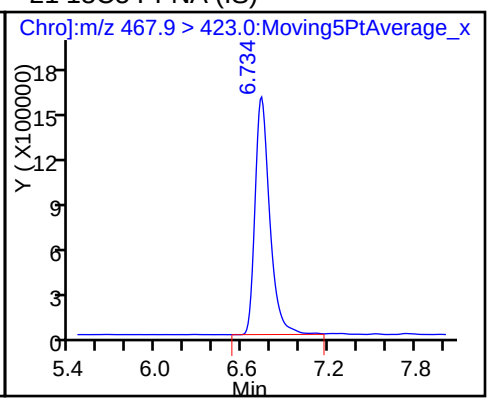
19 Perfluorooctane sulfonic acid



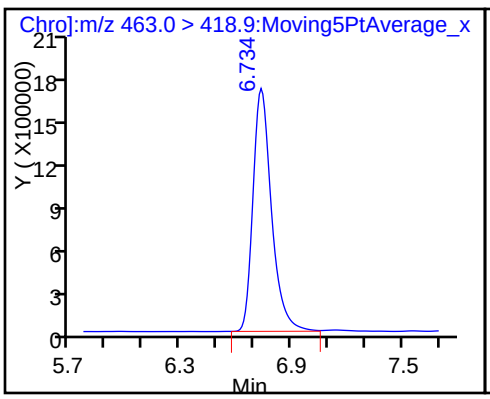
$ 18 13C8 PFOS



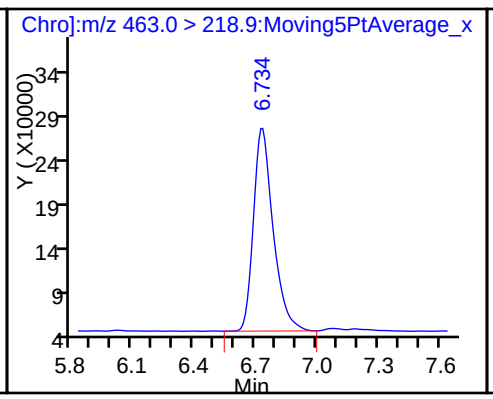
* 21 13C5 PFNA (IS)



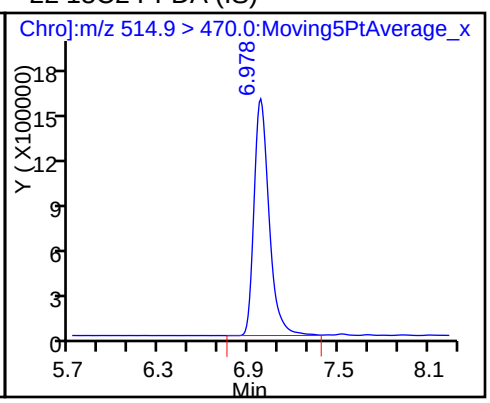
20 Perfluorononanoic acid



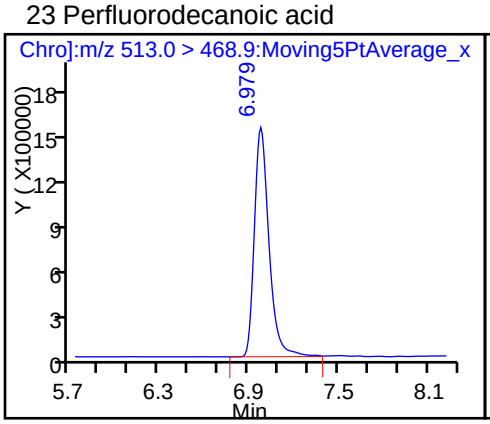
20 Perfluorononanoic acid



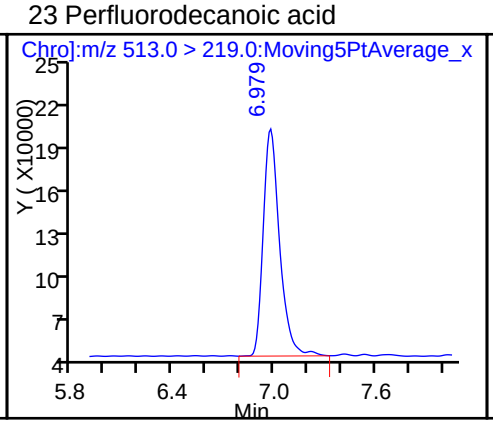
* 22 13C2 PFDA (IS)



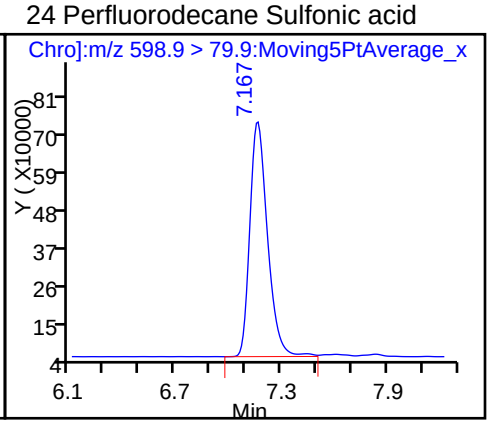
23 Perfluorodecanoic acid



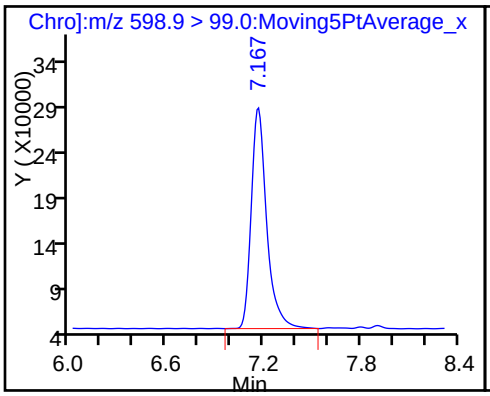
23 Perfluorodecanoic acid



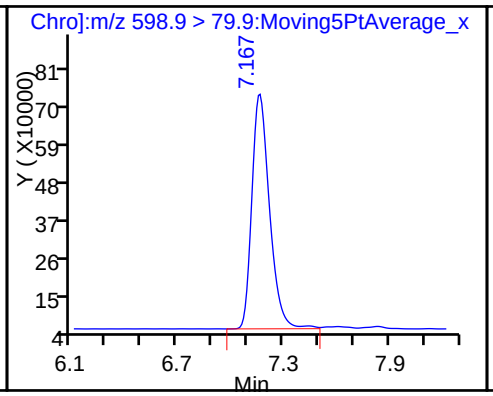
24 Perfluorodecane Sulfonic acid



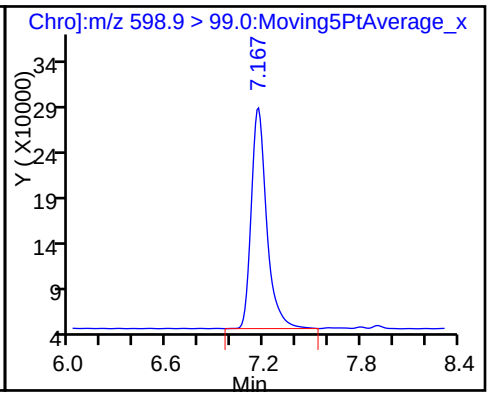
24 Perfluorodecane Sulfonic acid



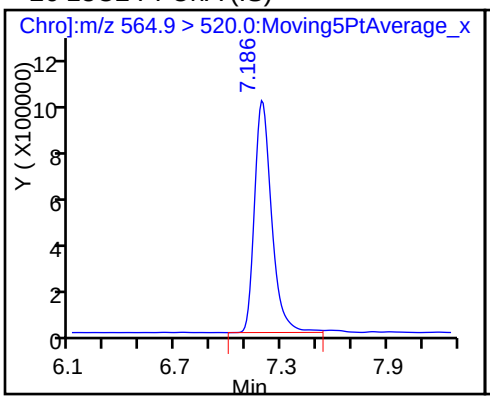
25 Perfluorodecane Sulfonate



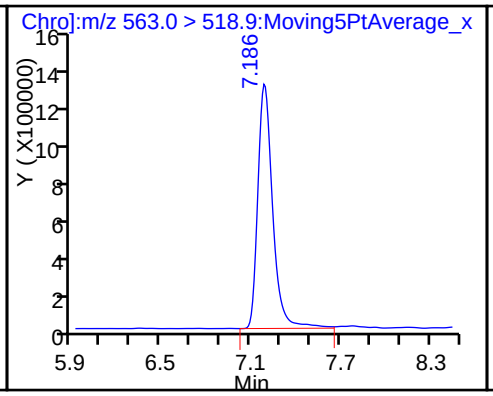
25 Perfluorodecane Sulfonate



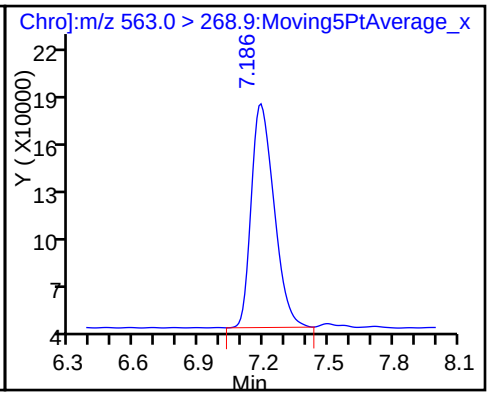
* 26 13C2 PFUnA (IS)



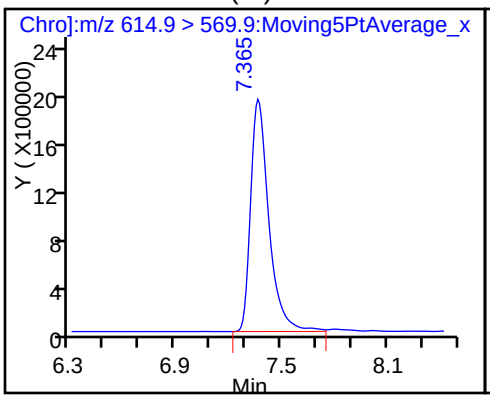
27 Perfluoroundecanoic acid



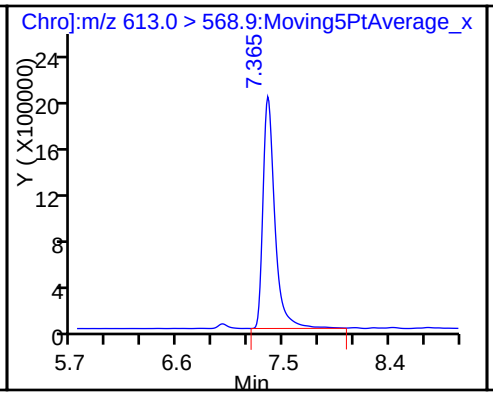
27 Perfluoroundecanoic acid



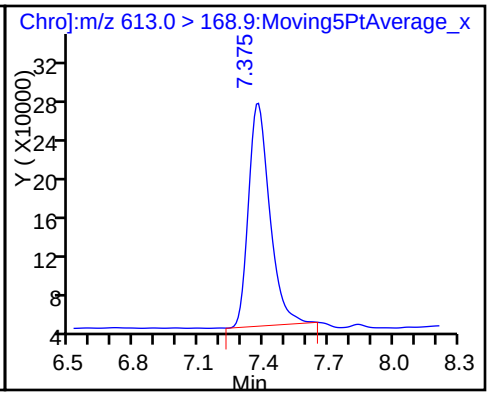
* 28 13C2 PFDoA (IS)



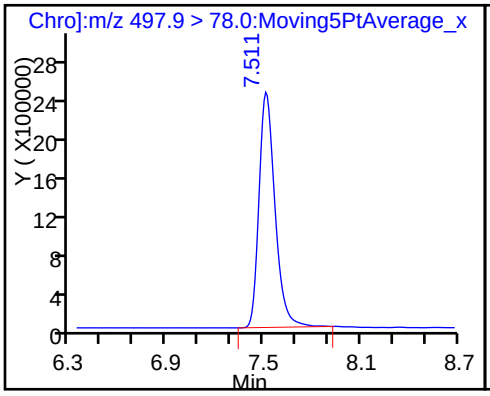
29 Perfluorododecanoic acid



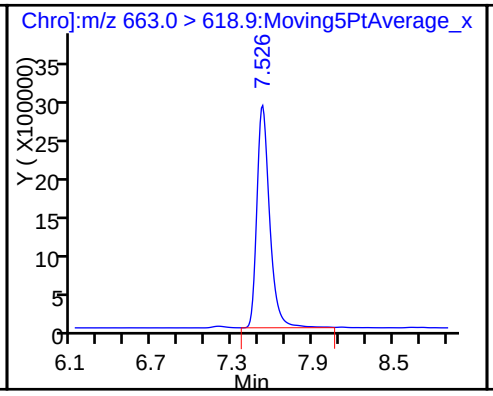
29 Perfluorododecanoic acid



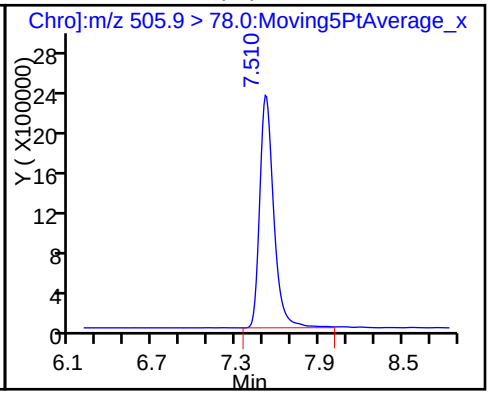
32 Perfluorooctane Sulfonamide



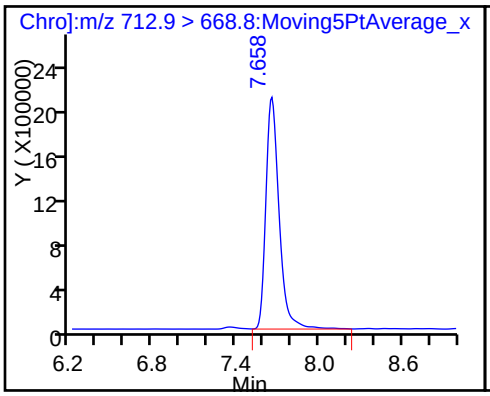
30 Perfluorotridecanoic acid



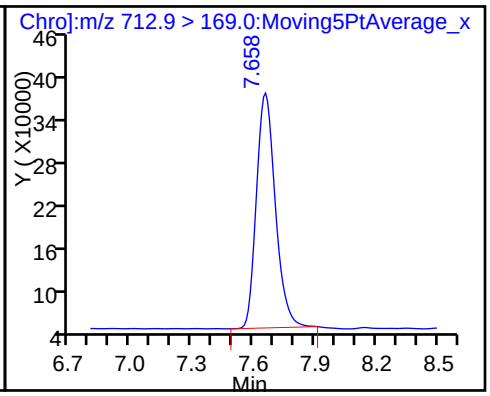
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



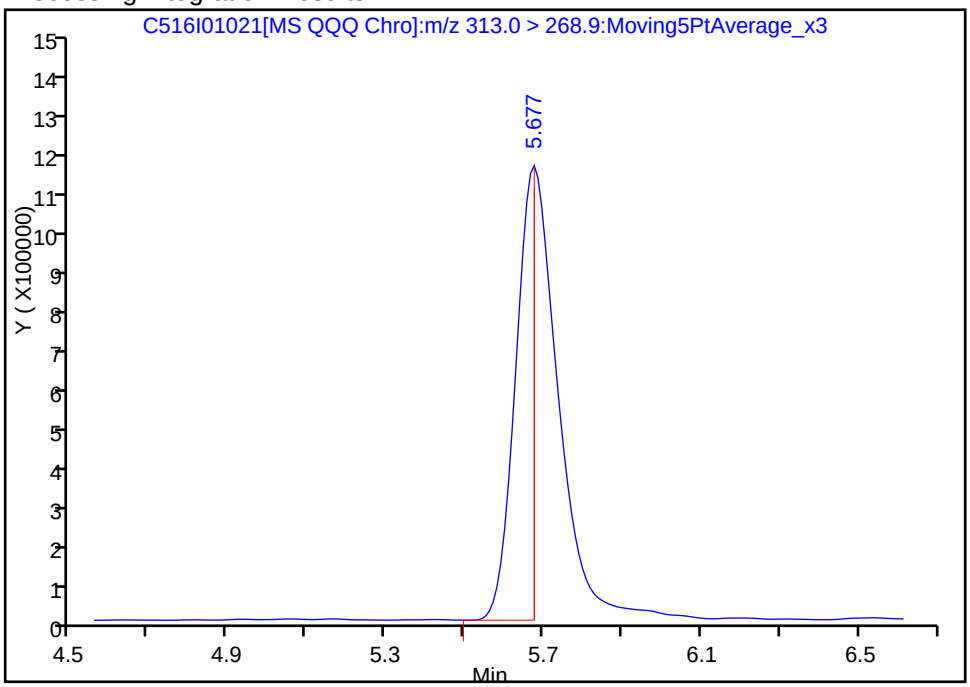
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01021.d
Injection Date: 01-Sep-2016 11:56:50 Instrument ID: LC_LCMS5
Lims ID: STD0100
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

7 Perfluorohexanoic acid, CAS: 307-24-4

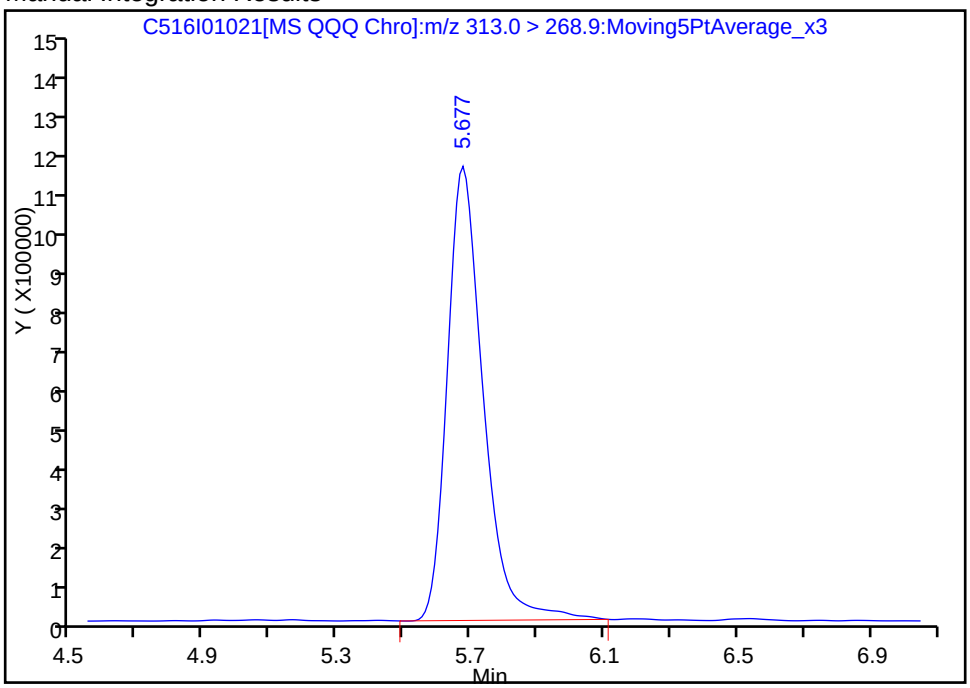
Processing Integration Results

RT: 5.68
Area: 3579763
Amount: 4.263862
Amount Units: ug/L



Manual Integration Results

RT: 5.68
Area: 8402668
Amount: 9.722351
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 10:38:54
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01022.d
Lims ID: STD0200
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 01-Sep-2016 12:09:11 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0200, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:23 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:39:08

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.020	4.058	-0.038		13207503	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.011	4.068	-0.057	0.998	24783380	19.5			
3 Perfluoropentanoic acid									M
263.0 > 218.9	5.100	5.109	-0.009	0.898	20937672	20.6			M
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.232	-0.019	0.852	10278122	17.4			
298.9 > 98.9	5.213	5.232	-0.019	0.852	3155793		3.26(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.232	-0.019	0.852	10278122	17.4			
298.9 > 98.9	5.213	5.232	-0.019	0.852	3155793		3.26(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		9383394	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.686	-0.009	1.000	16800712	20.2			
313.0 > 118.6	5.677	5.686	-0.009	1.000	510891		32.89(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.112	6.102	0.010	0.946	24713014	20.0			
363.0 > 168.9	6.112	6.102	0.010	0.946	6607852		3.74(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.111	0.009		1268798	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	0.998	9727199	18.1			
398.9 > 98.9	6.121	6.111	0.010	1.000	3022528		3.22(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	0.998	9727199	18.1			R
398.9 > 98.9	6.121	6.111	0.010	1.000	3022528		3.22(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.441	0.010	0.958	9639164	19.1			
449.0 > 98.9	6.451	6.441	0.010	0.958	2893152		3.33(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.441	0.010	0.958	9639164	19.1			
449.0 > 98.9	6.451	6.441	0.010	0.958	2893152		3.33(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.442	0.019	1.000	23880169	23.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.442	0.019		14751283	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.442	0.019	1.000	29379405	20.4			
413.0 > 169.0	6.461	6.442	0.019	1.000	9372588		3.13(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.714	0.019		4386622	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.734	6.715	0.019	1.000	9140566	19.5			R
498.9 > 98.9	6.734	6.715	0.019	1.000	3394942		2.69(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.723	0.010	1.000	5225135	19.9			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.734	0.010		11262001	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.734	0.019	1.001	22299666	18.7			
463.0 > 218.9	6.753	6.734	0.019	1.001	3076569		7.25(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	6.978	0.010		10779036	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.988	6.979	0.009	1.000	20217922	19.8			
513.0 > 219.0	6.988	6.979	0.009	1.000	1913924		10.56(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.176	7.167	0.009	1.066	9218011	20.3			
598.9 > 99.0	7.176	7.167	0.009	1.066	2941342		3.13(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.176	7.167	0.009	1.066	9218011	20.3			
598.9 > 99.0	7.176	7.167	0.009	1.066	2941342		3.13(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.205	7.186	0.019		6464767	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.205	7.186	0.019	1.000	16971733	20.3			R
563.0 > 268.9	7.196	7.186	0.010	0.999	1969673		8.62(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.365	0.019		13745058	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.375	7.365	0.010	0.999	26732518	20.0			
613.0 > 168.9	7.375	7.365	0.010	0.999	3230854		8.27(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.511	0.019	1.000	32592976	19.8			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.535	7.516	0.019	1.020	34759616	20.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.519	0.010		15913053	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.668	7.649	0.019	1.038	27275322	20.5			
712.9 > 169.0	7.668	7.649	0.019	1.038	4216761		6.47(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	40.00	Units: uL
PFC-LCS_00084	Amount Added:	40.00	Units: uL

Report Date: 02-Sep-2016 11:52:24 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01022.d

Injection Date: 01-Sep-2016 12:09:11 Instrument ID: LC_LCMS5

Lims ID: STD0200

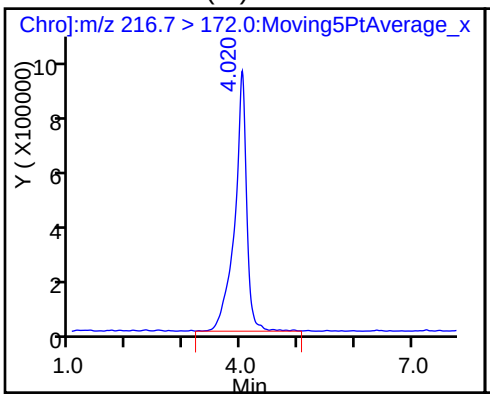
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 9

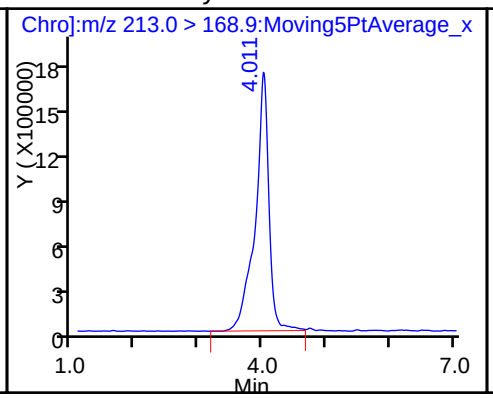
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

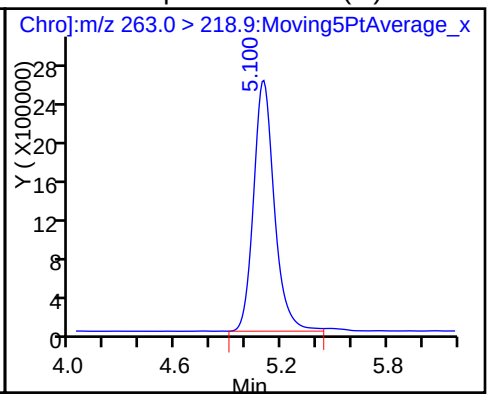
* 1 13C4 PFBA (IS)



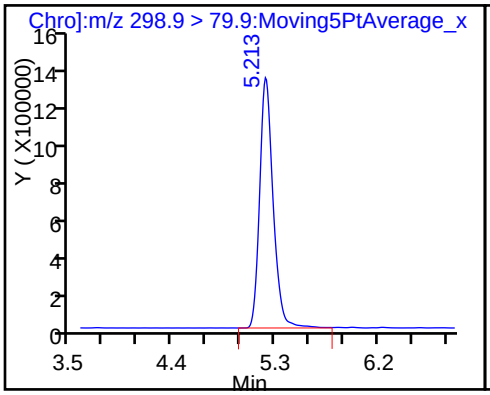
2 Perfluorobutyric acid



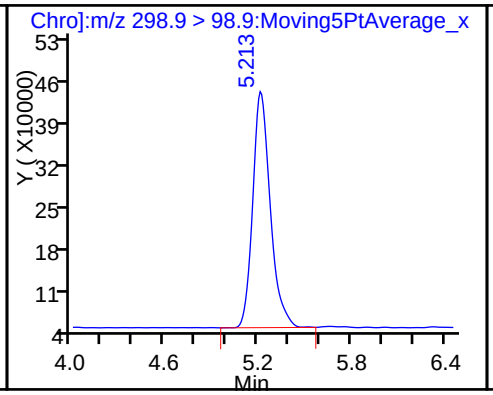
3 Perfluoropentanoic acid (M)



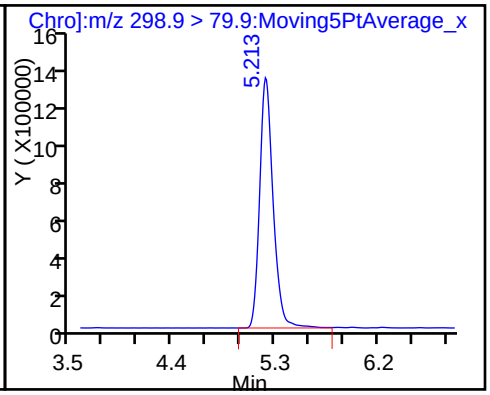
4 Perfluorobutane Sulfonate



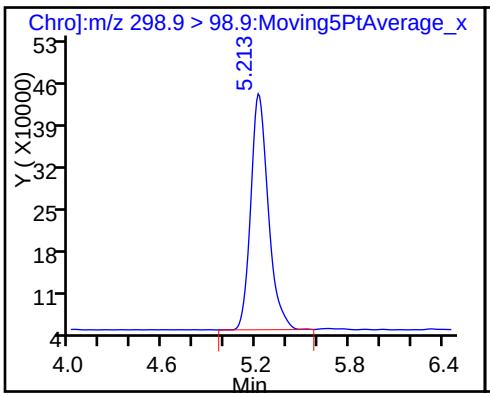
4 Perfluorobutane Sulfonate



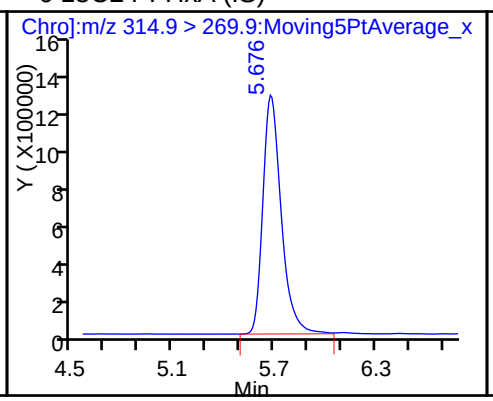
5 Perfluorobutanesulfonic acid



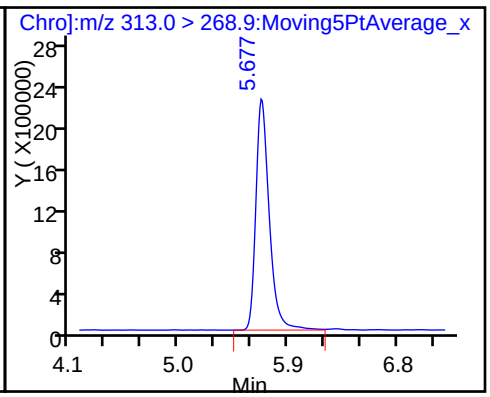
5 Perfluorobutanesulfonic acid



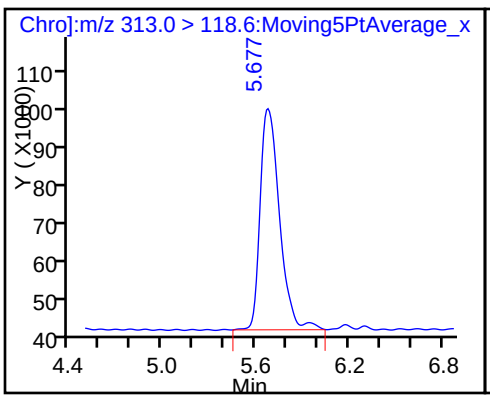
* 6 13C2 PFHxA (IS)



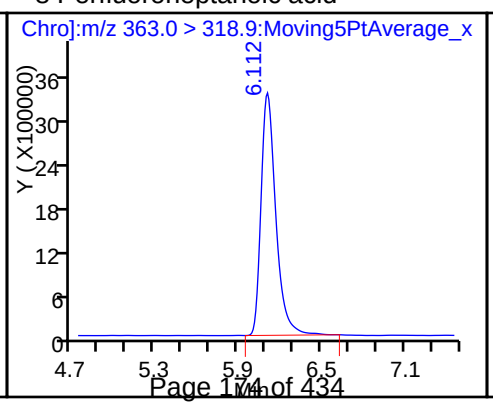
7 Perfluorohexanoic acid



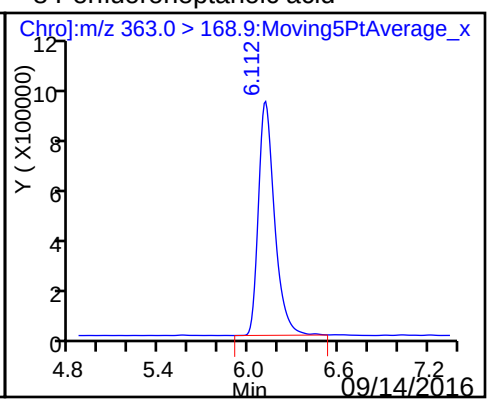
7 Perfluorohexanoic acid



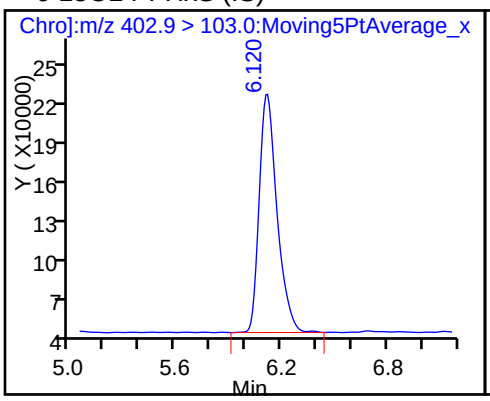
8 Perfluoroheptanoic acid



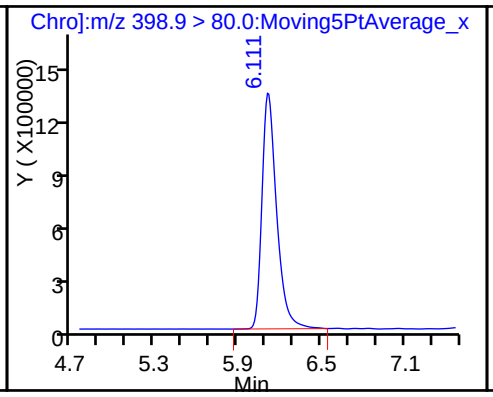
8 Perfluoroheptanoic acid



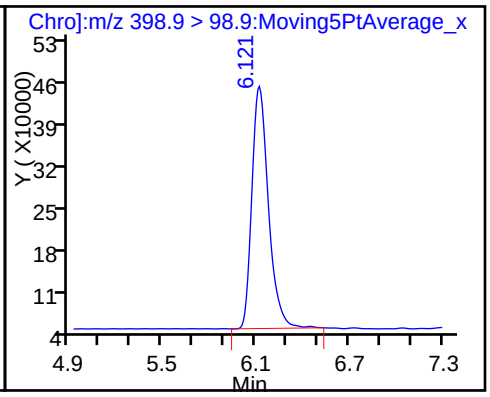
* 9 18O2 PFHxS (IS)



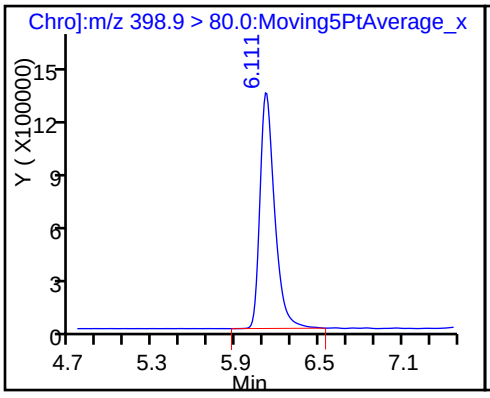
11 Perfluorohexanesulfonic acid



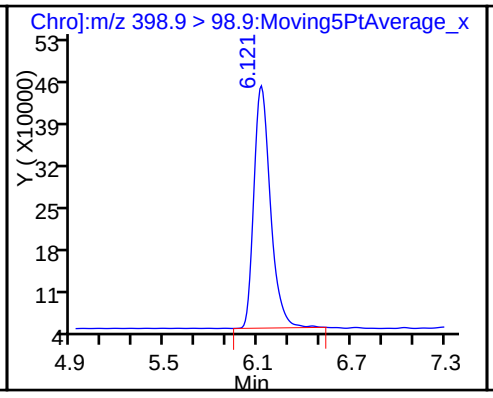
11 Perfluorohexanesulfonic acid



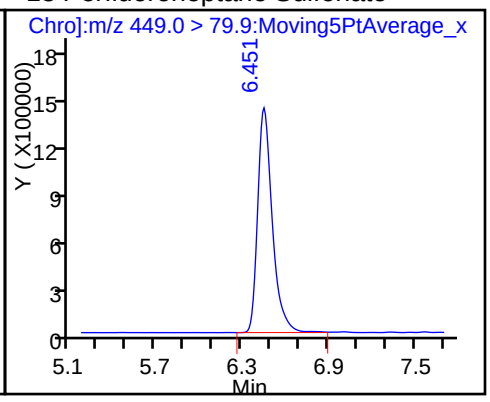
10 Perfluorohexane Sulfonate



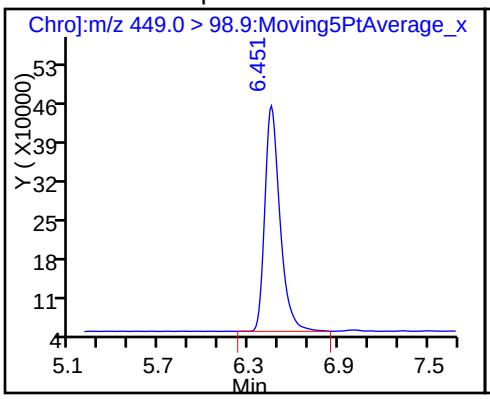
10 Perfluorohexane Sulfonate



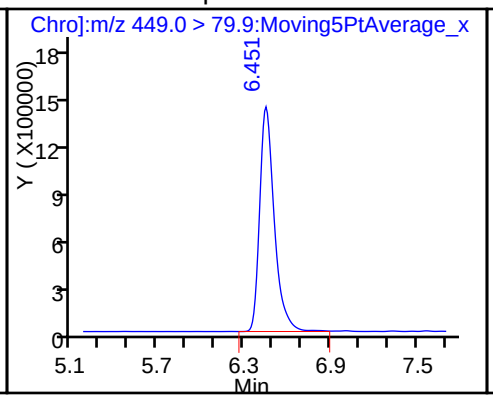
13 Perfluoroheptane Sulfonate



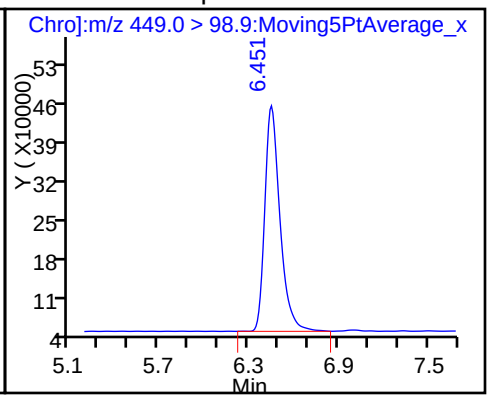
13 Perfluoroheptane Sulfonate



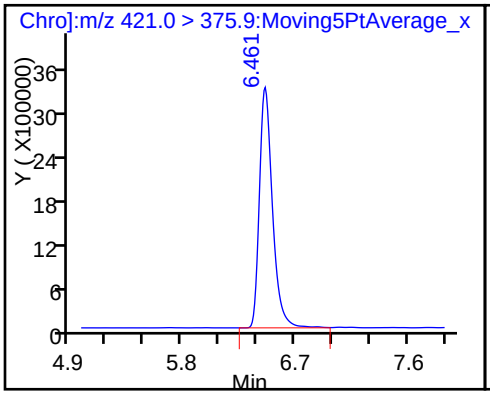
12 Perfluoroheptanesulfonic Acid



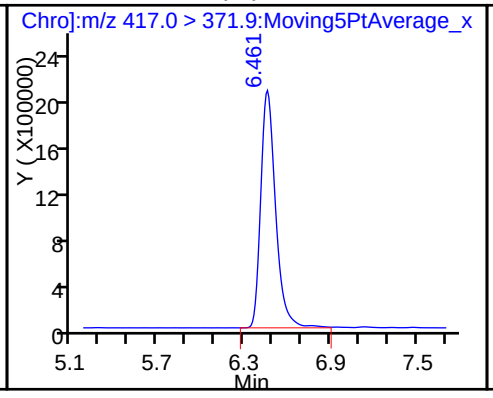
12 Perfluoroheptanesulfonic Acid



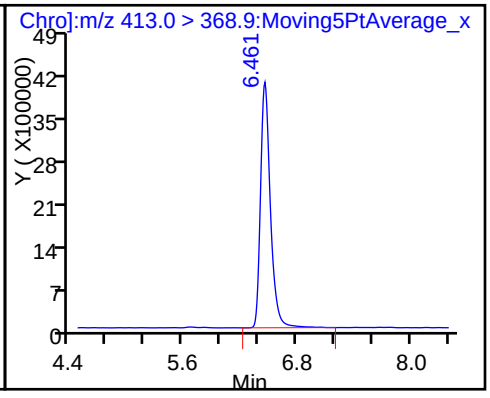
$ 14 13C8 PFOA



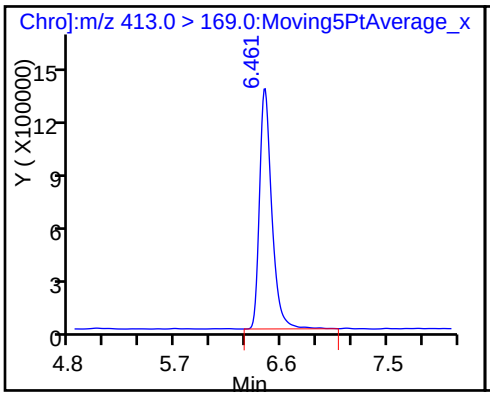
* 15 13C4 PFOA (IS)



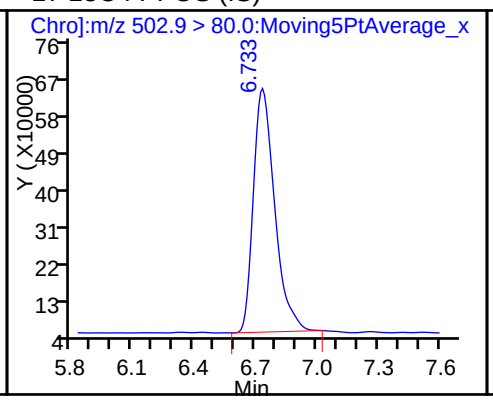
16 Perfluorooctanoic acid



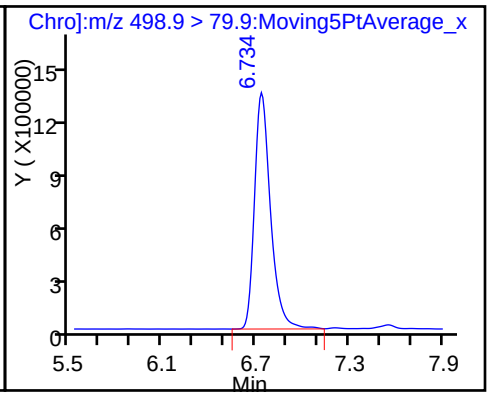
16 Perfluorooctanoic acid



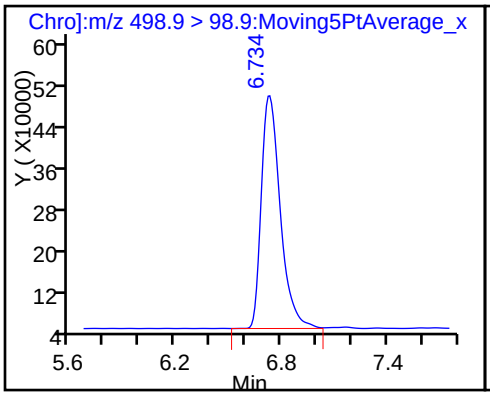
* 17 13C4 PFOS (IS)



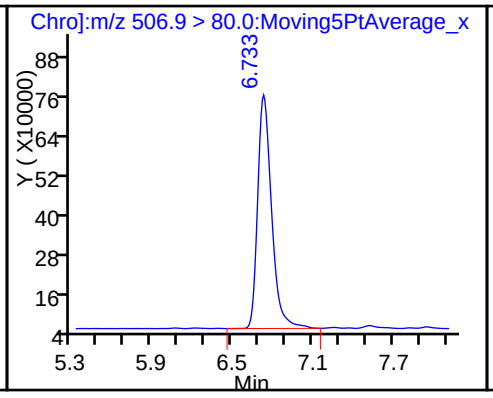
19 Perfluorooctane sulfonic acid



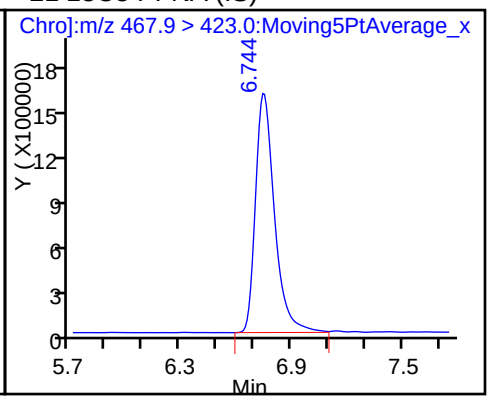
19 Perfluorooctane sulfonic acid



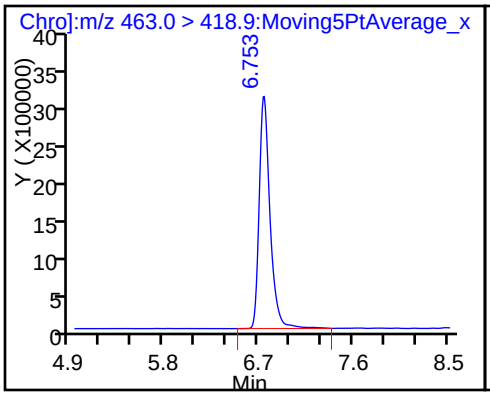
$ 18 13C8 PFOS



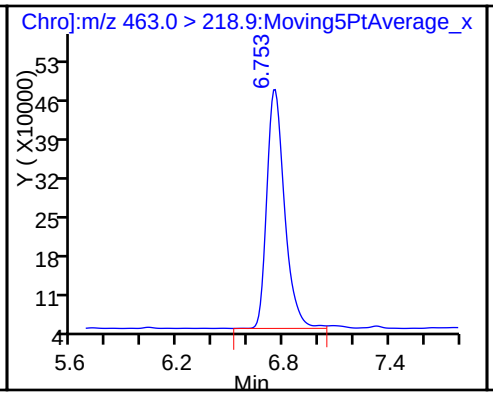
* 21 13C5 PFNA (IS)



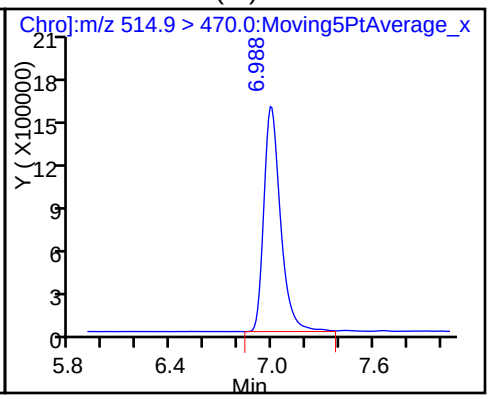
20 Perfluorononanoic acid



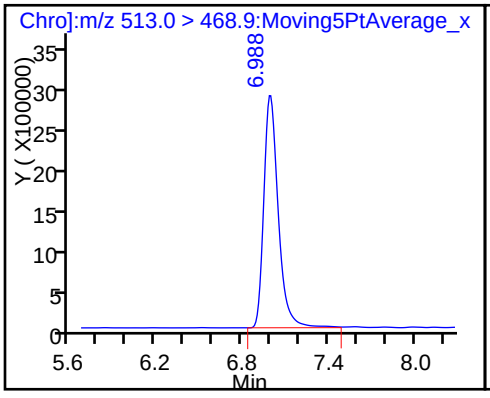
20 Perfluorononanoic acid



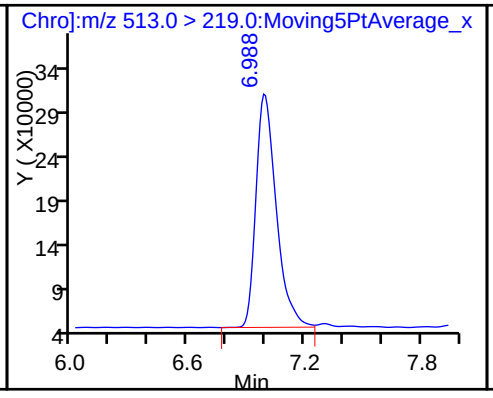
* 22 13C2 PFDA (IS)



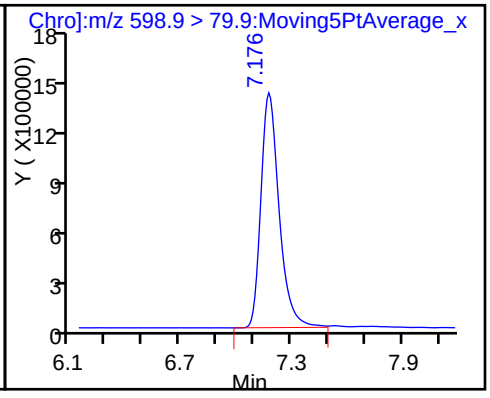
23 Perfluorodecanoic acid



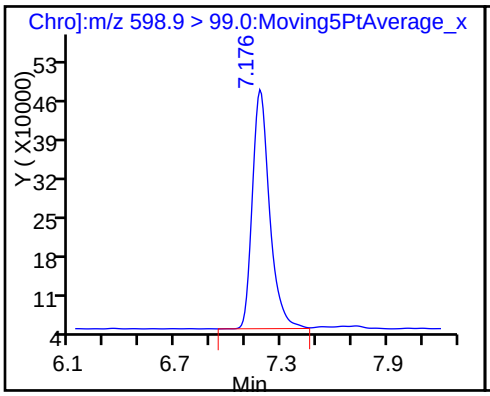
23 Perfluorodecanoic acid



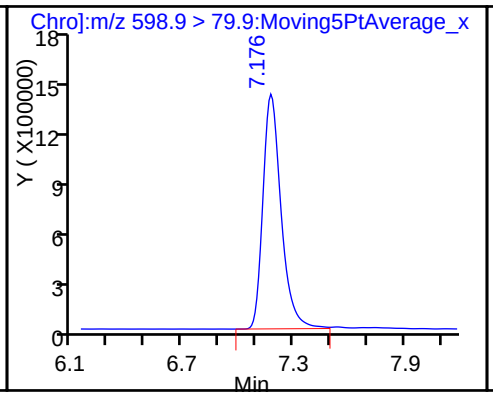
24 Perfluorodecane Sulfonic acid



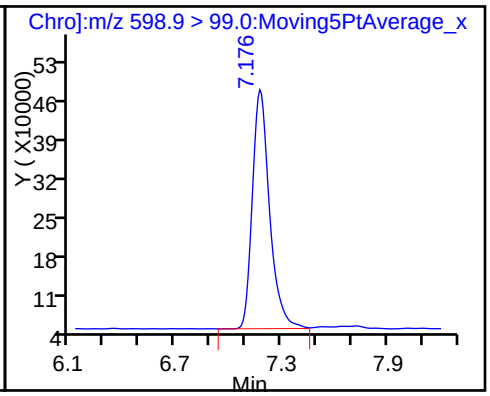
24 Perfluorodecane Sulfonic acid



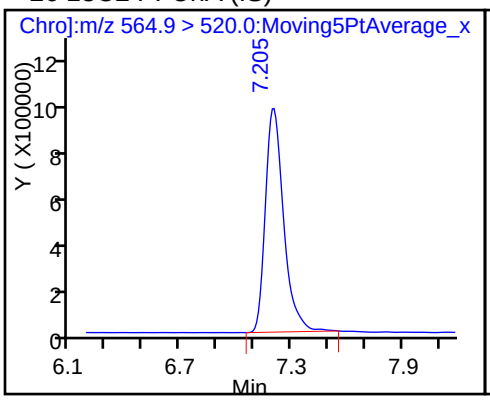
25 Perfluorodecane Sulfonate



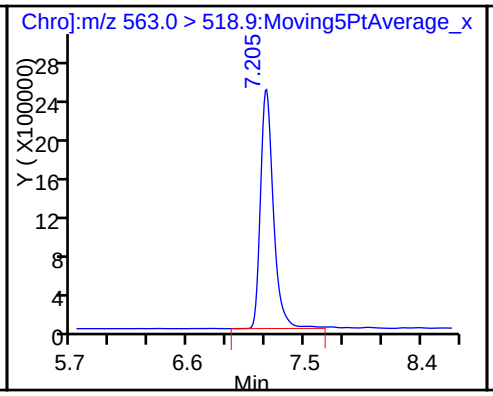
25 Perfluorodecane Sulfonate



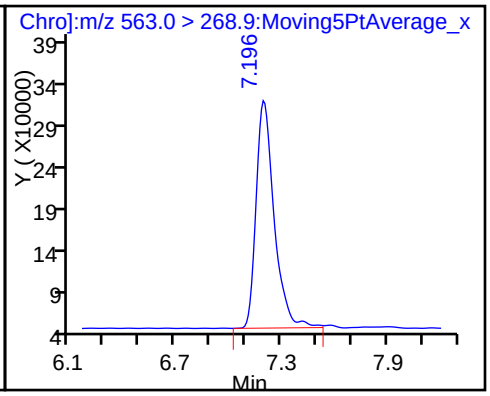
* 26 13C2 PFUnA (IS)



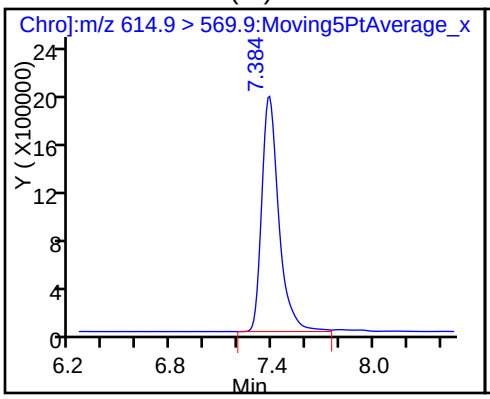
27 Perfluoroundecanoic acid



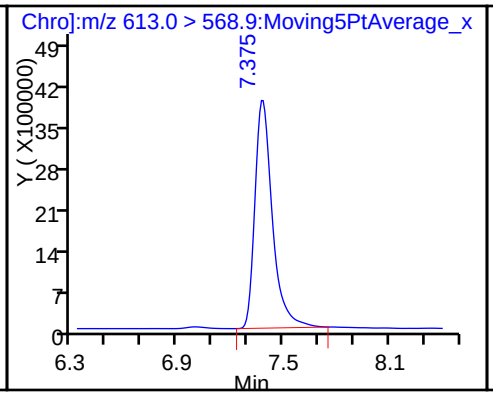
27 Perfluoroundecanoic acid



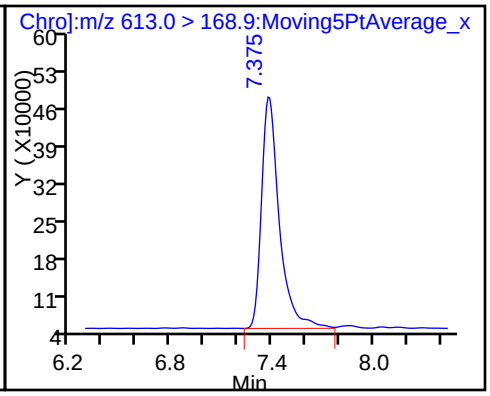
* 28 13C2 PFDoA (IS)



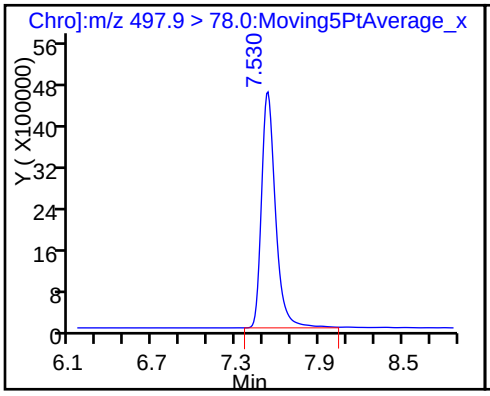
29 Perfluorododecanoic acid



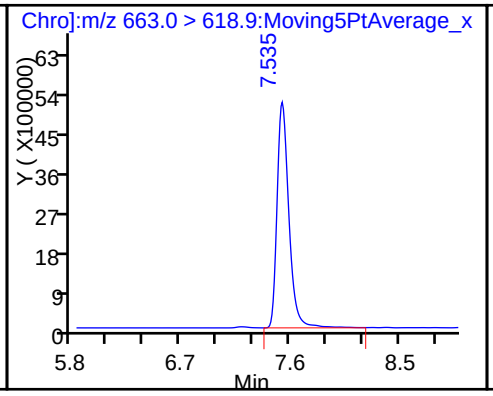
29 Perfluorododecanoic acid



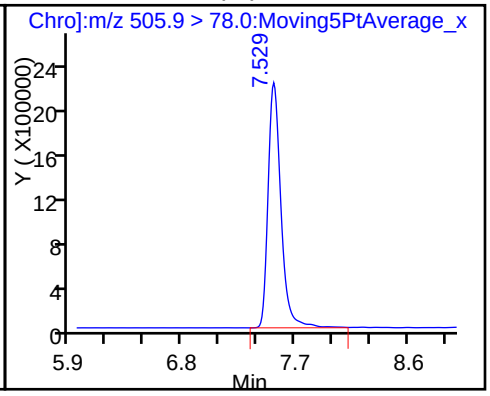
32 Perfluorooctane Sulfonamide



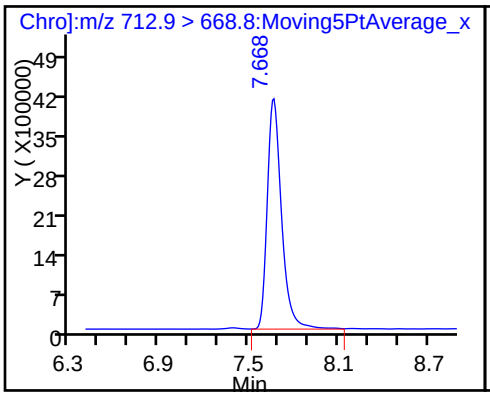
30 Perfluorotridecanoic acid



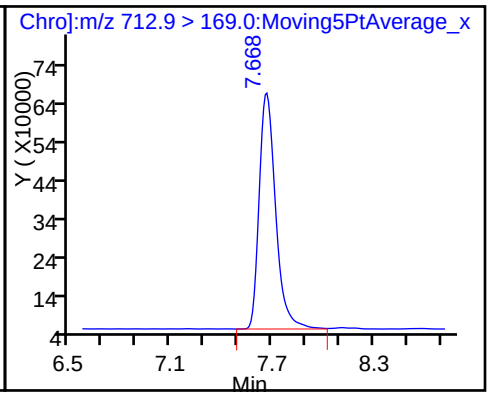
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



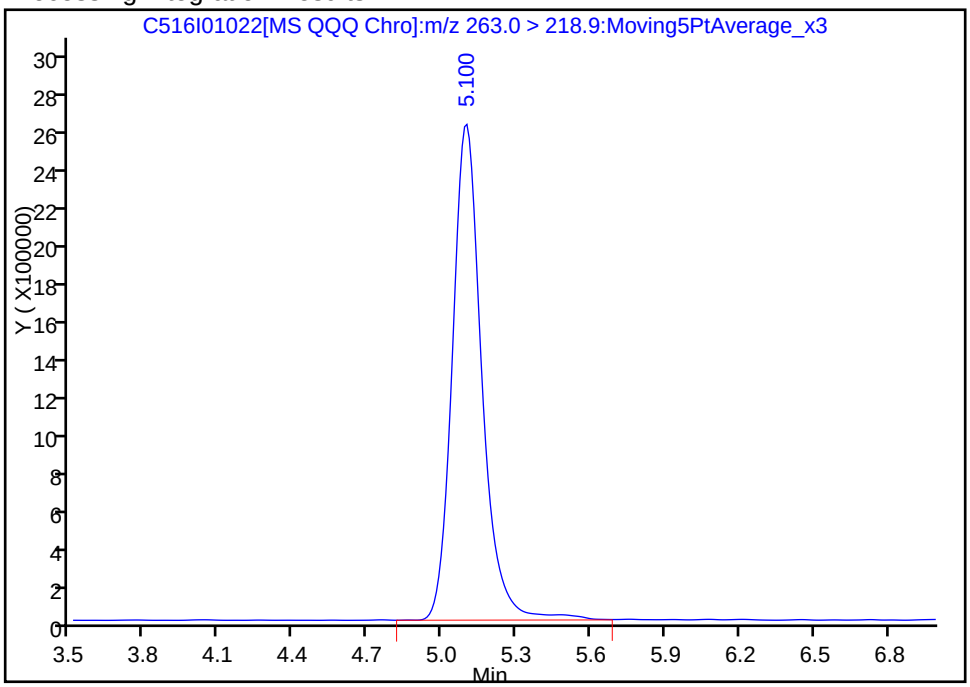
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01022.d
Injection Date: 01-Sep-2016 12:09:11 Instrument ID: LC_LCMS5
Lims ID: STD0200
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

3 Perfluoropentanoic acid, CAS: 2706-90-3

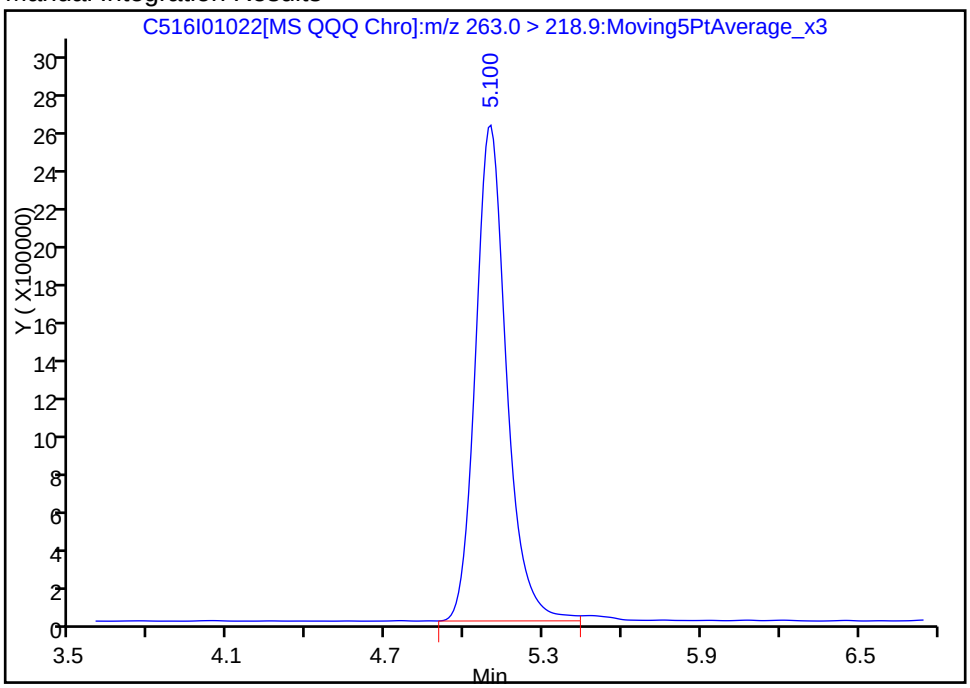
Processing Integration Results

RT: 5.10
Area: 21155887
Amount: 20.731522
Amount Units: ug/L



Manual Integration Results

RT: 5.10
Area: 20937672
Amount: 20.550373
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 10:44:46
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01023.d
Lims ID: STD0500
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 01-Sep-2016 12:21:29 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0500, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:27 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:39:21

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.077	4.058	0.019		13061693	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.077	4.068	0.009	1.000	63432662	50.4			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.109	0.0	0.900	52082548	49.7			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.222	5.232	-0.010	0.855	25102967	41.9			R
298.9 > 98.9	5.222	5.232	-0.010	0.855	7266939		3.45(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.222	5.232	-0.010	0.855	25102967	41.9			
298.9 > 98.9	5.222	5.232	-0.010	0.855	7266939		3.45(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		9677513	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.686	-0.009	1.000	41635305	48.6			
313.0 > 118.6	5.677	5.686	-0.009	1.000	1205955		34.52(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.946	59774956	48.3			
363.0 > 168.9	6.102	6.102	0.0	0.946	15399506		3.88(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		1287559	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	1.000	23595828	43.4			
398.9 > 98.9	6.111	6.111	0.0	1.000	7365737		3.20(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	1.000	23595828	43.4			R
398.9 > 98.9	6.111	6.111	0.0	1.000	7365737		3.20(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.441	0.0	0.958	22770367	49.2			
449.0 > 98.9	6.441	6.441	0.0	0.958	6839281		3.33(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.441	0.0	0.958	22770367	49.2			
449.0 > 98.9	6.441	6.441	0.0	0.958	6839281		3.33(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.451	6.442	0.009	1.000	53941464	54.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.442	0.009		14754835	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.452	6.442	0.010	1.000	71067411	49.5			
413.0 > 169.0	6.452	6.442	0.010	1.000	22371997		3.18(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.714	0.010		4017926	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.724	6.715	0.009	1.000	21274119	49.4			R
498.9 > 98.9	6.724	6.715	0.009	1.000	7752497		2.74(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.723	0.0	1.000	11353754	47.4			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.734	0.0		10024325	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.734	0.010	1.001	53901822	50.8			
463.0 > 218.9	6.734	6.734	0.0	1.000	7628835		7.07(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	6.978	0.010		10564872	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.988	6.979	0.009	1.000	48609515	48.6			R
513.0 > 219.0	6.988	6.979	0.009	1.000	4721010		10.30(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.167	0.0	1.066	21459219	51.7			
598.9 > 99.0	7.176	7.167	0.009	1.067	7053706		3.04(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.167	0.0	1.066	21459219	51.7			
598.9 > 99.0	7.176	7.167	0.009	1.067	7053706		3.04(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.196	7.186	0.010		6290944	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.196	7.186	0.010	1.000	40165888	49.5			R
563.0 > 268.9	7.196	7.186	0.010	1.000	5328877		7.54(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.375	7.365	0.010		13606837	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.375	7.365	0.010	1.000	65559095	49.6			
613.0 > 168.9	7.375	7.365	0.010	1.000	8084293		8.11(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.511	0.009	1.000	77190935	49.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.535	7.516	0.019	1.022	86143679	50.2			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.519	0.0		15269215	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.668	7.649	0.019	1.040	67093348	50.9			
712.9 > 169.0	7.668	7.649	0.019	1.040	10458171		6.42(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC-LCS_00084	Amount Added: 100.00	Units: uL
PFC_Surr_00023	Amount Added: 100.00	Units: uL

Report Date: 02-Sep-2016 11:52:27 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01023.d

Injection Date: 01-Sep-2016 12:21:29 Instrument ID: LC_LCMS5

Lims ID: STD0500

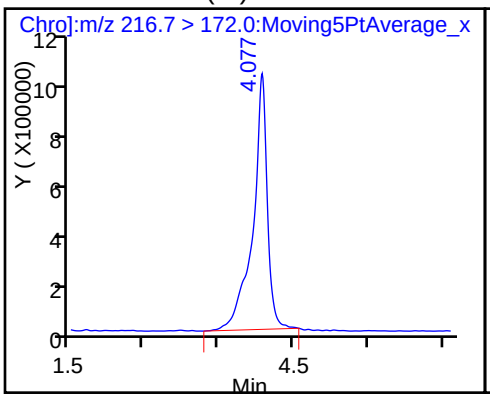
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 10

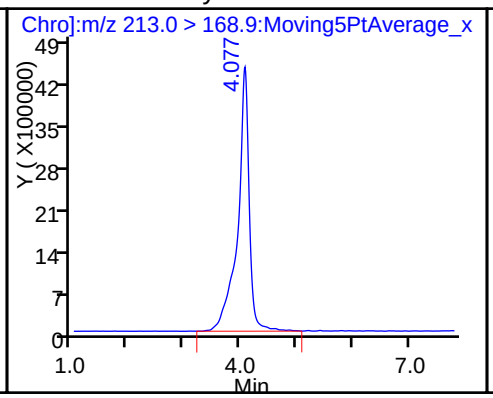
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

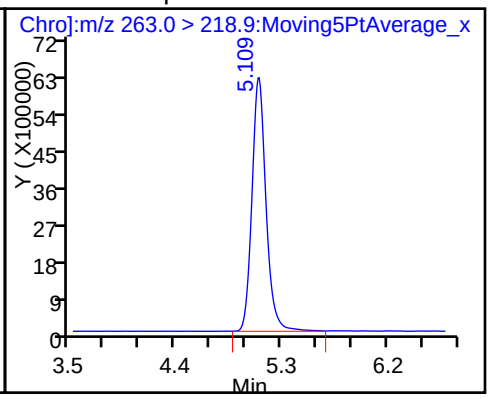
* 1 13C4 PFBA (IS)



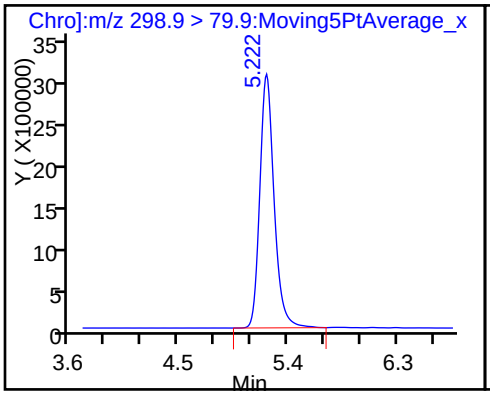
2 Perfluorobutyric acid



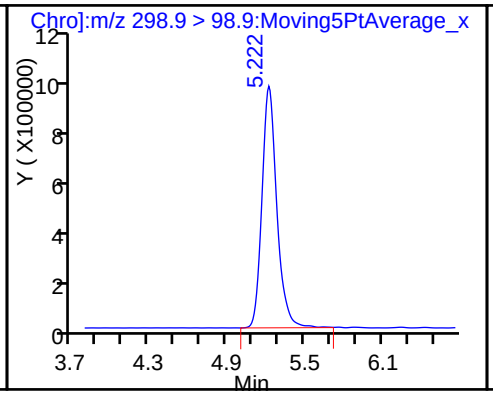
3 Perfluoropentanoic acid



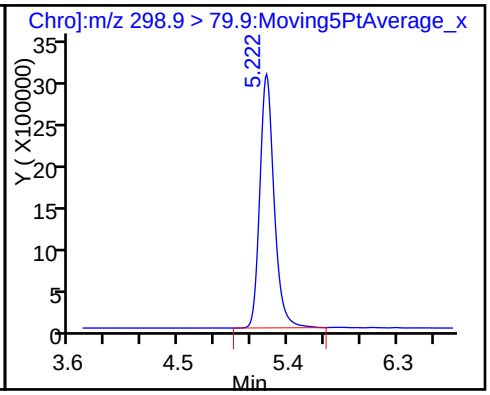
4 Perfluorobutane Sulfonate



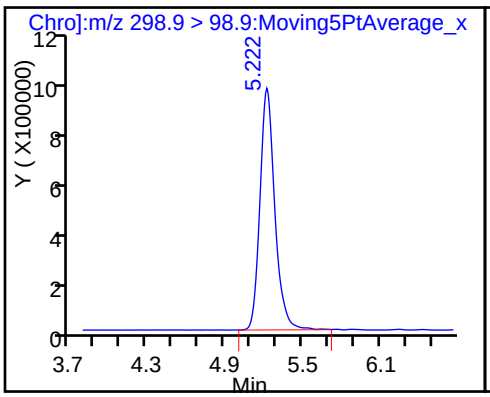
4 Perfluorobutane Sulfonate



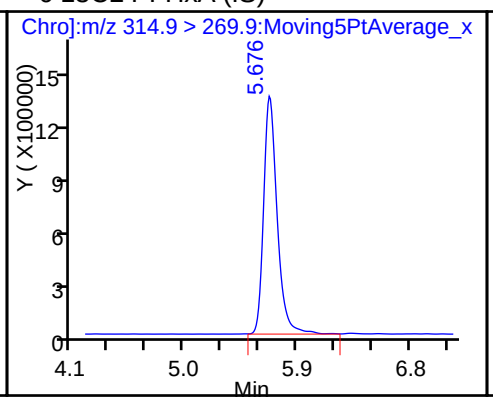
5 Perfluorobutanesulfonic acid



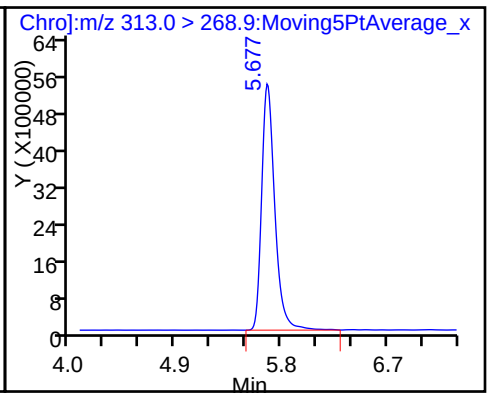
5 Perfluorobutanesulfonic acid



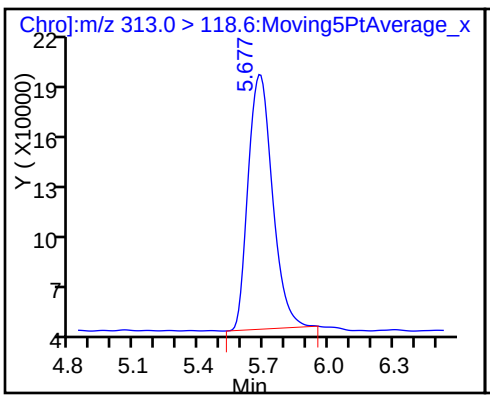
* 6 13C2 PFHxA (IS)



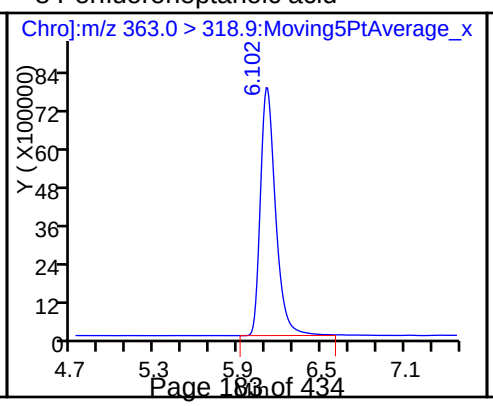
7 Perfluorohexanoic acid



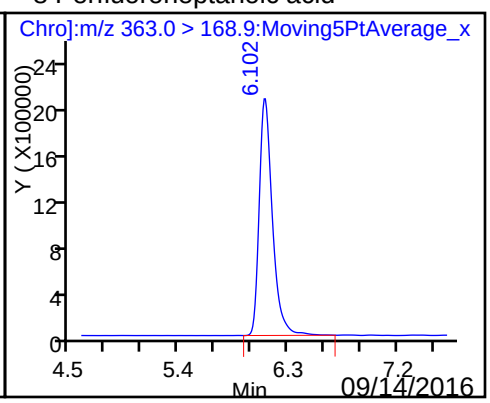
7 Perfluorohexanoic acid



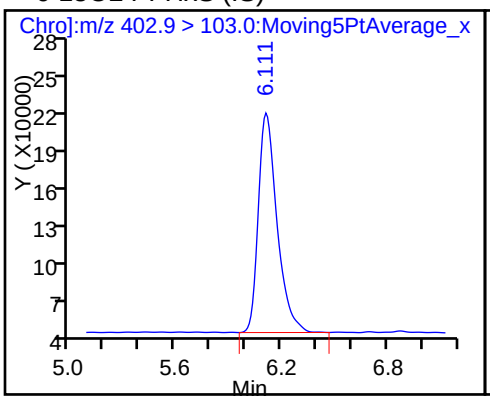
8 Perfluoroheptanoic acid



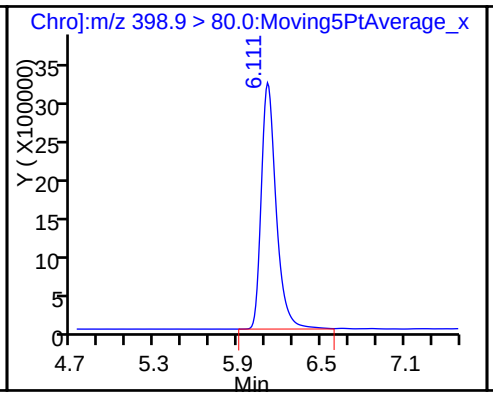
8 Perfluoroheptanoic acid



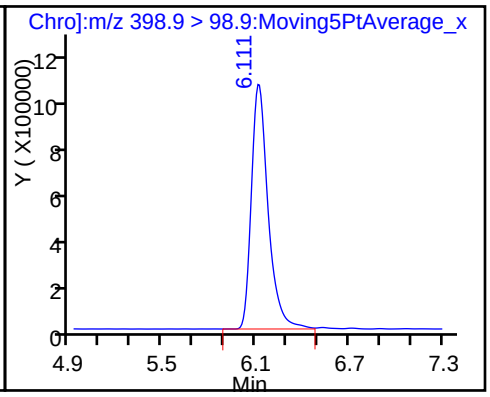
* 9 18O2 PFHxS (IS)



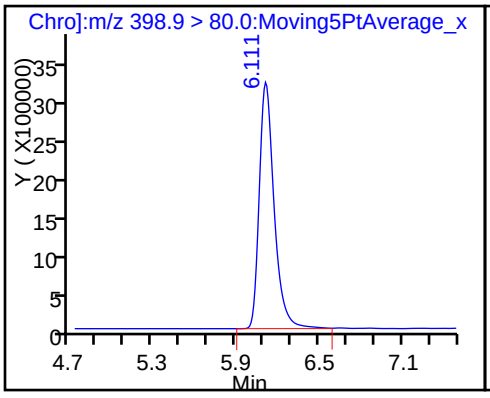
11 Perfluorohexanesulfonic acid



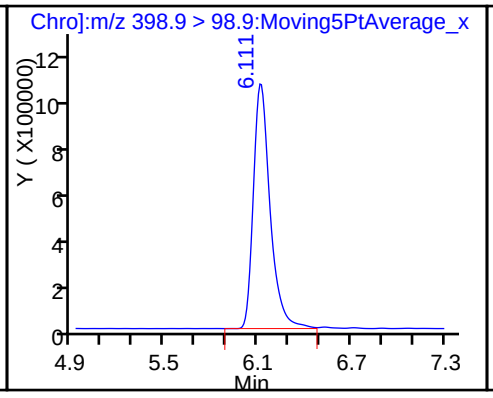
11 Perfluorohexanesulfonic acid



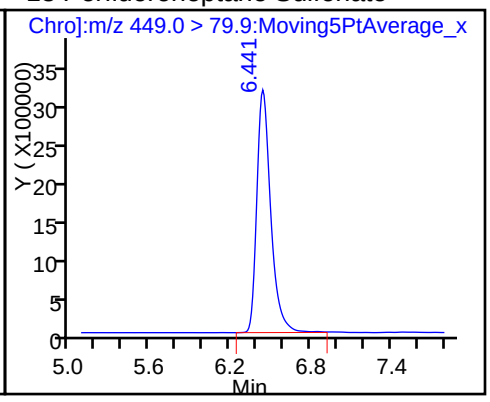
10 Perfluorohexane Sulfonate



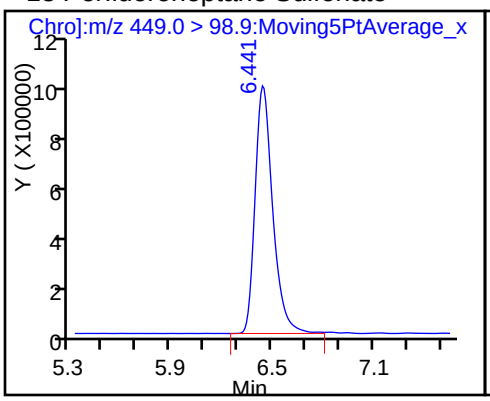
10 Perfluorohexane Sulfonate



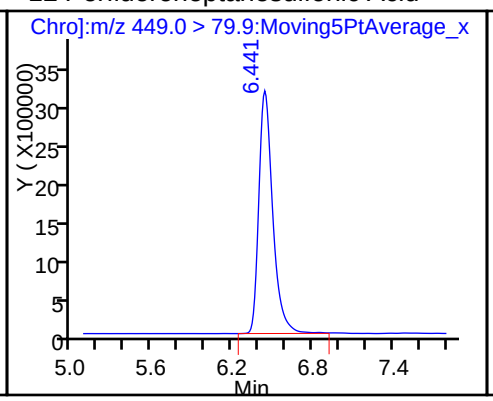
13 Perfluoroheptane Sulfonate



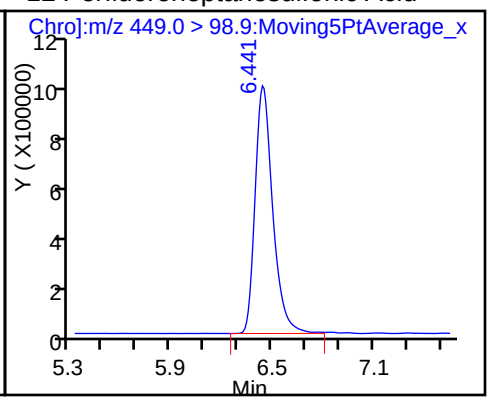
13 Perfluoroheptane Sulfonate



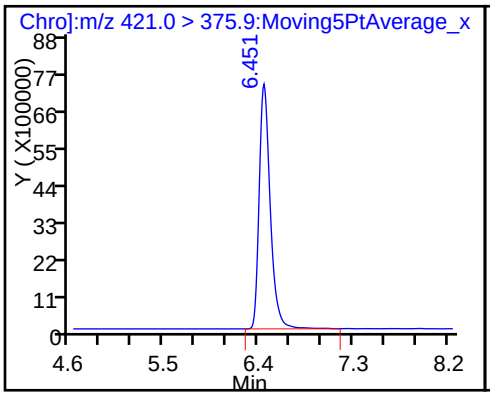
12 Perfluoroheptanesulfonic Acid



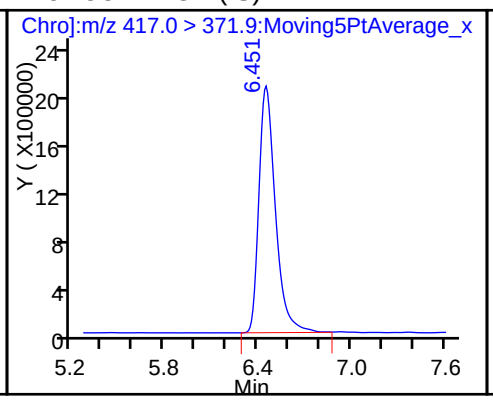
12 Perfluoroheptanesulfonic Acid



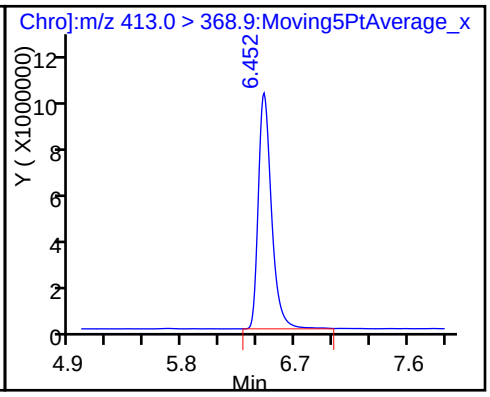
$ 14 13C8 PFOA



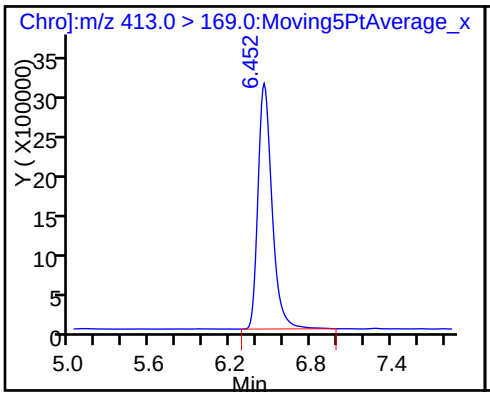
* 15 13C4 PFOA (IS)



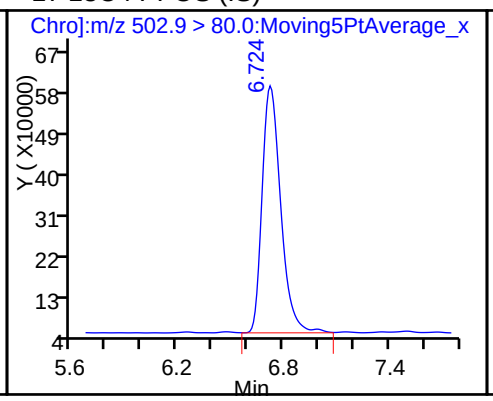
16 Perfluorooctanoic acid



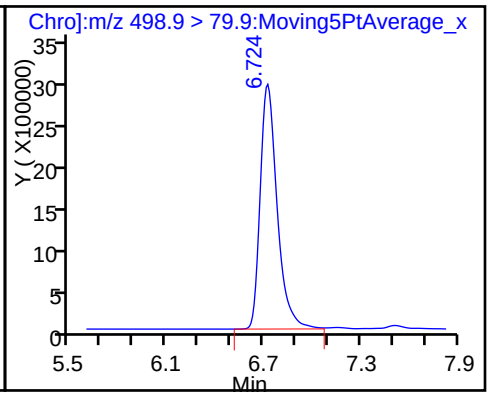
16 Perfluorooctanoic acid



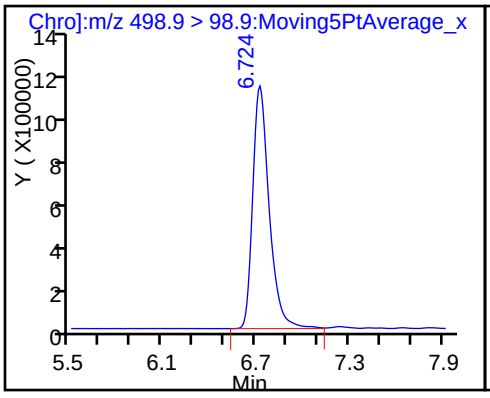
* 17 13C4 PFOS (IS)



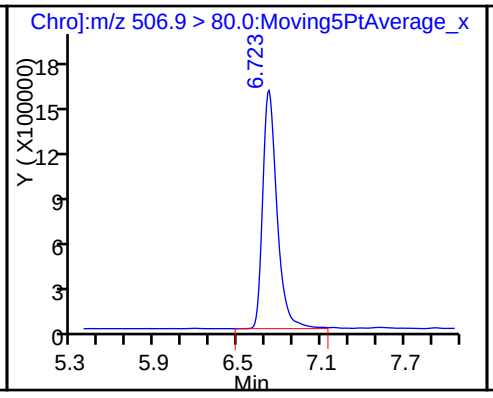
19 Perfluorooctane sulfonic acid



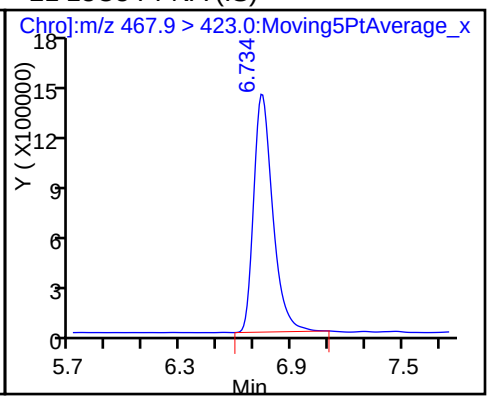
19 Perfluorooctane sulfonic acid



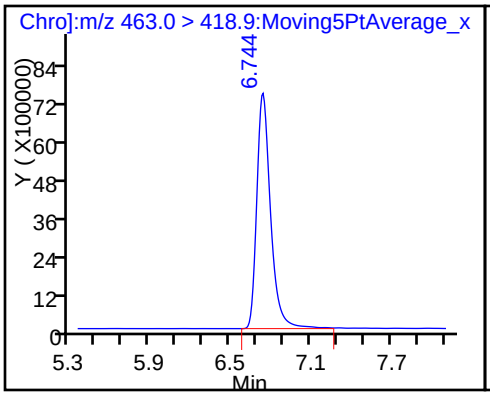
$ 18 13C8 PFOS



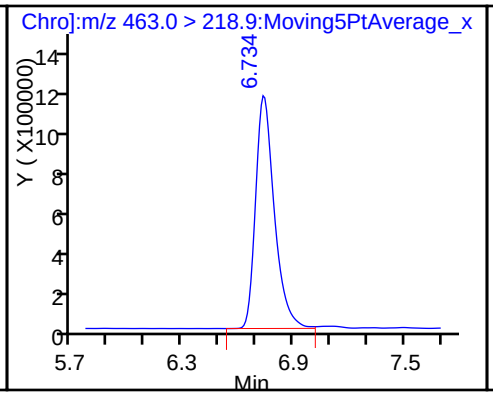
* 21 13C5 PFNA (IS)



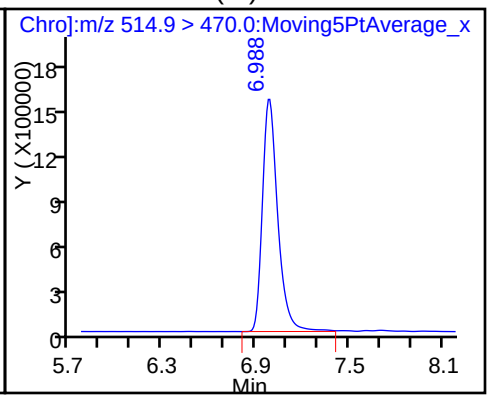
20 Perfluorononanoic acid



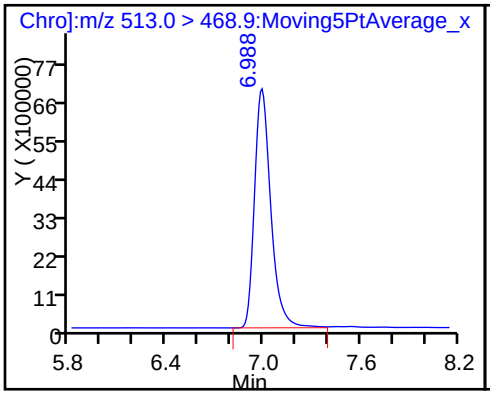
20 Perfluorononanoic acid



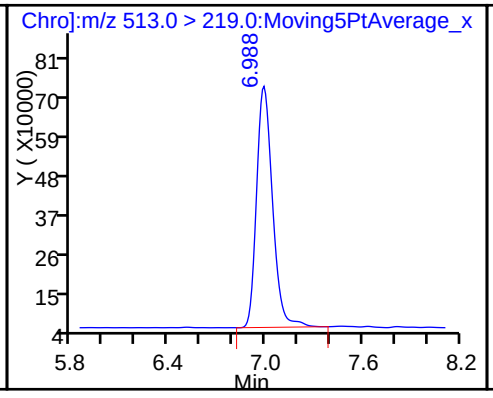
* 22 13C2 PFDA (IS)



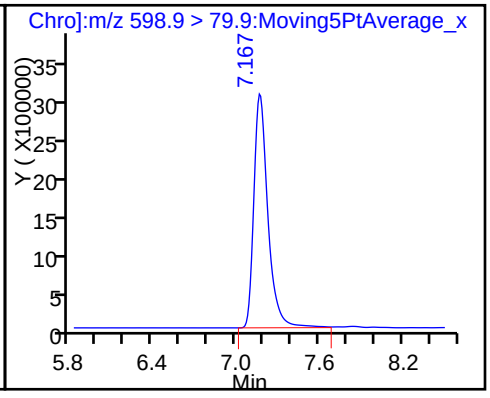
23 Perfluorodecanoic acid



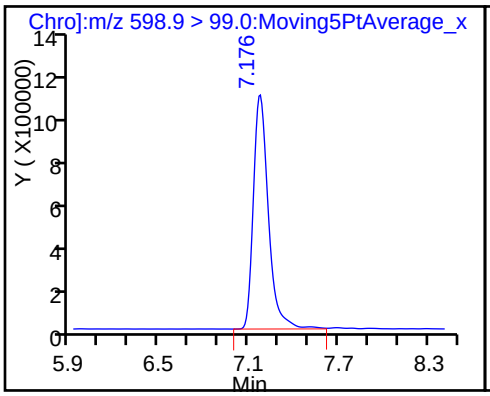
23 Perfluorodecanoic acid



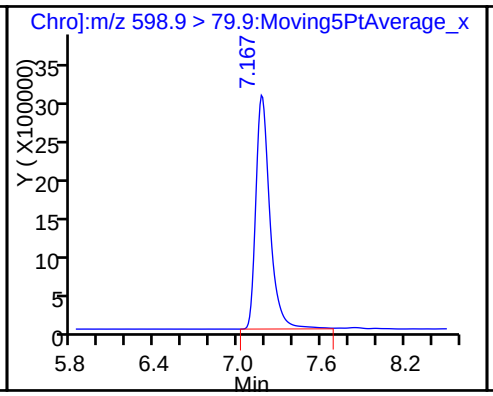
24 Perfluorodecane Sulfonic acid



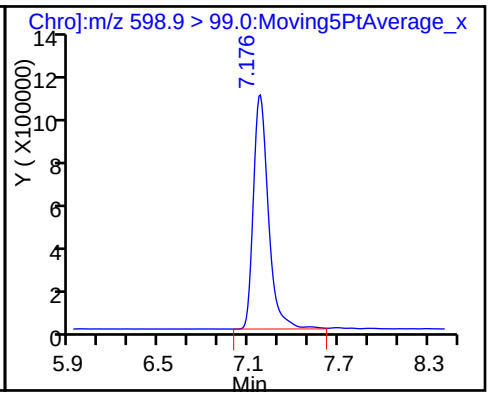
24 Perfluorodecane Sulfonic acid



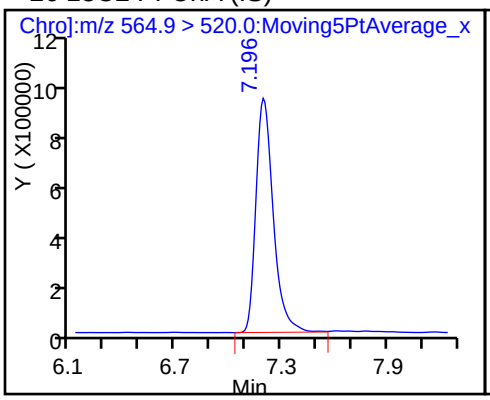
25 Perfluorodecane Sulfonate



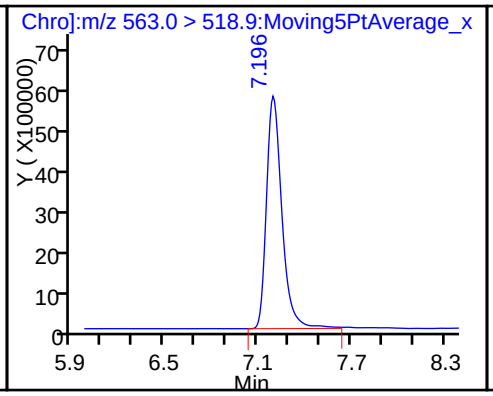
25 Perfluorodecane Sulfonate



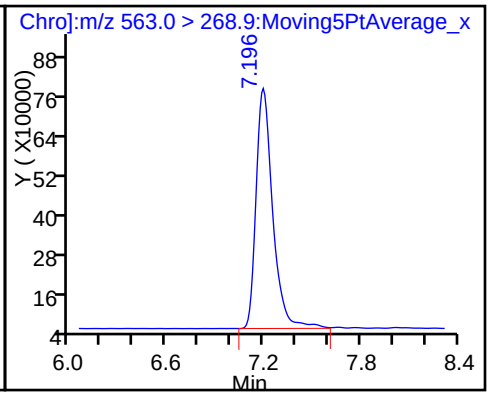
* 26 13C2 PFUnA (IS)



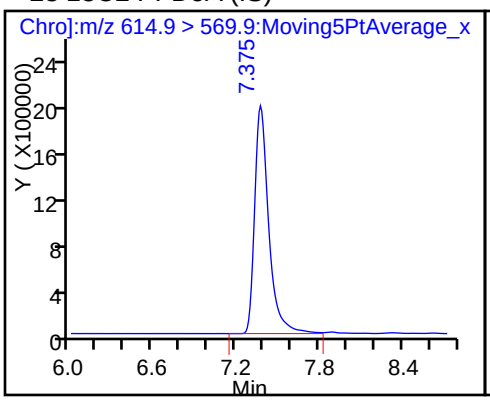
27 Perfluoroundecanoic acid



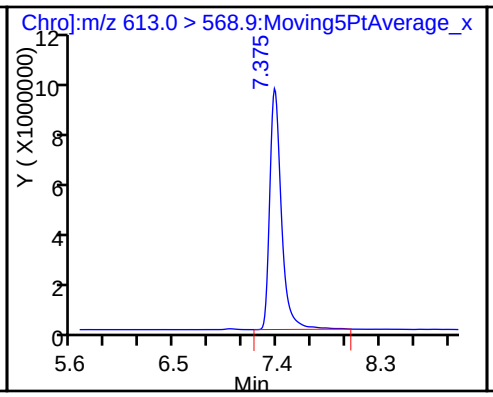
27 Perfluoroundecanoic acid



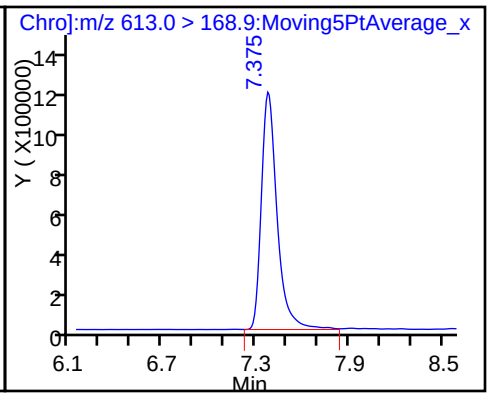
* 28 13C2 PFDoA (IS)



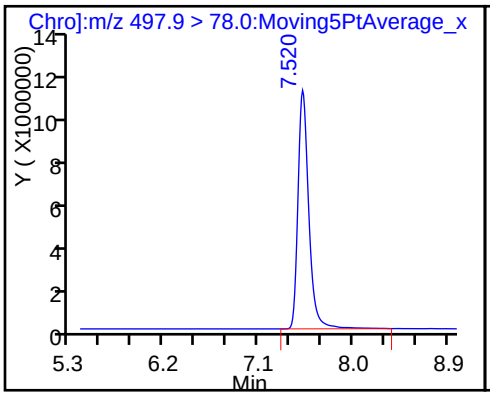
29 Perfluorododecanoic acid



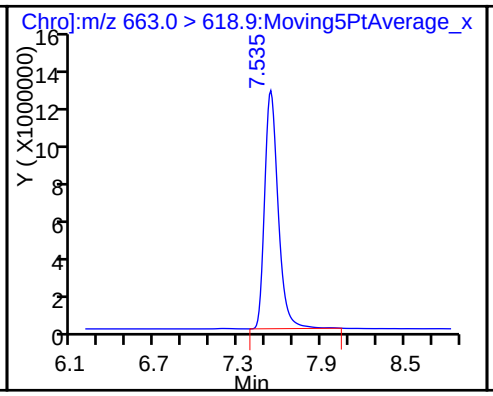
29 Perfluorododecanoic acid



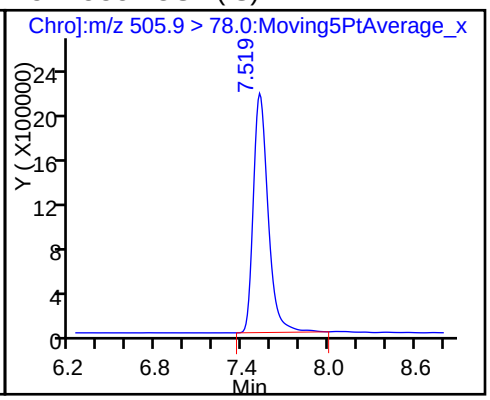
32 Perfluorooctane Sulfonamide



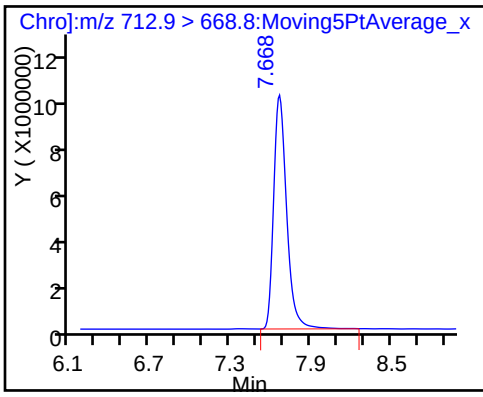
30 Perfluorotridecanoic acid



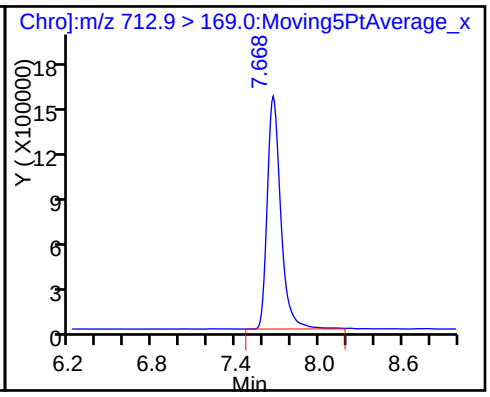
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d
Lims ID: STD1250
Client ID:
Sample Type: IC Calib Level: 9
Inject. Date: 01-Sep-2016 12:33:48 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 1250, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:30 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:39:41

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.048	4.058	-0.010		12979355	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.049	4.068	-0.019	1.000	154342797	123.3			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.109	0.0	0.899	123787287	128.8			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.232	5.232	0.0	0.853	58702268	115.0			R
298.9 > 98.9	5.232	5.232	0.0	0.853	17160978		3.42(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.232	5.232	0.0	0.853	58702268	115.0			
298.9 > 98.9	5.232	5.232	0.0	0.853	17160978		3.42(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.686	5.676	0.010		8877447	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.696	5.686	0.010	1.002	98976344	126.1			
313.0 > 118.6	5.696	5.686	0.010	1.002	2858167		34.63(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.121	6.102	0.019	0.946	142918889	107.9			
363.0 > 168.9	6.121	6.102	0.019	0.946	35735132		4.00(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.130	6.111	0.019		1096601	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.130	6.111	0.019	1.000	52301837	112.9			
398.9 > 98.9	6.130	6.111	0.019	1.000	16319604		3.20(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.130	6.111	0.019	1.000	52301837	112.9			R
398.9 > 98.9	6.130	6.111	0.019	1.000	16319604		3.20(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.460	6.441	0.019	0.958	50154548	100.5			
449.0 > 98.9	6.460	6.441	0.019	0.958	15111418		3.32(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.460	6.441	0.019	0.958	50154548	100.5			
449.0 > 98.9	6.460	6.441	0.019	0.958	15111418		3.32(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.470	6.442	0.028	1.000	121199928	113.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.470	6.442	0.028		15798255	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.471	6.442	0.029	1.000	157527806	102.6			
413.0 > 169.0	6.471	6.442	0.029	1.000	49102187		3.21(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.743	6.714	0.029		4333658	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.743	6.715	0.028	1.000	46396532	99.8			R
498.9 > 98.9	6.743	6.715	0.028	1.000	17042019		2.72(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.742	6.723	0.019	1.000	25454631	98.6			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.763	6.734	0.029		9337331	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.763	6.734	0.029	1.000	122511662	123.9			
463.0 > 218.9	6.763	6.734	0.029	1.000	17157905		7.14(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	6.978	0.029		10327363	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.007	6.979	0.028	1.000	118049050	120.7			R
513.0 > 219.0	7.007	6.979	0.028	1.000	11326037		10.42(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.167	0.019	1.066	48688260	108.7			
598.9 > 99.0	7.186	7.167	0.019	1.066	15478896		3.15(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.167	0.019	1.066	48688260	108.7			
598.9 > 99.0	7.186	7.167	0.019	1.066	15478896		3.15(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.186	0.029		6136283	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.186	0.029	1.000	91112669	115.1			R
563.0 > 268.9	7.215	7.186	0.029	1.000	11474520		7.94(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.365	0.028		13658879	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.365	0.029	1.000	160800256	121.1			
613.0 > 168.9	7.394	7.365	0.029	1.000	20627346		7.80(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.511	0.028	1.000	173475638	128.7			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.554	7.516	0.038	1.022	195237711	113.5			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.519	0.019		13061105	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.686	7.649	0.037	1.040	156178707	118.2			
712.9 > 169.0	7.686	7.649	0.037	1.040	24843825		6.29(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 250.00	Units: uL
PFC-LCS_00084	Amount Added: 250.00	Units: uL

Report Date: 02-Sep-2016 11:52:31 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Injection Date: 01-Sep-2016 12:33:48 Instrument ID: LC_LCMS5

Lims ID: STD1250

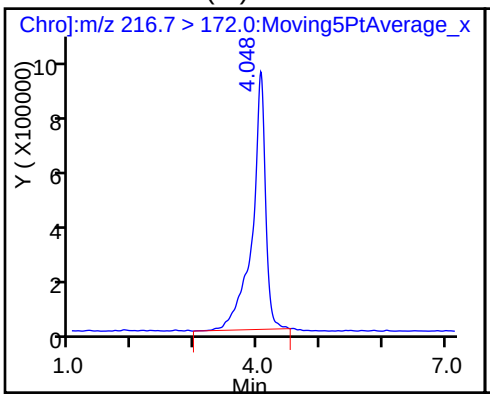
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 11

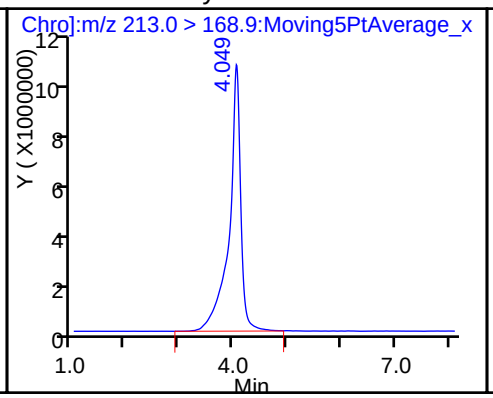
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

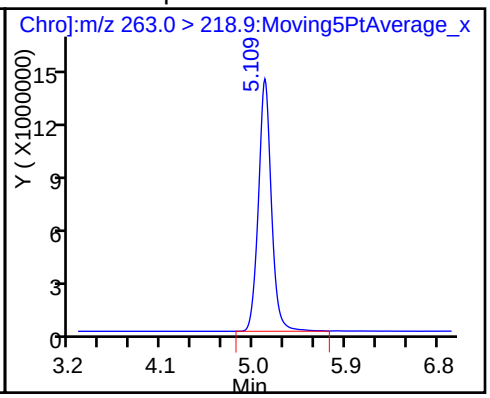
* 1 13C4 PFBA (IS)



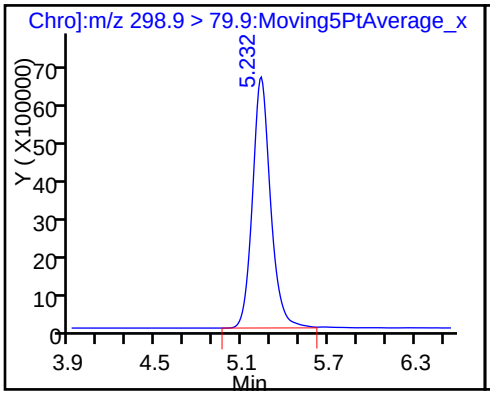
2 Perfluorobutyric acid



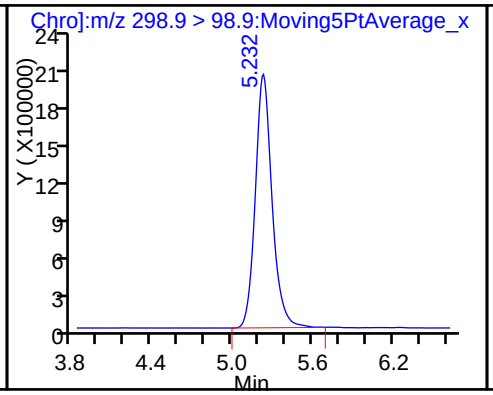
3 Perfluoropentanoic acid



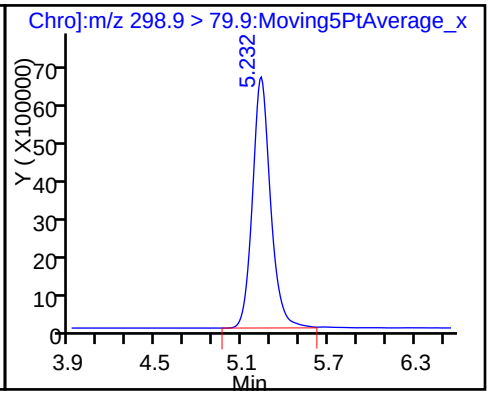
4 Perfluorobutane Sulfonate



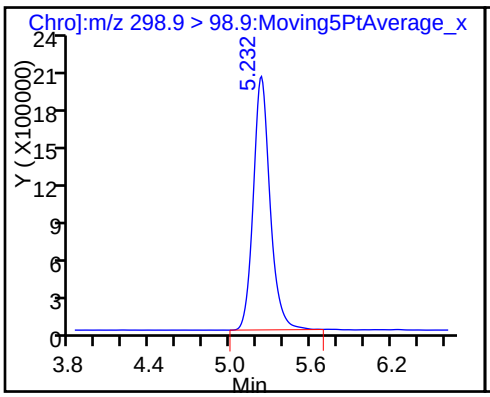
4 Perfluorobutane Sulfonate



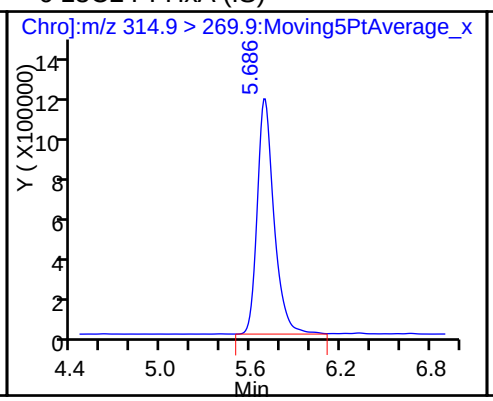
5 Perfluorobutanesulfonic acid



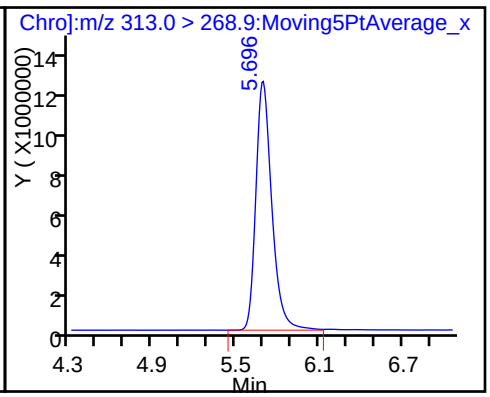
5 Perfluorobutanesulfonic acid



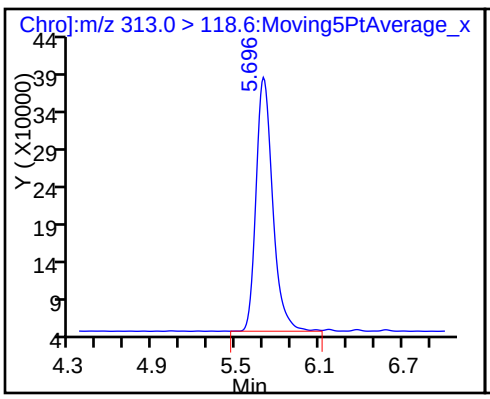
* 6 13C2 PFHxA (IS)



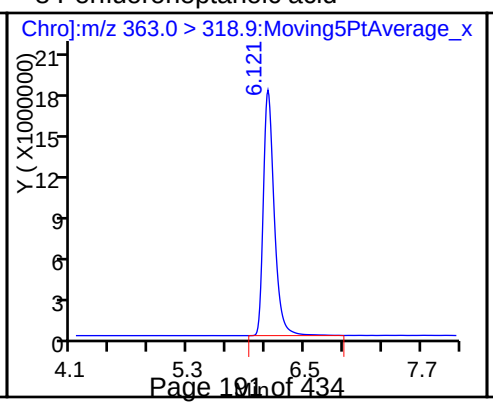
7 Perfluorohexanoic acid



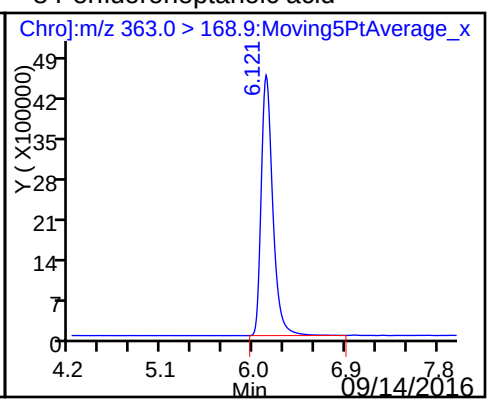
7 Perfluorohexanoic acid



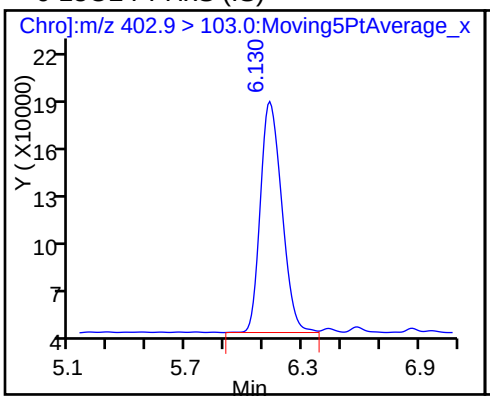
8 Perfluoroheptanoic acid



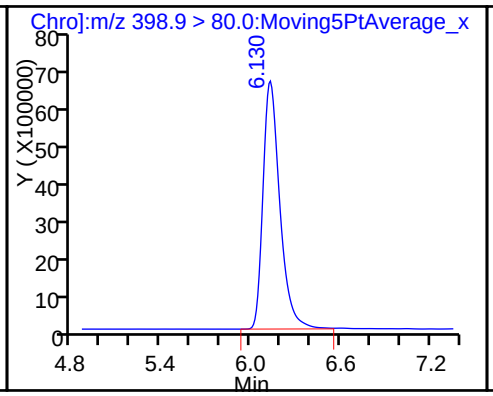
8 Perfluoroheptanoic acid



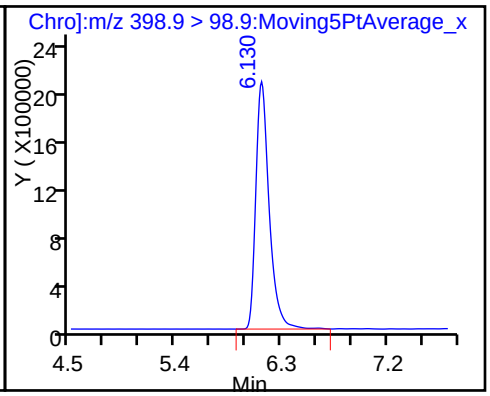
* 9 18O2 PFHxS (IS)



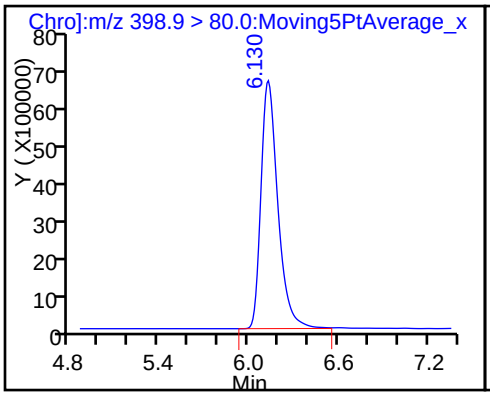
11 Perfluorohexanesulfonic acid



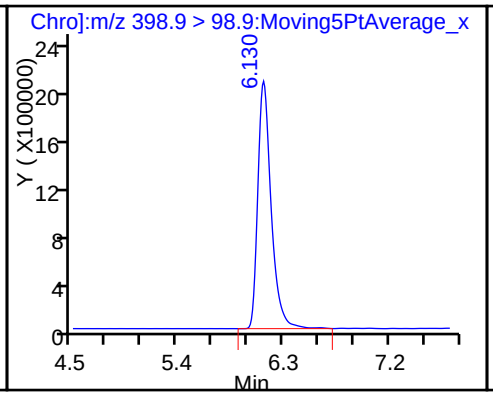
11 Perfluorohexanesulfonic acid



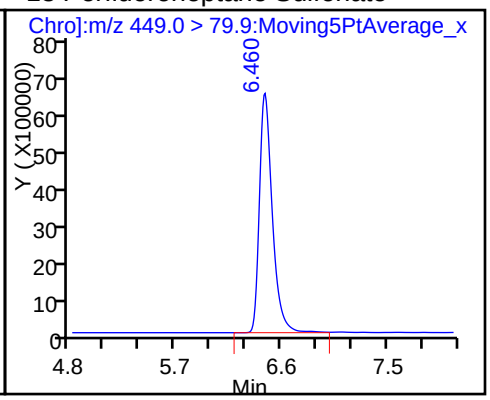
10 Perfluorohexane Sulfonate



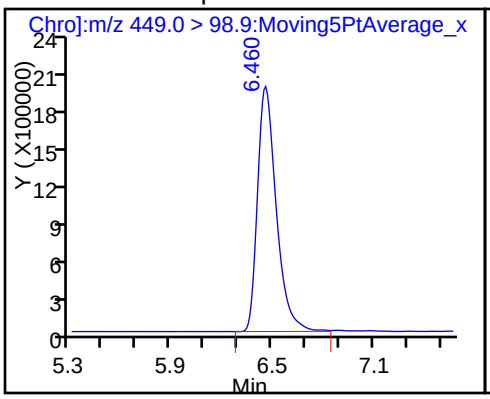
10 Perfluorohexane Sulfonate



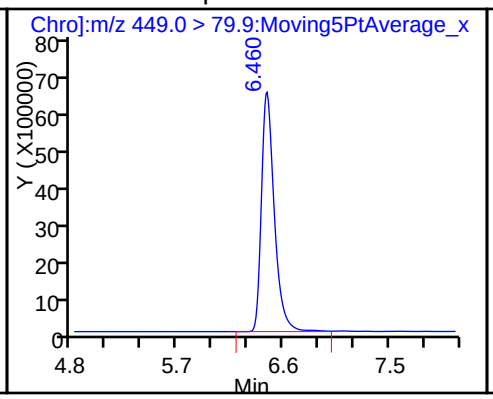
13 Perfluoroheptane Sulfonate



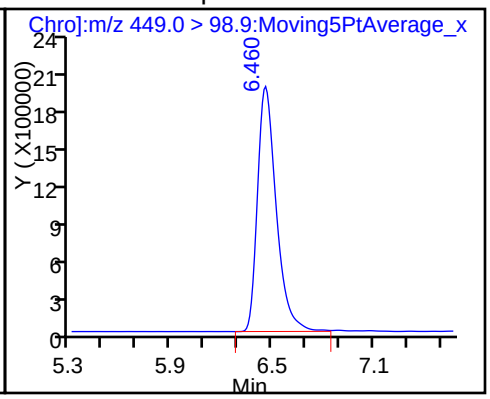
13 Perfluoroheptane Sulfonate



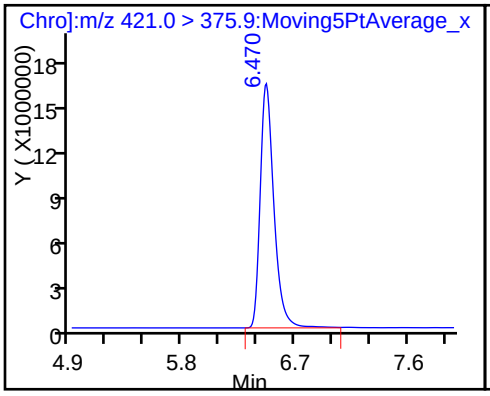
12 Perfluoroheptanesulfonic Acid



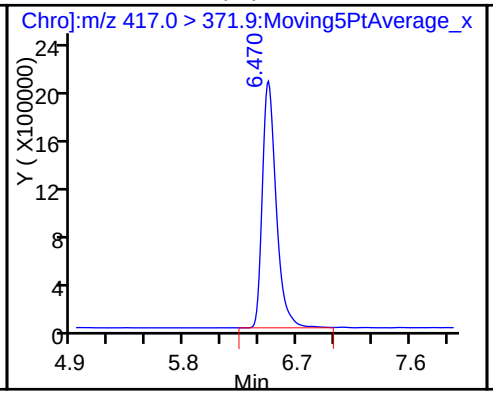
12 Perfluoroheptanesulfonic Acid



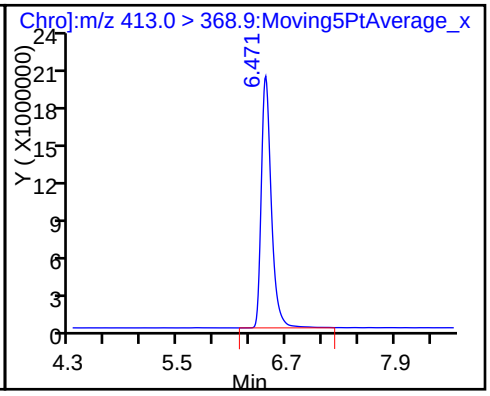
$ 14 13C8 PFOA



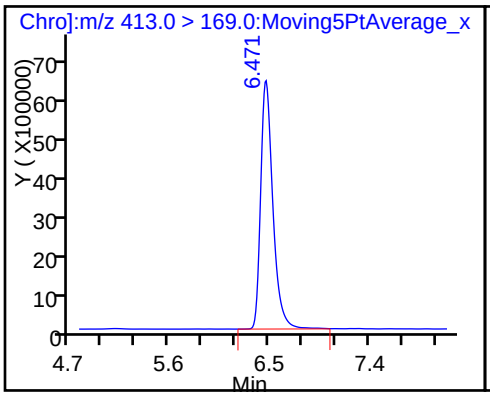
* 15 13C4 PFOA (IS)



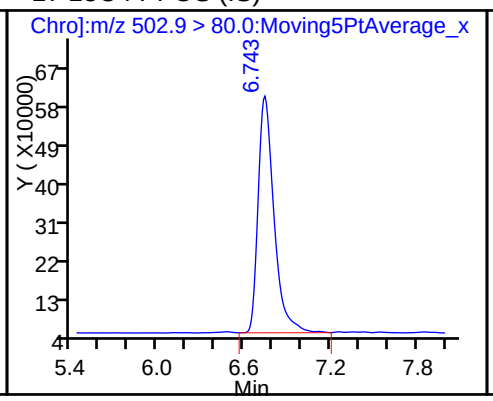
16 Perfluorooctanoic acid



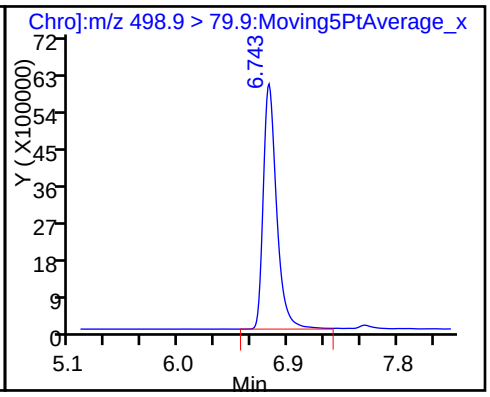
16 Perfluorooctanoic acid



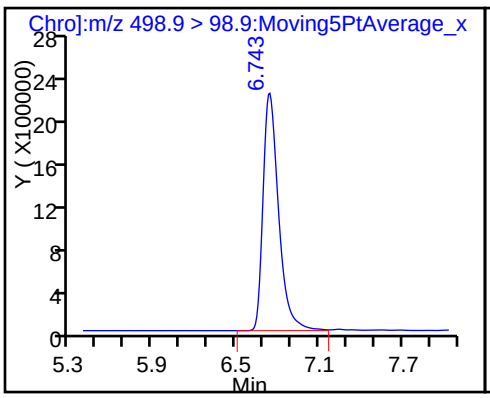
* 17 13C4 PFOS (IS)



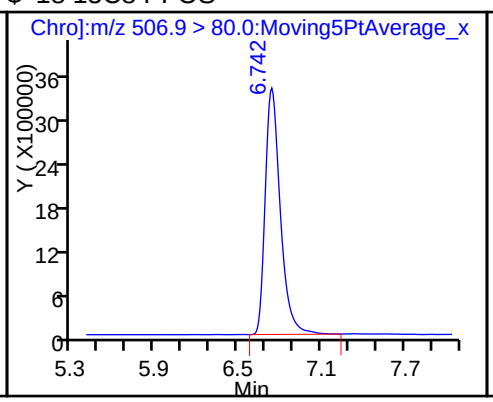
19 Perfluorooctane sulfonic acid



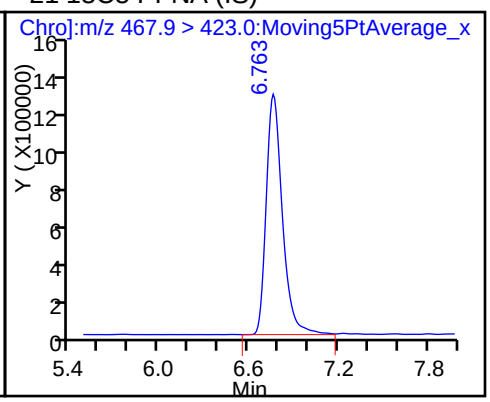
19 Perfluorooctane sulfonic acid



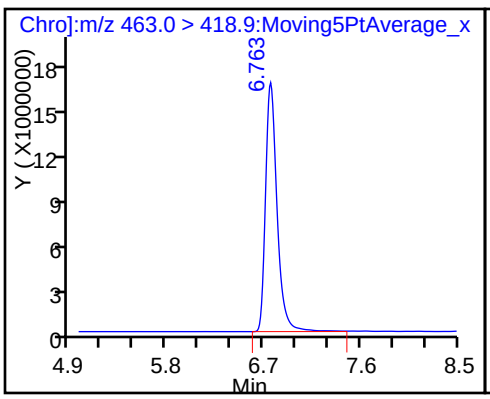
$ 18 13C8 PFOS



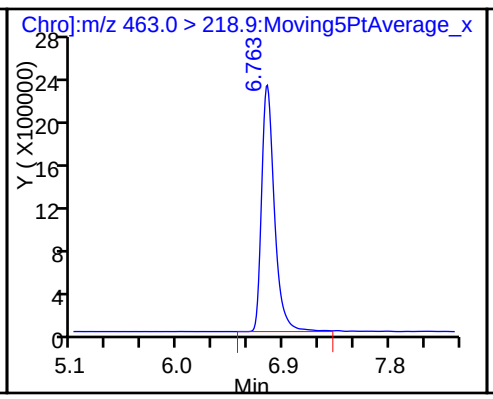
* 21 13C5 PFNA (IS)



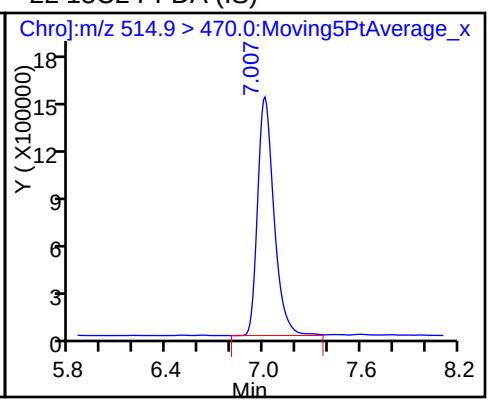
20 Perfluorononanoic acid



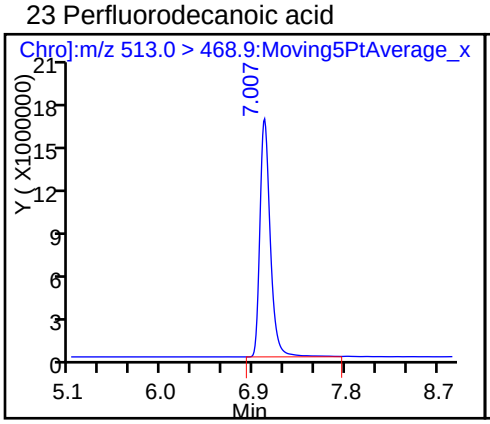
20 Perfluorononanoic acid



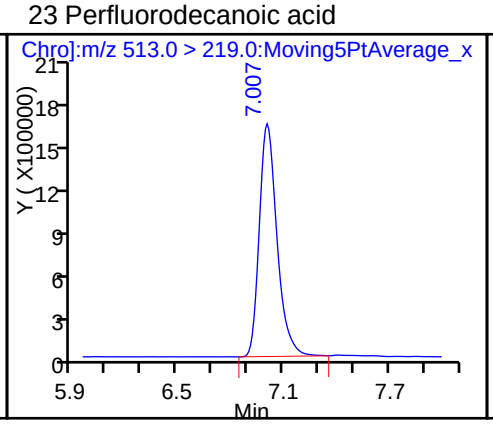
* 22 13C2 PFDA (IS)



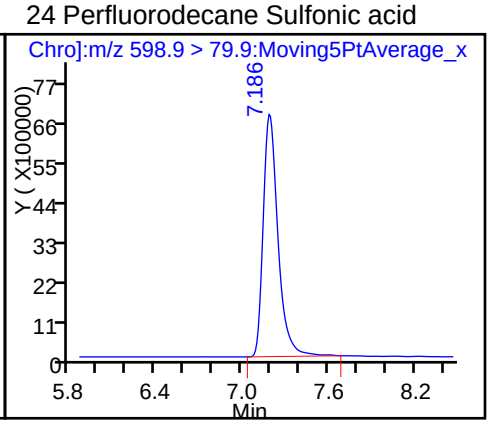
23 Perfluorodecanoic acid



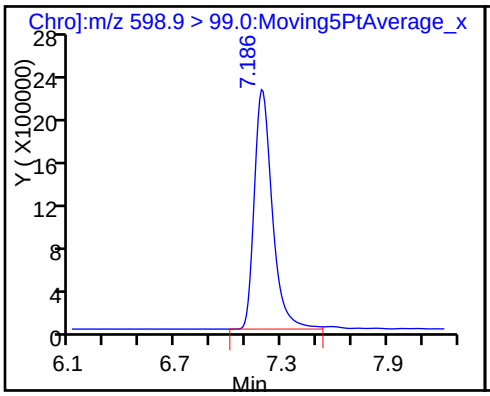
23 Perfluorodecanoic acid



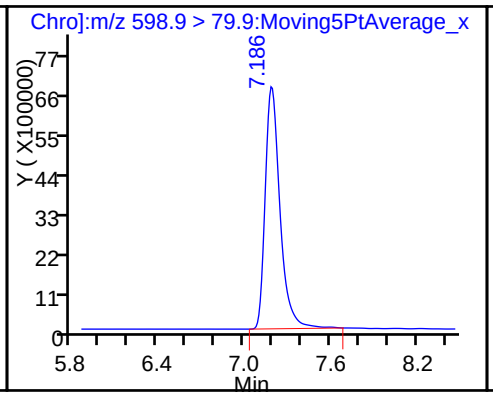
24 Perfluorodecane Sulfonic acid



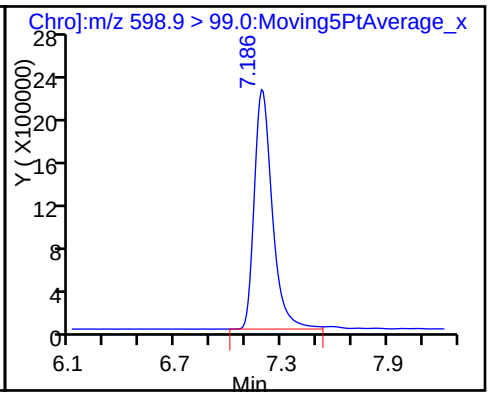
24 Perfluorodecane Sulfonic acid



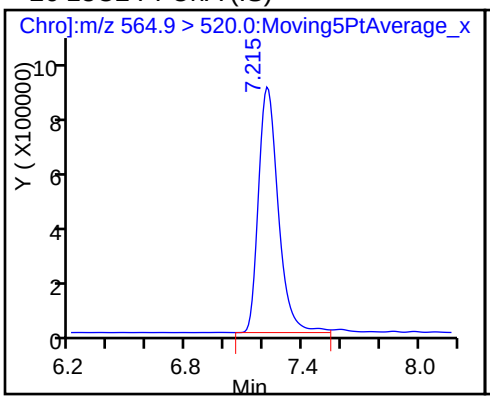
25 Perfluorodecane Sulfonate



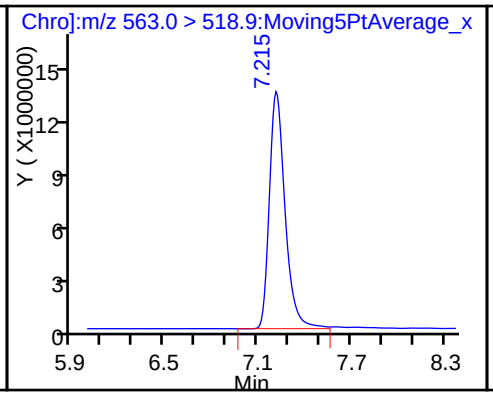
25 Perfluorodecane Sulfonate



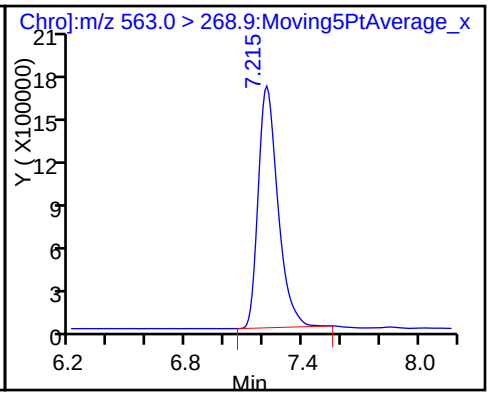
* 26 13C2 PFUnA (IS)



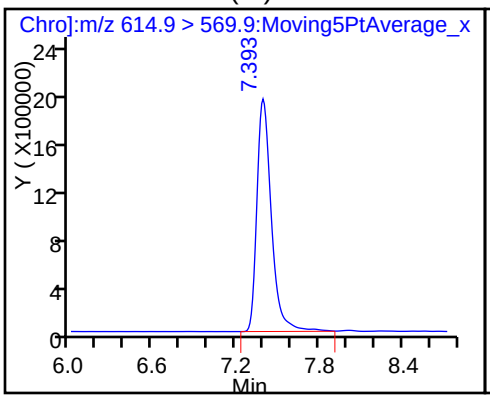
27 Perfluoroundecanoic acid



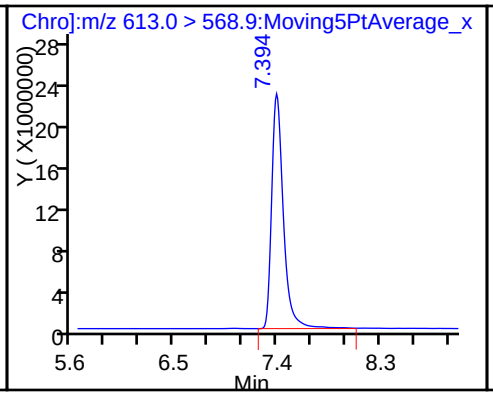
27 Perfluoroundecanoic acid



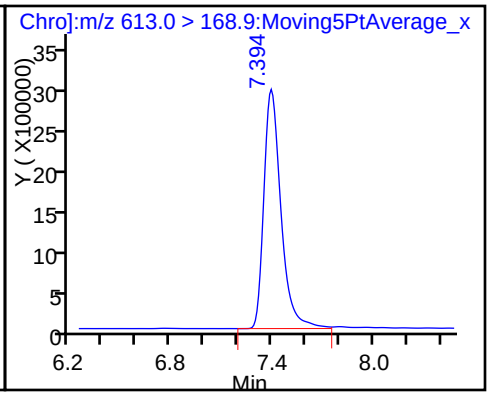
* 28 13C2 PFDoA (IS)



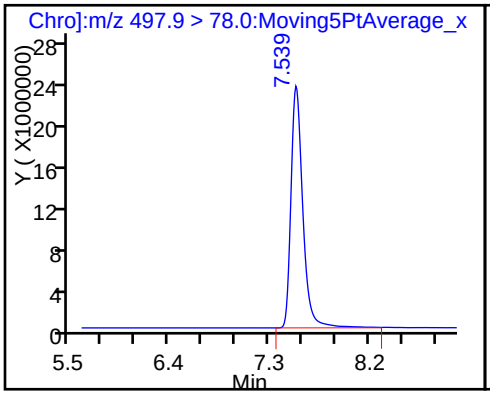
29 Perfluorododecanoic acid



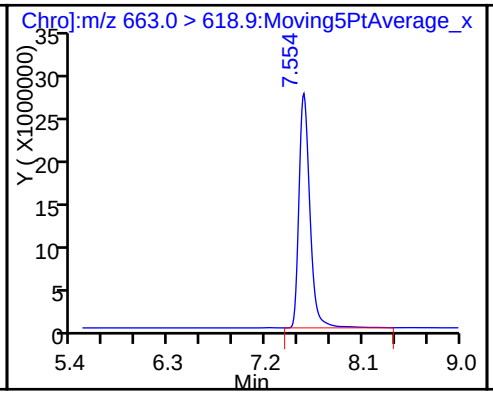
29 Perfluorododecanoic acid



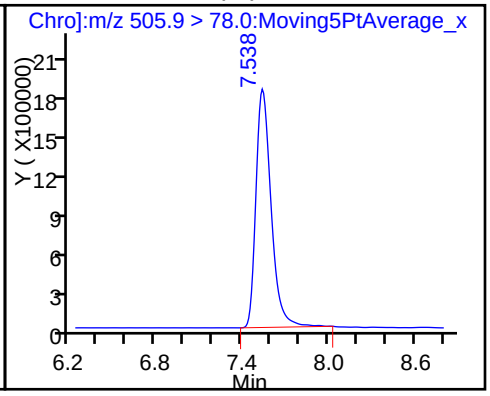
32 Perfluorooctane Sulfonamide



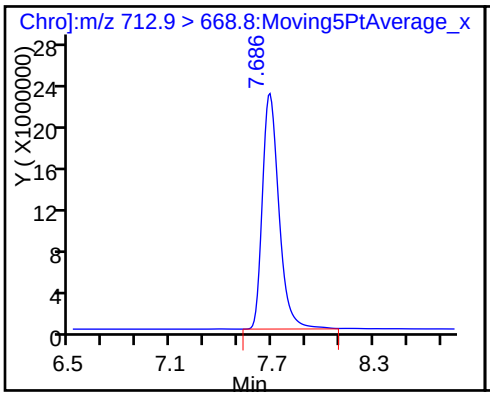
30 Perfluorotridecanoic acid



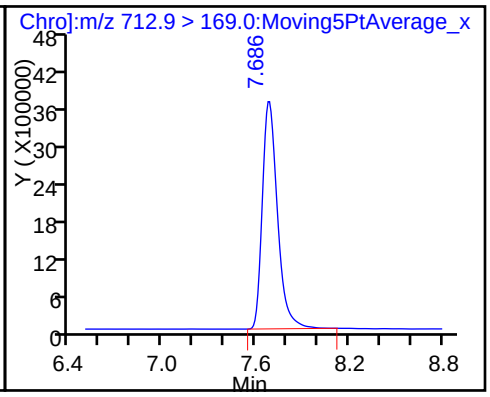
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: ICV 280-340408/13 Calibration Date: 09/01/2016 12:58

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I01026.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.006		2.09	2.00	4.4	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.255		2.24	2.00	12.0	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.435		1.78	1.77	0.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9851		2.18	2.00	9.1	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8972		2.13	2.00	6.3	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.759		2.17	1.82	18.8	30.0
Perfluoroheptane Sulfonate	Lin2		1.119		1.98	1.90	3.7	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.119		1.98	1.90	3.7	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.119		2.22	2.00	10.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.209		2.43	2.00	21.4	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.145		2.17	2.00	8.7	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.112		2.32	2.00	16.2	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.083		2.07	1.93	7.3	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.288		1.91	2.00	-4.3	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9948		2.05	2.00	2.4	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.162		2.24	2.00	11.8	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.405		2.18	2.00	9.1	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		1.092		2.21	2.00	10.5	30.0
13C8 PFOA	Lin1		0.8523		12.4	10.0	24.3	30.0
13C8 PFOS	Lin2		0.5465		9.09	9.56	-5.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01026.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 01-Sep-2016 12:58:27 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: ICV, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist:

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:36 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:42:10

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.058	0.0		13429034	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.068	4.068	0.0	1.002	2701582	2.09			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.100	5.100	0.0	0.897	2396887	2.24			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.222	5.222	0.0	0.853	1227390	1.78			R
298.9 > 98.9	5.232	5.222	0.010	0.855	315079		3.90(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.686	5.686	0.0		9552910	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.686	0.0	1.000	1882171	2.18			
313.0 > 118.6	5.677	5.686	-0.009	0.998	55550		33.88(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.112	6.112	0.0	0.946	2744687	2.13			
363.0 > 168.9	6.112	6.112	0.0	0.946	705421		3.89(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.120	0.0		1479176	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.121	0.0	1.000	1355924	2.16			R
398.9 > 98.9	6.130	6.121	0.009	1.002	388770		3.49(1.30-2.41)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.451	0.0	0.958	1042774	1.97			
449.0 > 98.9	6.451	6.451	0.0	0.958	391670		2.66(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.451	0.0	0.958	1042774	1.97			
449.0 > 98.9	6.451	6.451	0.0	0.958	391670		2.66(0.00-0.00)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.461	0.0	1.000	13036059	12.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.461	0.0		15295609	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.461	0.0	1.000	3422276	2.22			
413.0 > 169.0	6.452	6.461	-0.009	0.999	1031533		3.32(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.733	0.0		4679676	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.724	6.724	0.0	0.999	1183760	2.43			R
498.9 > 98.9	6.734	6.724	0.010	1.000	412470		2.87(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	1.000	2557590	9.09			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.753	0.0		11435309	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.753	0.0	1.000	2618186	2.17			
463.0 > 218.9	6.753	6.753	0.0	1.000	373675		7.01(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	6.997	0.0		11281711	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.998	6.998	0.0	1.000	2510111	2.32			R
513.0 > 219.0	7.007	6.998	0.009	1.001	265753		9.45(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.176	7.176	0.0	1.066	1022177	2.07			
598.9 > 99.0	7.186	7.176	0.010	1.067	339993		3.01(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.205	7.205	0.0		6290686	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.205	7.205	0.0	1.000	1620643	1.91			R
563.0 > 268.9	7.215	7.205	0.010	1.001	248702		6.52(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.384	0.0		13421168	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.384	7.384	0.0	1.000	2670150	2.05			
613.0 > 168.9	7.384	7.384	0.0	1.000	356461		7.49(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.530	0.0	1.000	3751375	2.24			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.022	3770577	2.18			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.529	0.0		16142109	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.677	0.0	1.040	2931237	2.21			
712.9 > 169.0	7.668	7.677	-0.009	1.038	457325		6.41(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_ICV_00010	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFHpS-LCS_00002	Amount Added:	4.00	Units: uL

Report Date: 02-Sep-2016 11:52:37 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01026.d

Injection Date: 01-Sep-2016 12:58:27 Instrument ID: LC_LCMS5

Lims ID: ICV

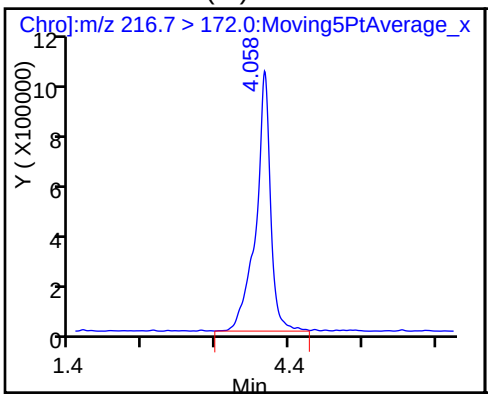
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 13

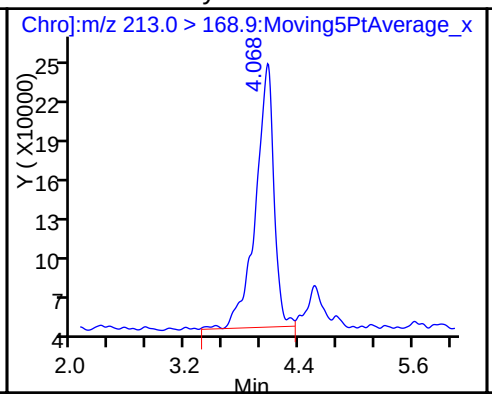
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

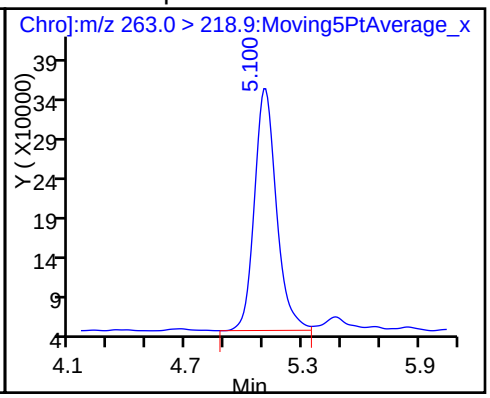
* 1 13C4 PFBA (IS)



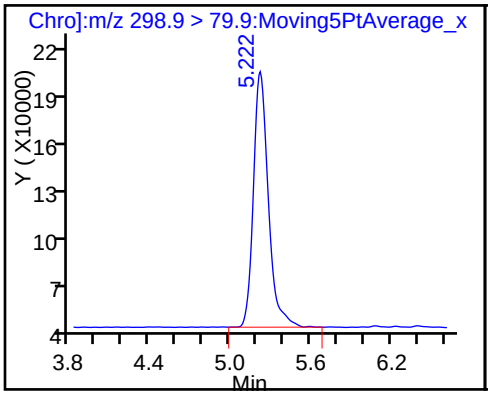
2 Perfluorobutyric acid



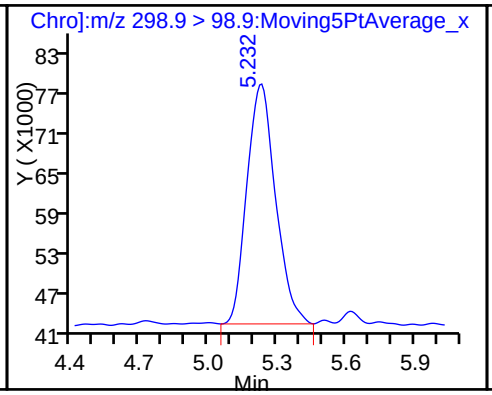
3 Perfluoropentanoic acid



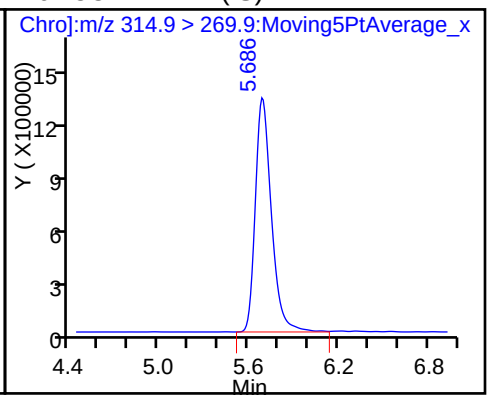
4 Perfluorobutane Sulfonate



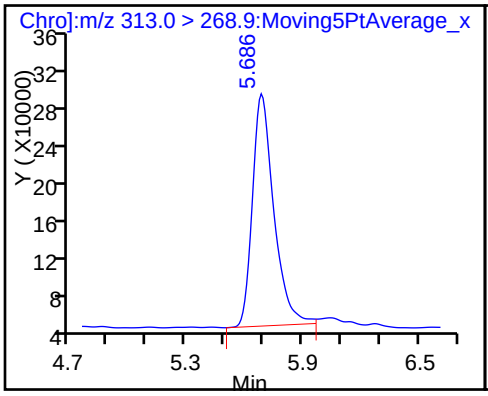
4 Perfluorobutane Sulfonate



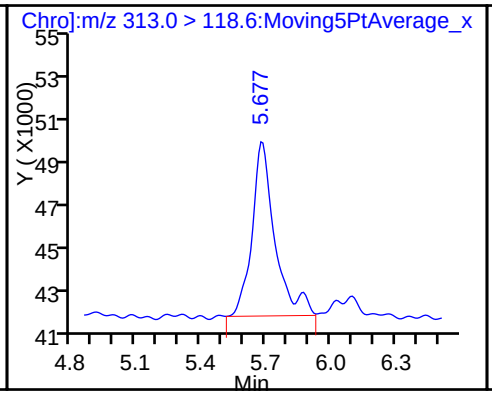
* 6 13C2 PFHxA (IS)



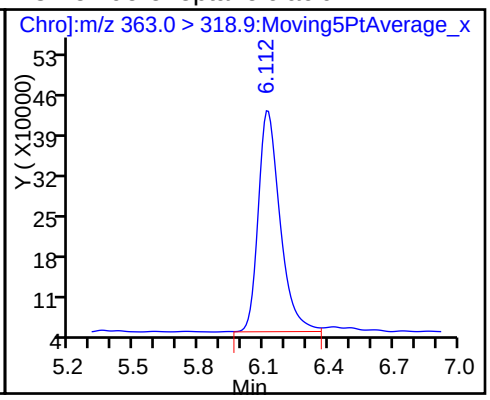
7 Perfluorohexanoic acid



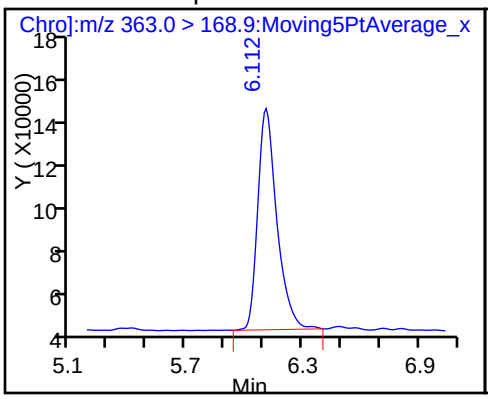
7 Perfluorohexanoic acid



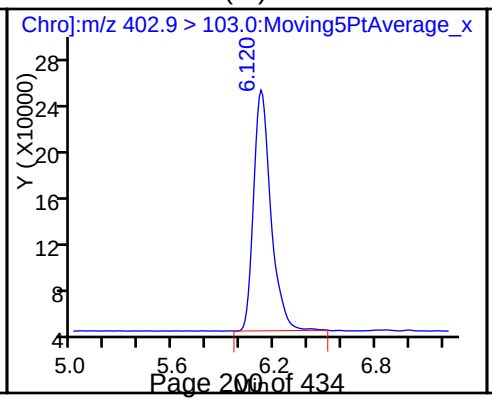
8 Perfluoroheptanoic acid



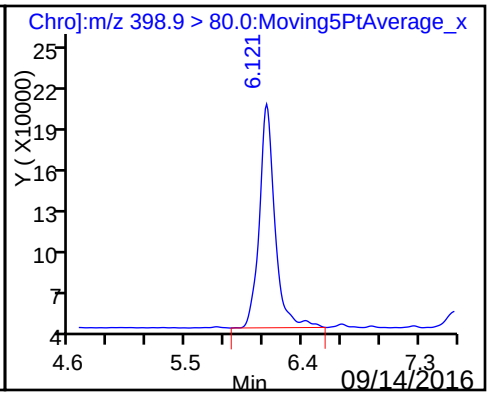
8 Perfluoroheptanoic acid



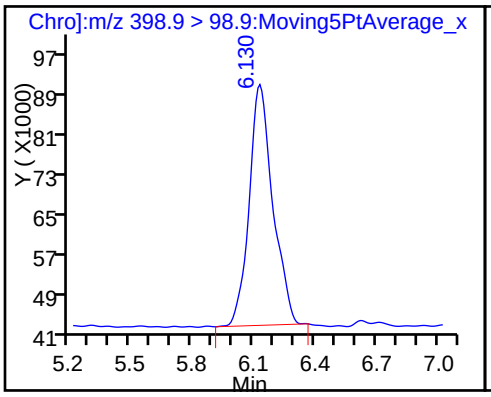
* 9 18O2 PFHxS (IS)



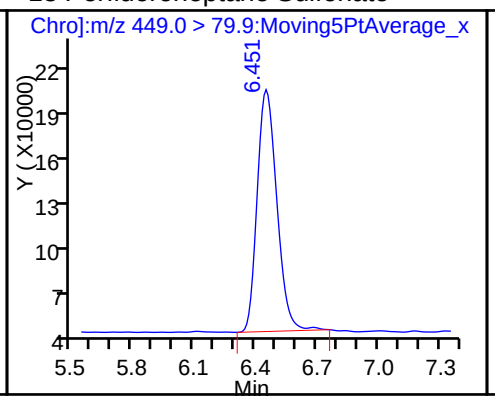
10 Perfluorohexane Sulfonate



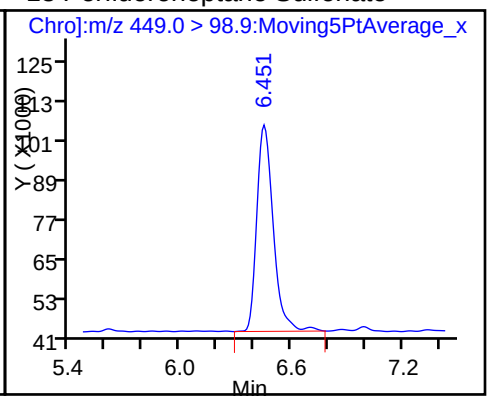
10 Perfluorohexane Sulfonate



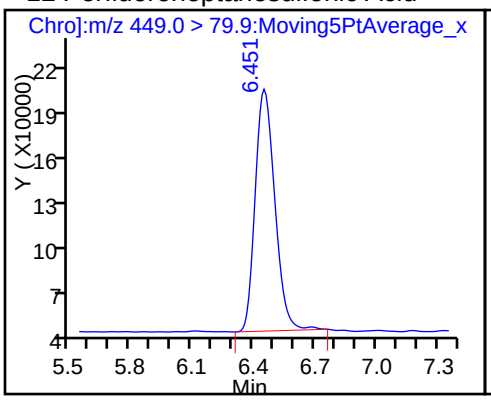
13 Perfluoroheptane Sulfonate



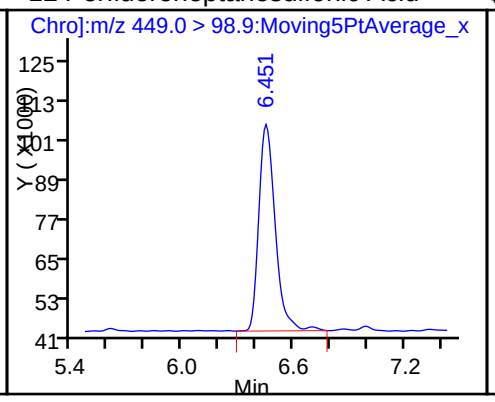
13 Perfluoroheptane Sulfonate



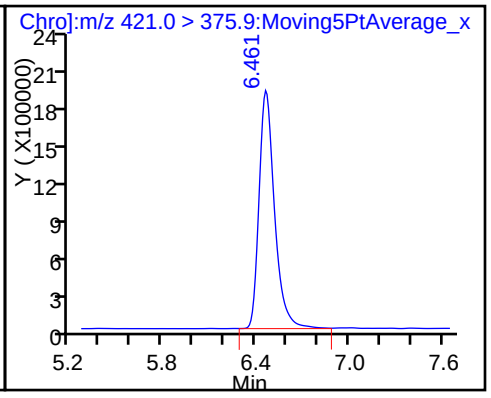
12 Perfluoroheptanesulfonic Acid



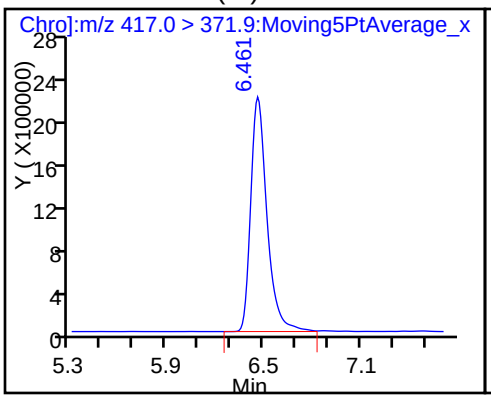
12 Perfluoroheptanesulfonic Acid



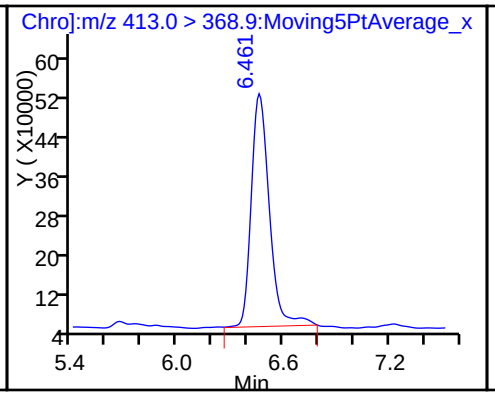
$ 14 13C8 PFOA



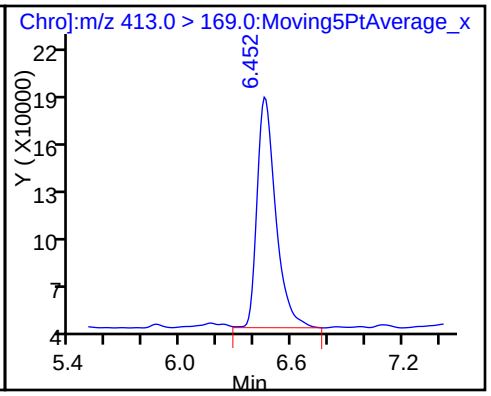
* 15 13C4 PFOA (IS)



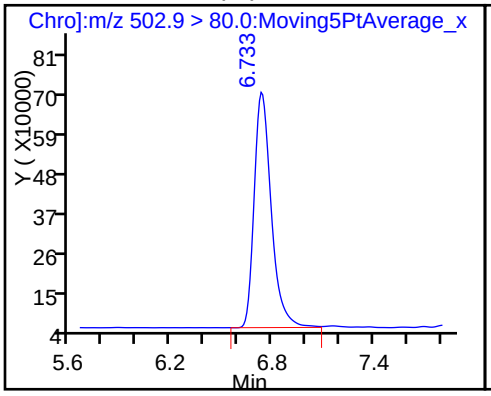
16 Perfluorooctanoic acid



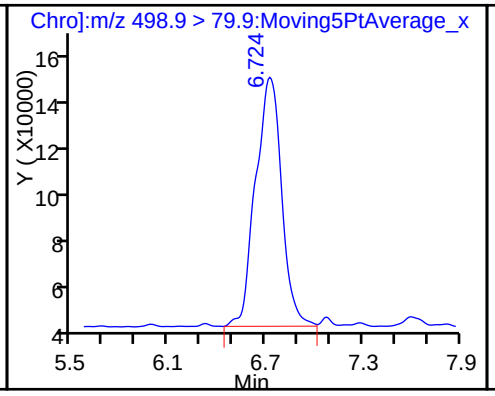
16 Perfluorooctanoic acid



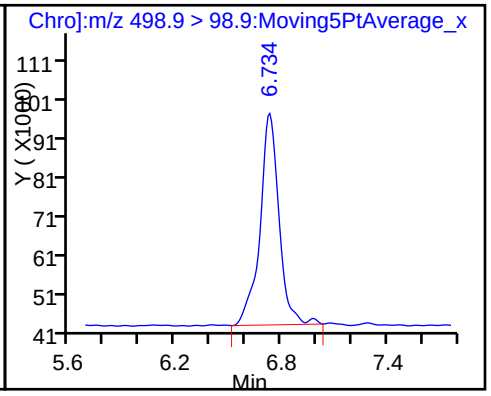
* 17 13C4 PFOS (IS)



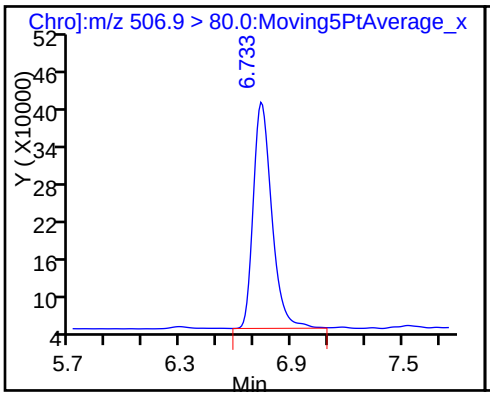
19 Perfluorooctane sulfonic acid



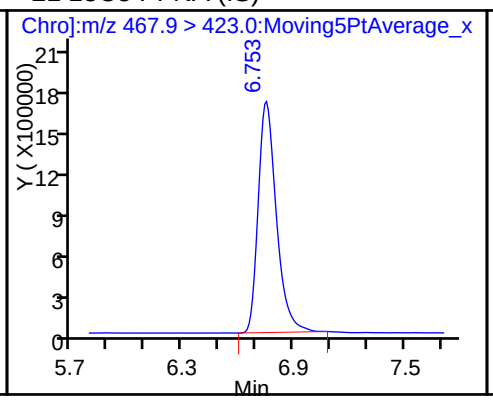
19 Perfluorooctane sulfonic acid



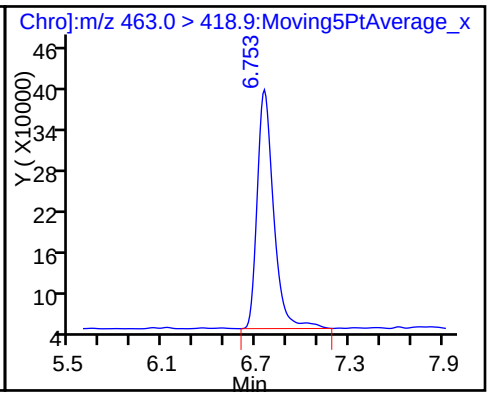
$ 18 13C8 PFOS



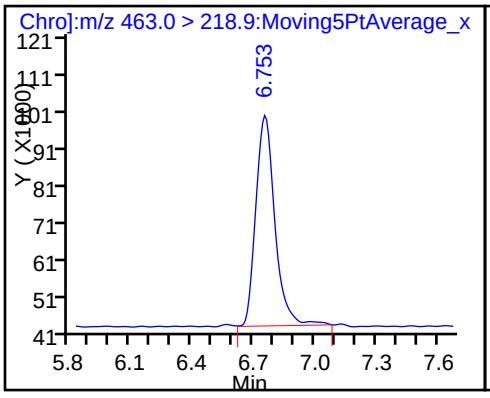
* 21 13C5 PFNA (IS)



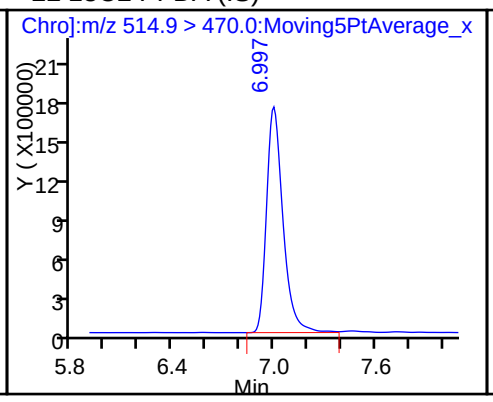
20 Perfluorononanoic acid



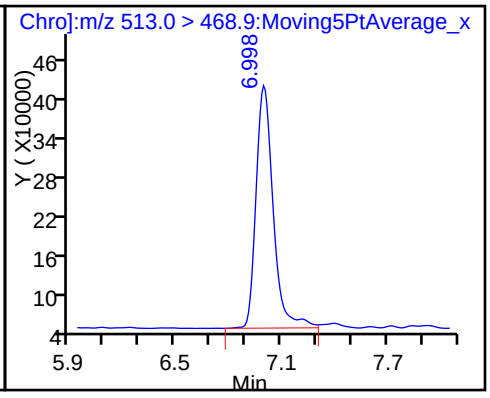
20 Perfluorononanoic acid



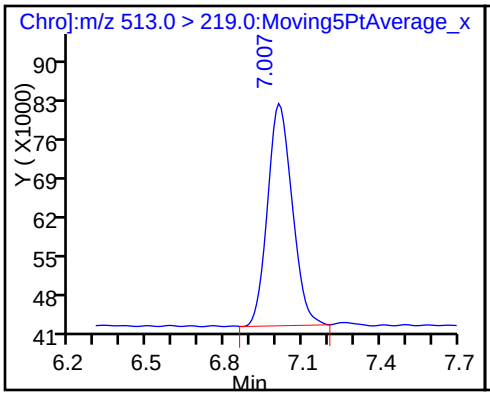
* 22 13C2 PFDA (IS)



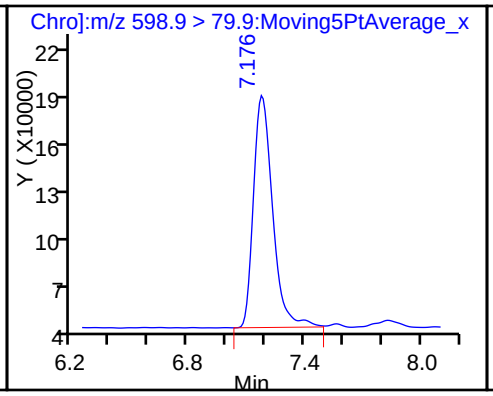
23 Perfluorodecanoic acid



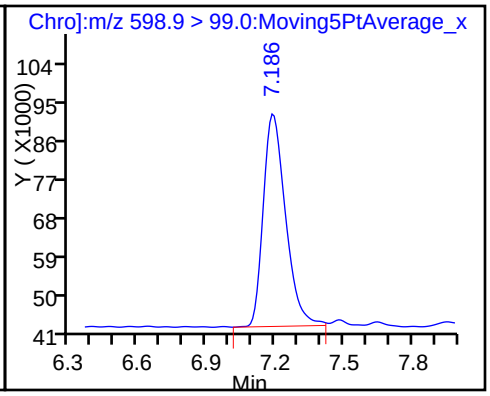
23 Perfluorodecanoic acid



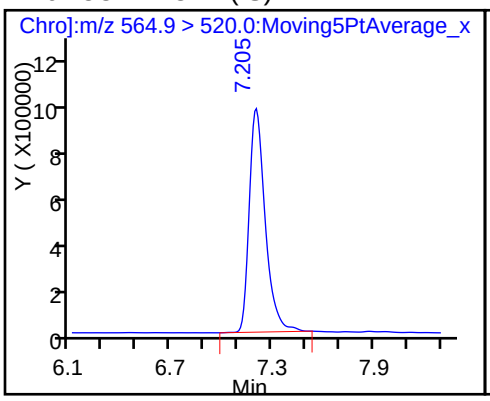
25 Perfluorodecane Sulfonate



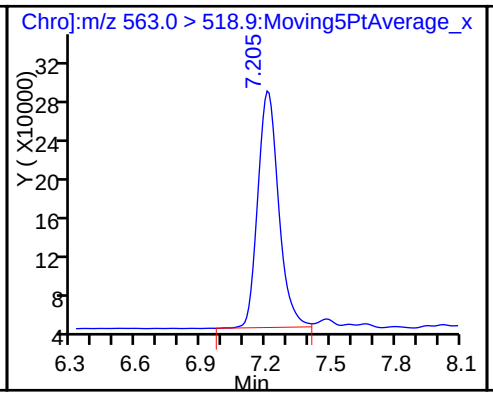
25 Perfluorodecane Sulfonate



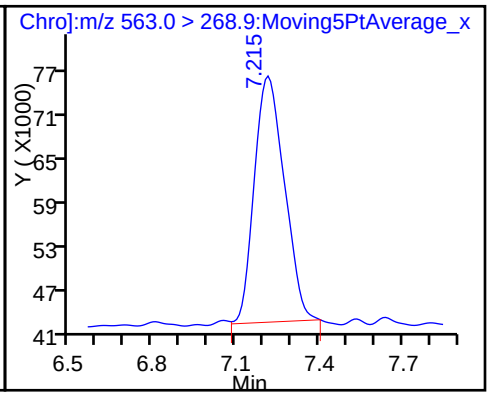
* 26 13C2 PFUnA (IS)



27 Perfluoroundecanoic acid



27 Perfluoroundecanoic acid



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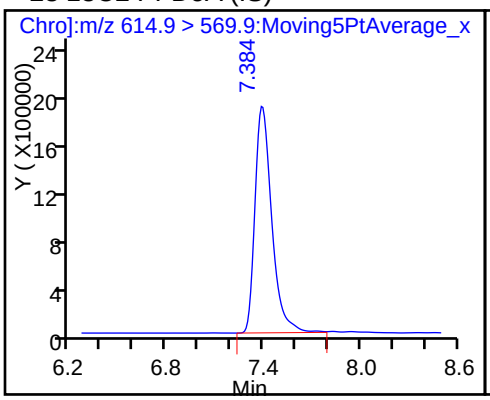
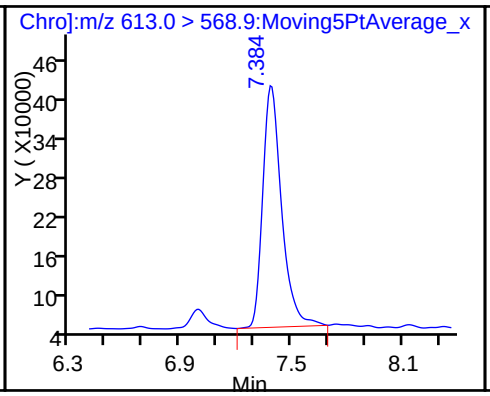
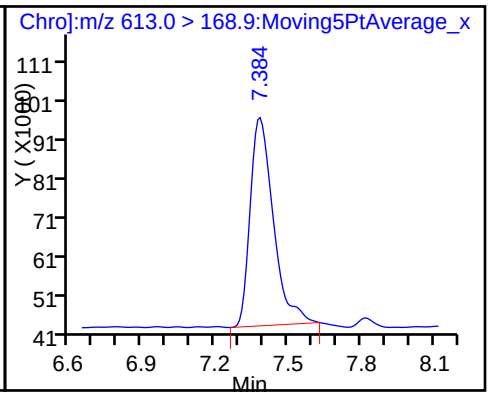


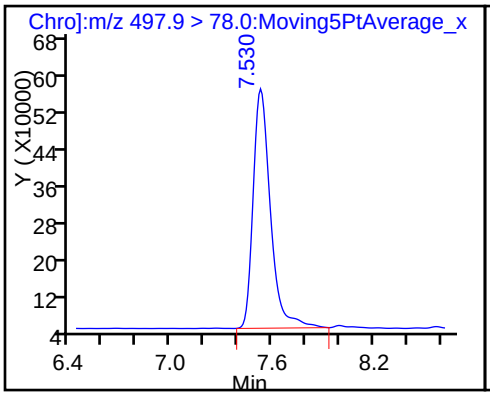
29 Perfluorododecanoic acid



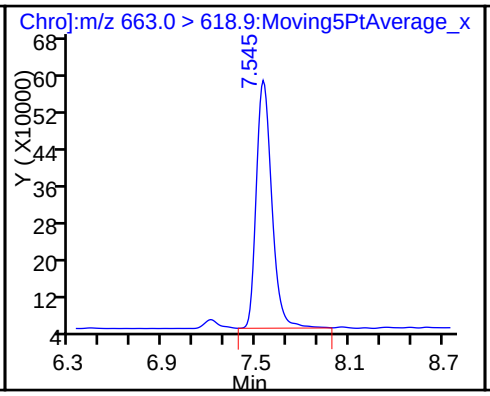
29 Perfluorododecanoic acid



32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



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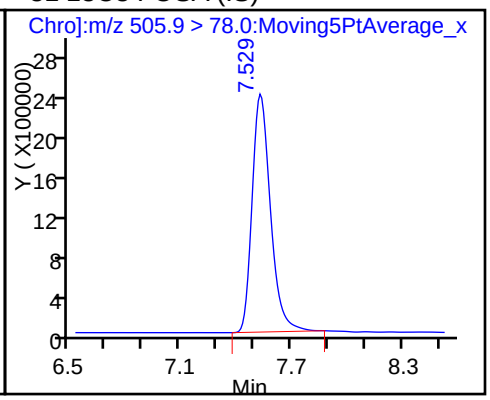
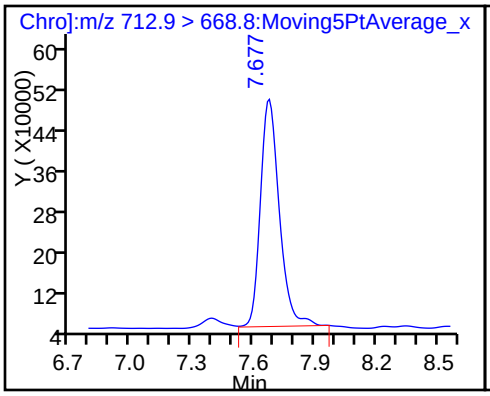
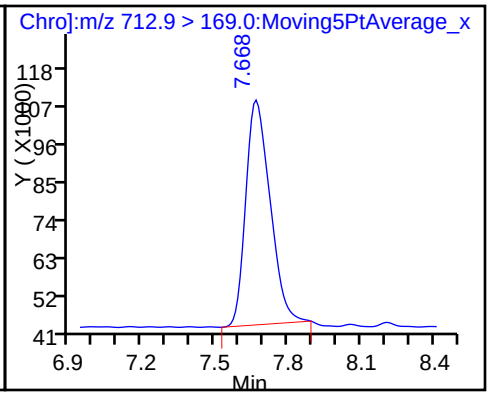


33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: CCV 280-340408/25 Calibration Date: 09/01/2016 15:26

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I01038.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.9622		4.99	5.00	-0.2	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.043		4.74	5.00	-5.1	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.359		4.37	4.43	-1.2	30.0
Perfluorobutanesulfonic acid	Lin2		4.359		4.37	4.43	-1.2	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8461		4.74	5.00	-5.2	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.7892		4.69	5.00	-6.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.753		4.43	4.73	-6.2	30.0
Perfluorohexanesulfonic acid	Lin2		3.753		4.43	4.73	-6.2	30.0
Perfluoroheptane Sulfonate	Lin2		1.140		4.97	4.76	4.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.140		4.97	4.76	4.4	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.9485		4.80	5.00	-4.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.114		5.25	4.78	10.0	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.015		4.81	5.00	-3.9	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9712		5.10	5.00	2.1	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.054		5.10	4.83	5.8	30.0
Perfluorodecane Sulfonic acid	Lin2		1.054		5.10	4.83	5.8	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.373		5.24	5.00	4.8	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9294		4.78	5.00	-4.4	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.297		5.10	5.00	2.1	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.001		4.84	5.00	-3.3	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.998		5.11	5.00	2.2	30.0
13C8 PFOA	Lin1		0.8240		5.89	5.00	17.8	30.0
13C8 PFOS	Lin2		0.7388		6.11	4.78	27.8	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01038.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 01-Sep-2016 15:26:13 ALS Bottle#: 0 Worklist Smp#: 25
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:53:17 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:54:00

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.963	3.963	0.0		13646398	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.973	3.973	0.0	1.002	6564940	4.99			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.062	5.062	0.0	0.896	5508005	4.74			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.184	5.184	0.0	0.851	2835602	4.37			
298.9 > 98.9	5.194	5.184	0.010	0.853	922109		3.08(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.184	5.184	0.0	0.851	2835602	4.37			
298.9 > 98.9	5.194	5.184	0.010	0.853	922109		3.08(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.648	5.648	0.0		10558954	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.648	5.648	0.0	1.000	4467086	4.74			
313.0 > 118.6	5.639	5.648	-0.009	0.998	142727		31.30(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.083	6.083	0.0	0.946	6641352	4.69			
363.0 > 168.9	6.083	6.083	0.0	0.946	1642457		4.04(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.092	6.092	0.0		1390613	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.092	6.092	0.0	1.000	2606594	4.43			
398.9 > 98.9	6.092	6.092	0.0	1.000	871603		2.99(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.092	6.092	0.0	1.000	2606594	4.43			R
398.9 > 98.9	6.092	6.092	0.0	1.000	871603		2.99(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.422	6.422	0.0	0.958	2605266	4.97			
449.0 > 98.9	6.432	6.422	0.010	0.959	713469		3.65(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.422	6.422	0.0	0.958	2605266	4.97			
449.0 > 98.9	6.432	6.422	0.010	0.959	713469		3.65(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.432	6.432	0.0	1.000	6934513	5.89			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.432	6.432	0.0		16831333	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.433	6.433	0.0	1.000	7982294	4.80			
413.0 > 169.0	6.433	6.433	0.0	1.000	2533482		3.15(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.705	6.705	0.0		4590937	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.705	6.705	0.0	1.000	2554465	5.25			R
498.9 > 98.9	6.705	6.705	0.0	1.000	1006377		2.54(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.704	6.704	0.0	1.000	1695923	6.11			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.725	6.725	0.0		11773943	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.725	6.725	0.0	1.000	5976442	4.81			
463.0 > 218.9	6.725	6.725	0.0	1.000	789758		7.57(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.969	6.969	0.0		10948741	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.969	6.969	0.0	1.000	5316691	5.10			
513.0 > 219.0	6.969	6.969	0.0	1.000	464333		11.45(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.148	7.148	0.0	1.066	2442031	5.10			
598.9 > 99.0	7.157	7.148	0.009	1.067	803587		3.04(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.148	7.148	0.0	1.066	2442031	5.10			
598.9 > 99.0	7.157	7.148	0.009	1.067	803587		3.04(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.177	7.177	0.0		6570851	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.177	7.177	0.0	1.000	4510595	5.24			R
563.0 > 268.9	7.177	7.177	0.0	1.000	595136		7.58(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.356	7.356	0.0		14213407	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.356	7.356	0.0	1.000	6604746	4.78			
613.0 > 168.9	7.346	7.356	-0.010	0.999	926034		7.13(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.530	0.0	1.000	8311833	4.83			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.507	7.507	0.0	1.021	9220806	5.10			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.529	0.0		16604453	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.630	7.630	0.0	1.037	7090266	5.11			
712.9 > 169.0	7.639	7.630	0.009	1.039	1216019		5.83(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00084	Amount Added:	10.00	Units: uL

Report Date: 02-Sep-2016 11:53:17 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01038.d

Injection Date: 01-Sep-2016 15:26:13 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

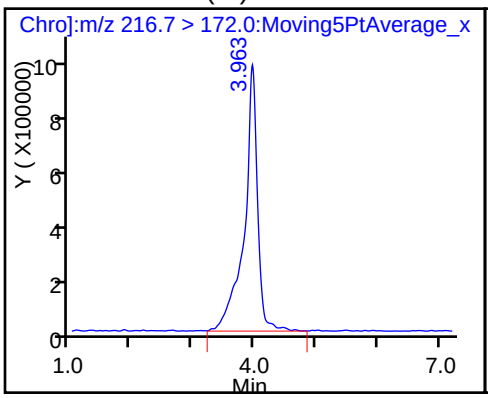
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 25

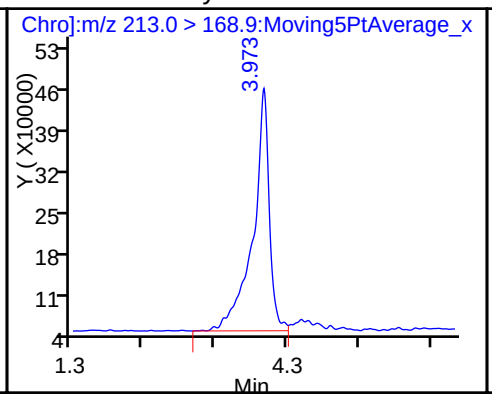
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

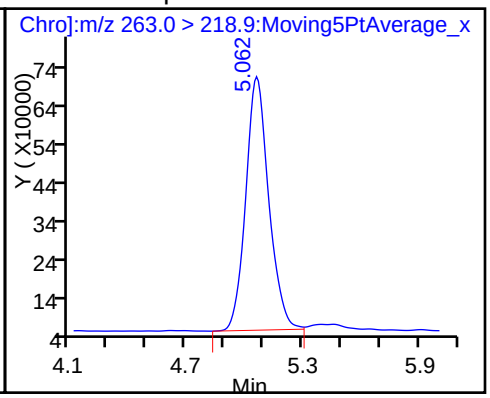
* 1 13C4 PFBA (IS)



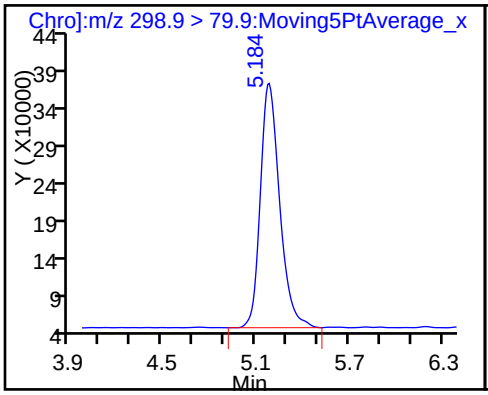
2 Perfluorobutyric acid



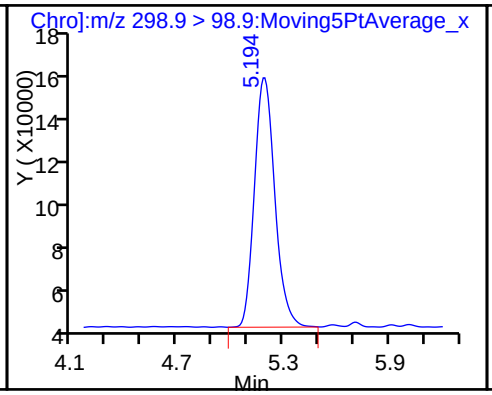
3 Perfluoropentanoic acid



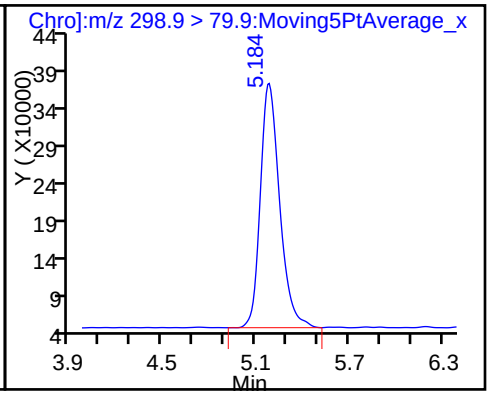
4 Perfluorobutane Sulfonate



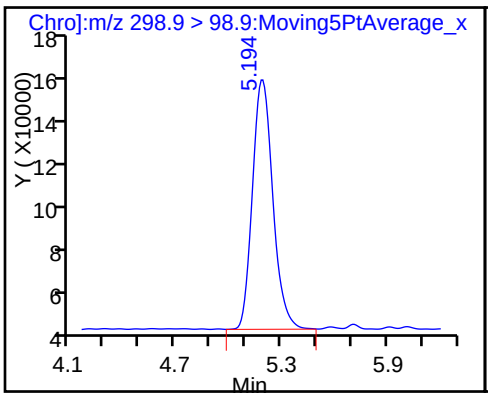
4 Perfluorobutane Sulfonate



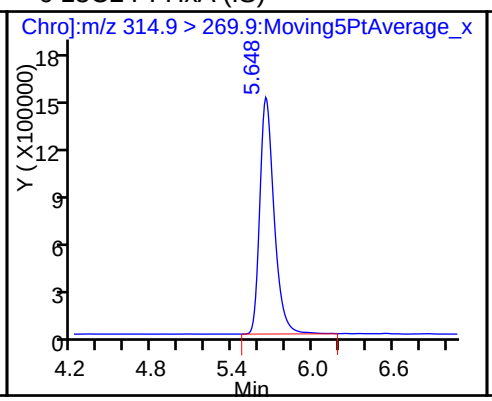
5 Perfluorobutanesulfonic acid



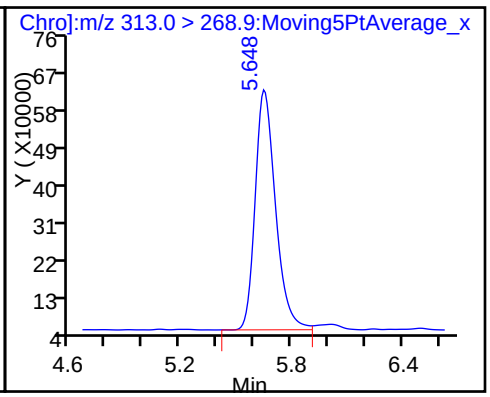
5 Perfluorobutanesulfonic acid



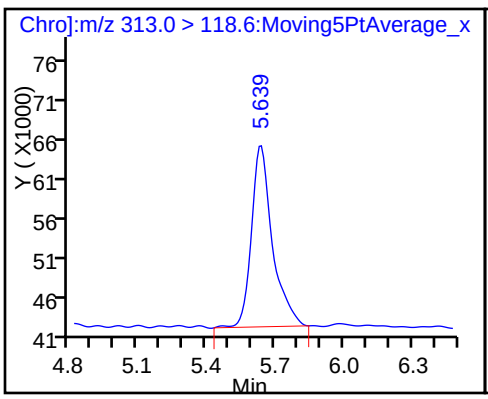
* 6 13C2 PFHxA (IS)



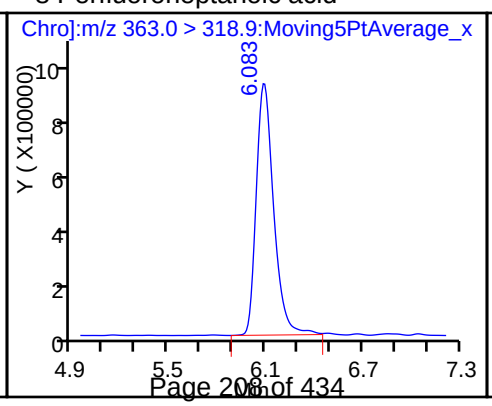
7 Perfluorohexanoic acid



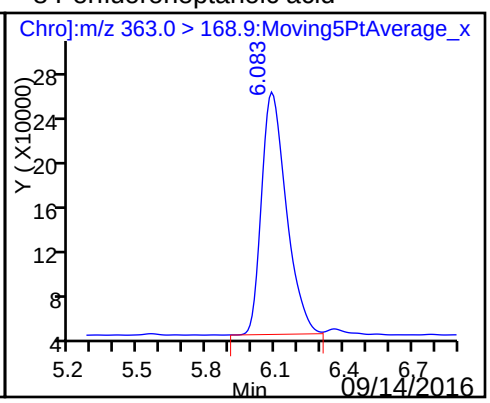
7 Perfluorohexanoic acid



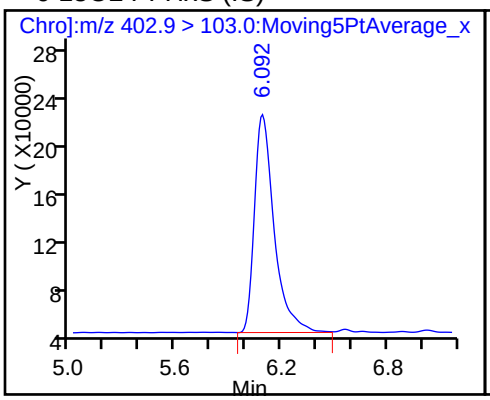
8 Perfluoroheptanoic acid



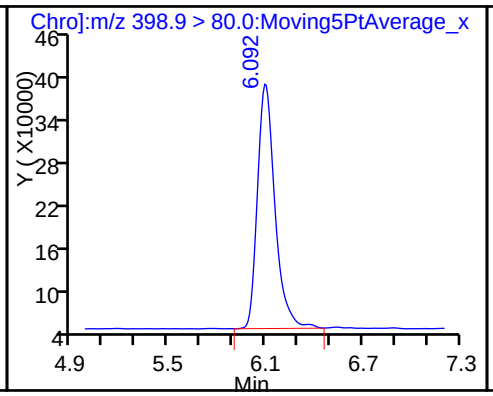
8 Perfluoroheptanoic acid



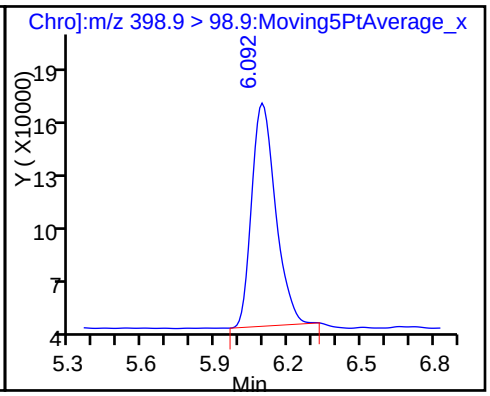
* 9 18O2 PFHxS (IS)



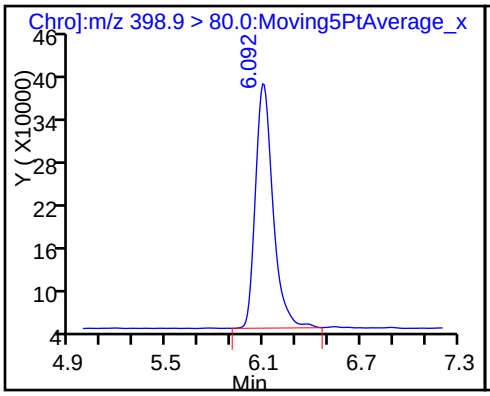
11 Perfluorohexanesulfonic acid



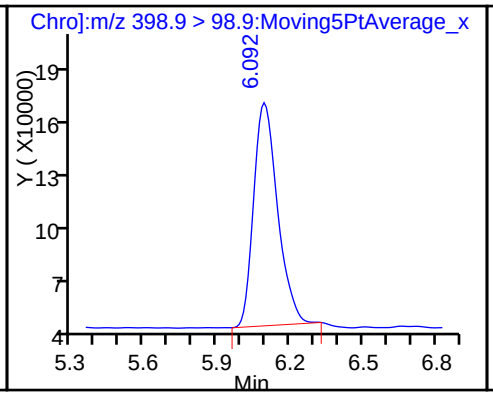
11 Perfluorohexanesulfonic acid



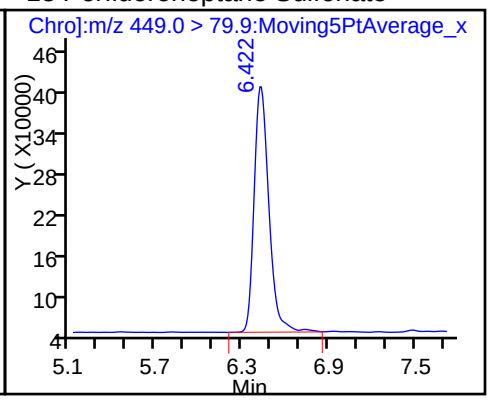
10 Perfluorohexane Sulfonate



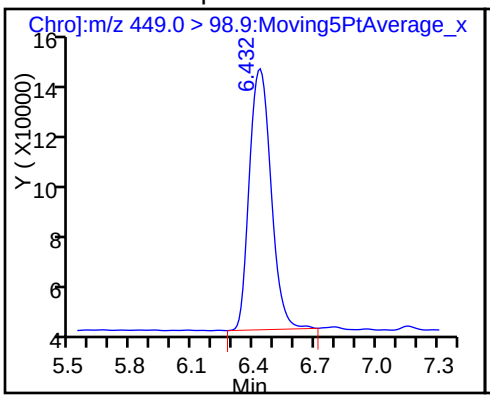
10 Perfluorohexane Sulfonate



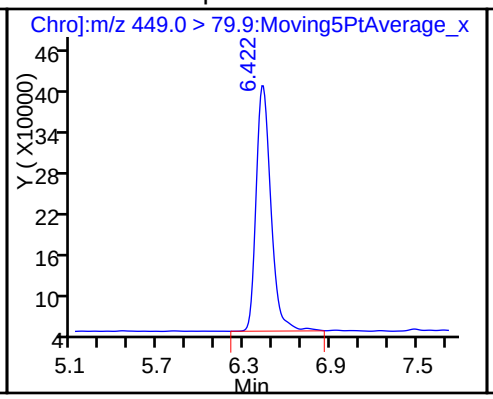
13 Perfluoroheptane Sulfonate



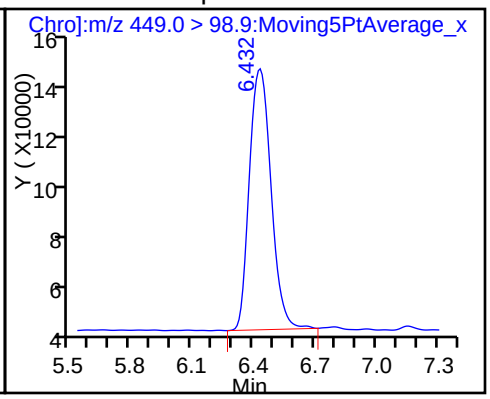
13 Perfluoroheptane Sulfonate



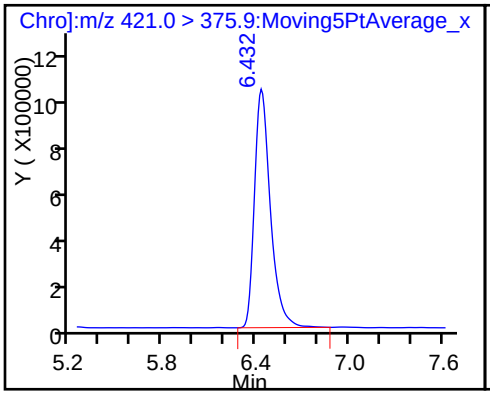
12 Perfluoroheptanesulfonic Acid



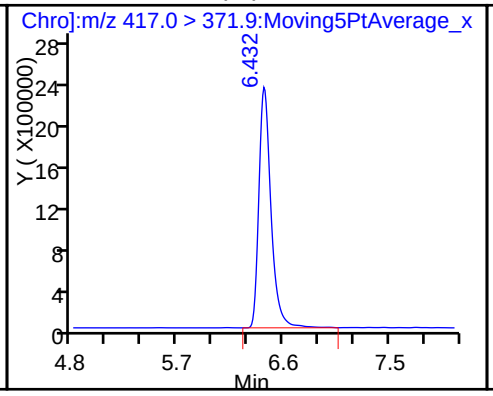
12 Perfluoroheptanesulfonic Acid



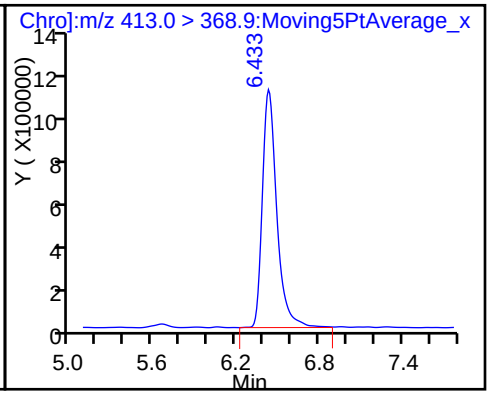
$ 14 13C8 PFOA



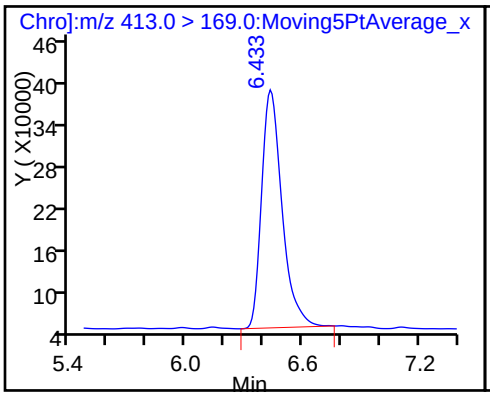
* 15 13C4 PFOA (IS)



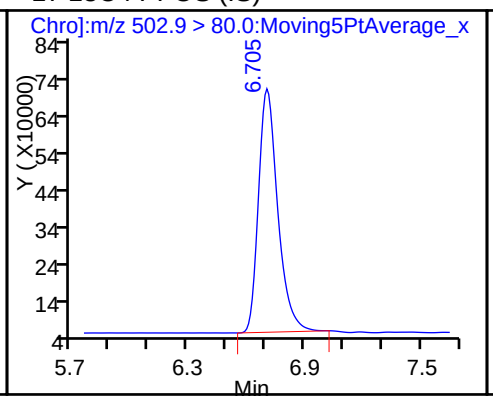
16 Perfluorooctanoic acid



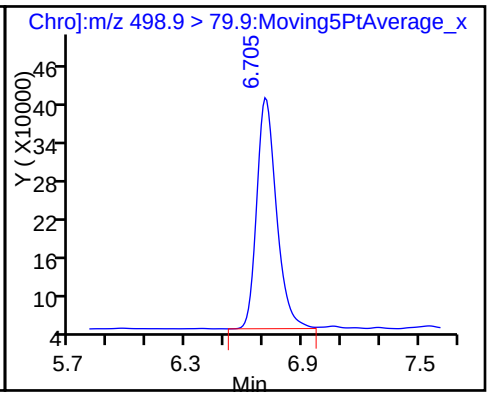
16 Perfluorooctanoic acid



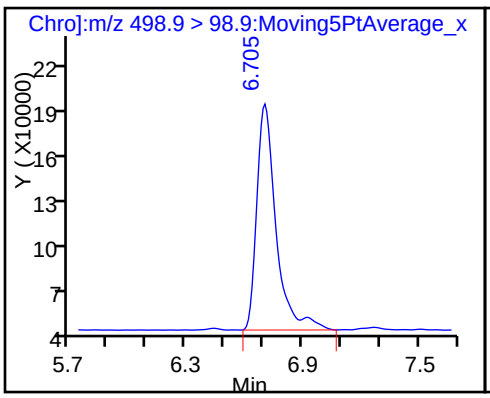
* 17 13C4 PFOS (IS)



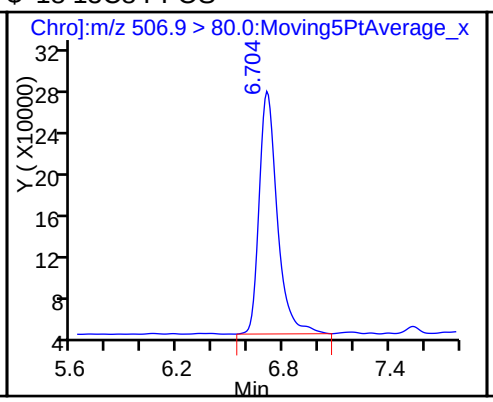
19 Perfluorooctane sulfonic acid



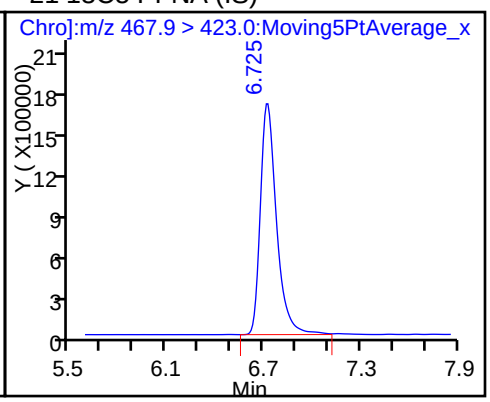
19 Perfluorooctane sulfonic acid



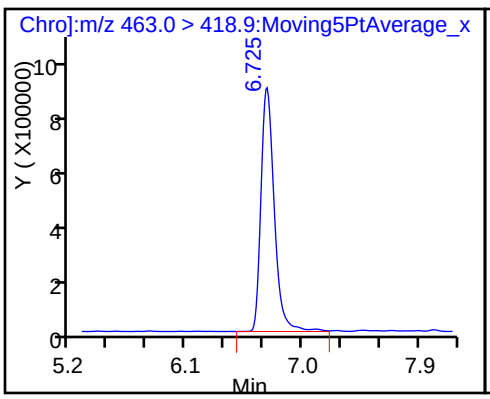
$ 18 13C8 PFOS



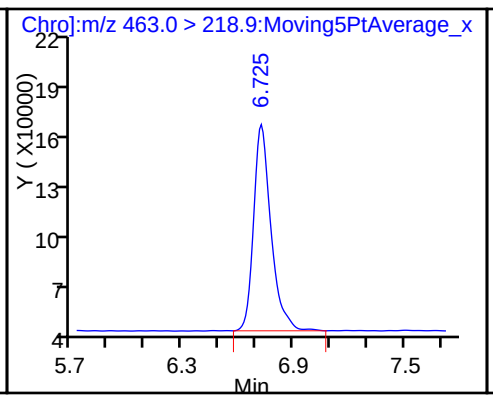
* 21 13C5 PFNA (IS)



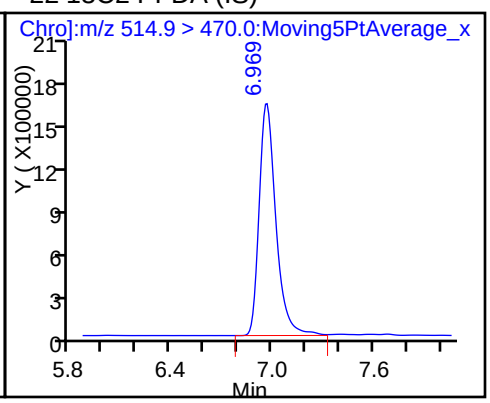
20 Perfluorononanoic acid



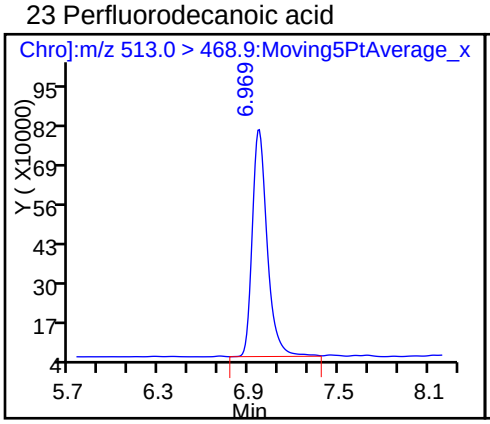
20 Perfluorononanoic acid



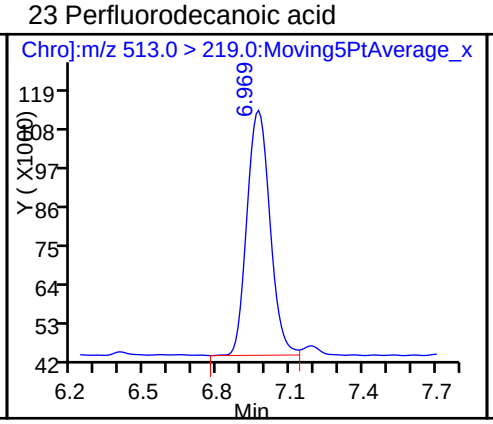
* 22 13C2 PFDA (IS)



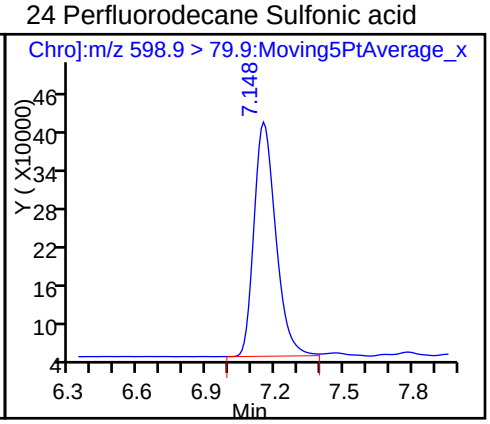
23 Perfluorodecanoic acid



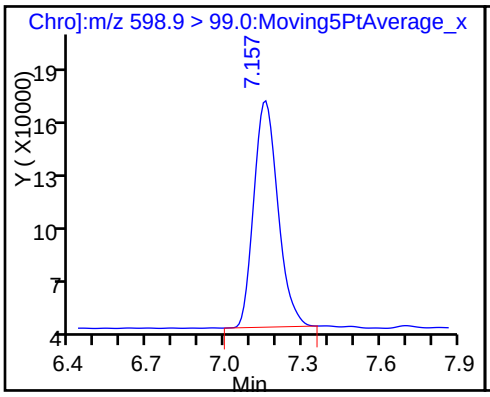
23 Perfluorodecanoic acid



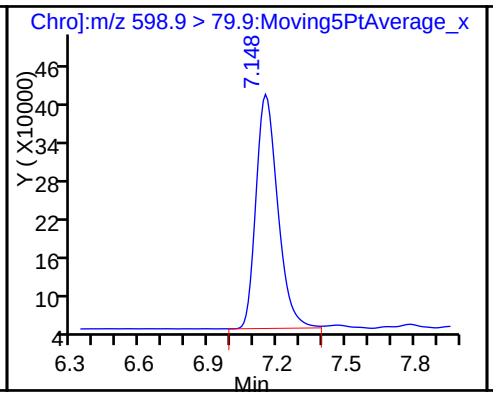
24 Perfluorodecane Sulfonic acid



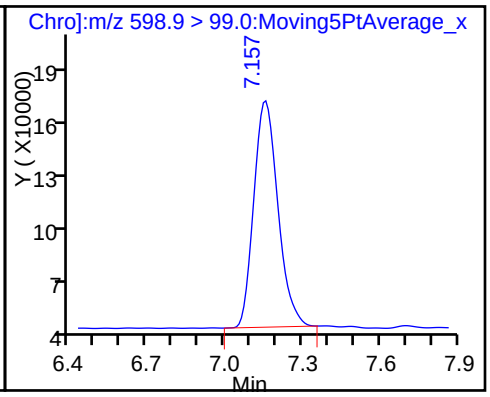
24 Perfluorodecane Sulfonic acid



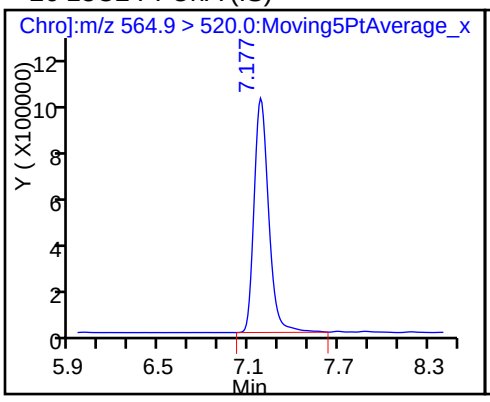
25 Perfluorodecane Sulfonate



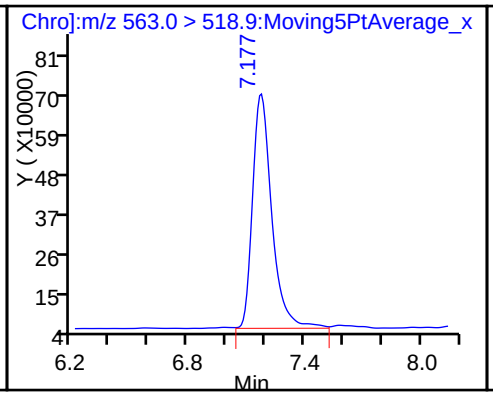
25 Perfluorodecane Sulfonate



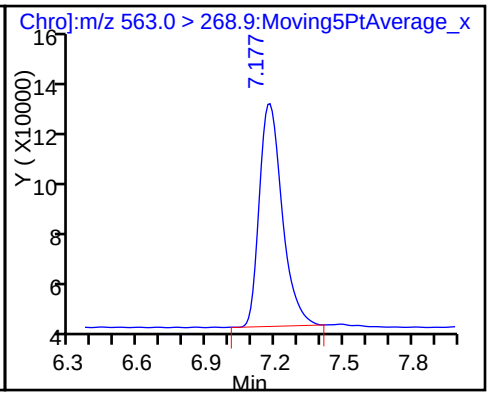
* 26 13C2 PFUnA (IS)



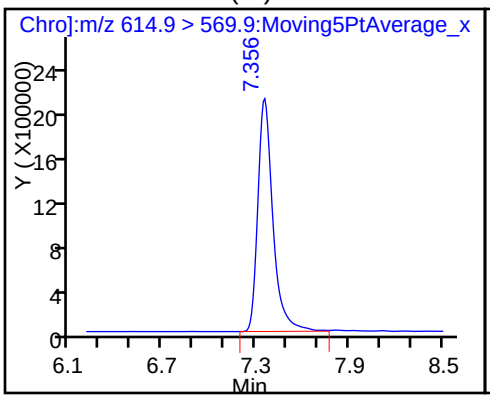
27 Perfluoroundecanoic acid



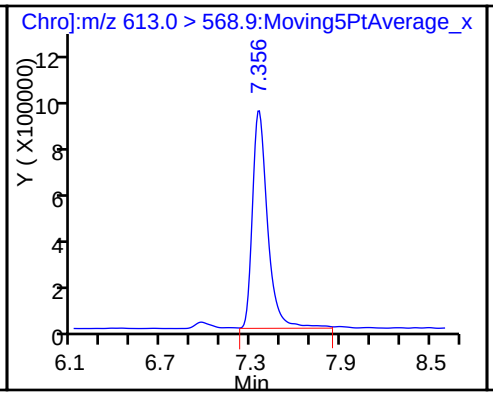
27 Perfluoroundecanoic acid



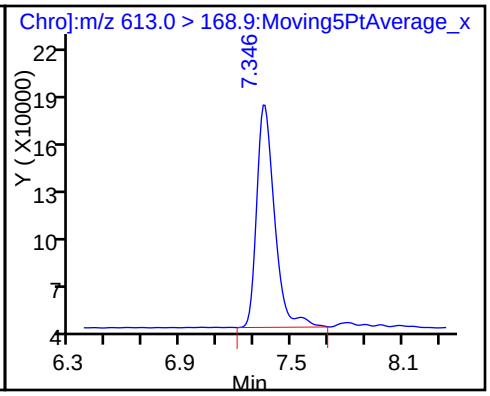
* 28 13C2 PFDoA (IS)



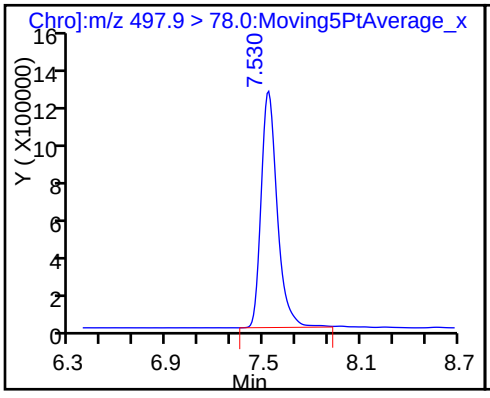
29 Perfluorododecanoic acid



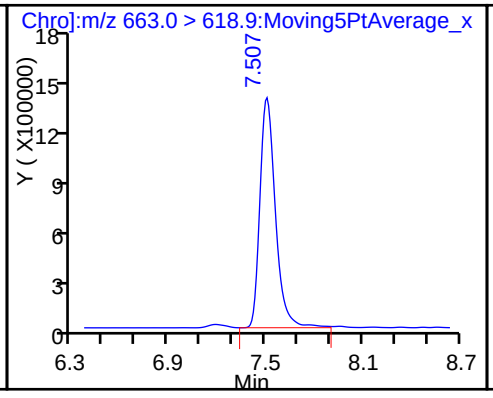
29 Perfluorododecanoic acid



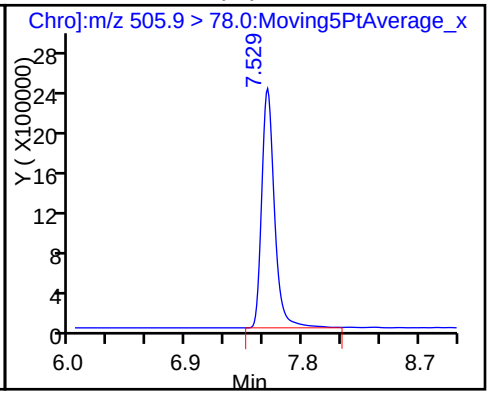
32 Perfluorooctane Sulfonamide



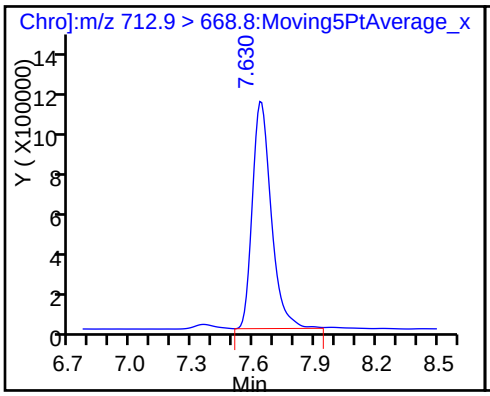
30 Perfluorotridecanoic acid



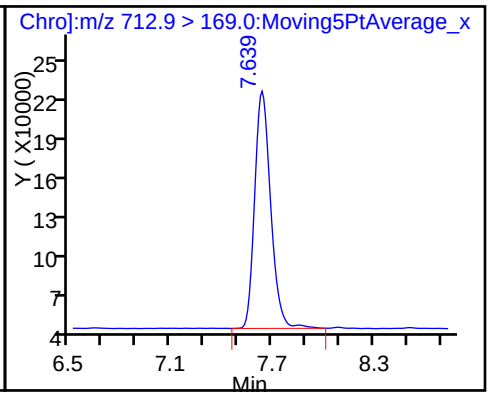
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: CCV 280-340408/32 Calibration Date: 09/01/2016 16:52

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I01045.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.064		11.0	10.0	10.4	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.148		10.5	10.0	5.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		5.215		10.5	8.85	18.4	30.0
Perfluorobutanesulfonic acid	Lin2		5.215		10.5	8.85	18.4	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9479		10.7	10.0	6.8	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8854		10.6	10.0	5.5	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.141		9.79	9.45	3.6	30.0
Perfluorohexanesulfonic acid	Lin2		4.141		9.79	9.45	3.6	30.0
Perfluoroheptane Sulfonate	Lin2		1.110		9.64	9.52	1.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.110		9.64	9.52	1.3	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.057		10.8	10.0	8.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.156		10.8	9.55	13.4	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.020		9.64	10.0	-3.6	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9837		10.4	10.0	3.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.059		10.3	9.65	6.7	30.0
Perfluorodecane Sulfonic acid	Lin2		1.059		10.3	9.65	6.7	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.392		10.7	10.0	7.1	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.002		10.3	10.0	3.1	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.303		10.3	10.0	3.0	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.102		10.7	10.0	6.6	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		1.003		10.3	10.0	3.2	30.0
13C8 PFOA	Lin1		0.8147		11.9	10.0	18.7	30.0
13C8 PFOS	Lin2		0.5678		9.44	9.56	-1.2	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01045.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 01-Sep-2016 16:52:26 ALS Bottle#: 0 Worklist Smp#: 32
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:53:37 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:56:58

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.153	4.153	0.0		12060883	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.153	4.153	0.0	1.000	12832802	11.0			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.223	5.223	0.0	0.901	9593294	10.5			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.336	5.336	0.0	0.856	5352428	10.5			R
298.9 > 98.9	5.345	5.336	0.009	0.857	1567132		3.42(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.336	5.336	0.0	0.856	5352428	10.5			
298.9 > 98.9	5.345	5.336	0.009	0.857	1567132		3.42(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.800	5.800	0.0		8358800	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.800	5.800	0.0	1.000	7922859	10.7			
313.0 > 118.6	5.800	5.800	0.0	1.000	191979		41.27(34.05-63.23)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.234	6.234	0.0	1.000	4537923	9.79			
398.9 > 98.9	6.225	6.234	-0.009	0.999	1372940		3.31(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.225	6.225	0.0	0.948	11332588	10.5			
363.0 > 168.9	6.225	6.225	0.0	0.948	3192193		3.55(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.234	6.234	0.0		1097050	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.234	6.234	0.0	1.000	4537923	9.79			R
398.9 > 98.9	6.225	6.234	-0.009	0.999	1372940		3.31(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.555	6.555	0.0	0.960	4538487	9.64			
449.0 > 98.9	6.555	6.555	0.0	0.960	1371069		3.31(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.555	6.555	0.0	0.960	4538487	9.64			
449.0 > 98.9	6.555	6.555	0.0	0.960	1371069		3.31(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.565	6.565	0.0	1.000	10427191	11.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.565	6.565	0.0		12799038	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.565	6.565	0.0	1.000	13525497	10.8			
413.0 > 169.0	6.565	6.565	0.0	1.000	4136446		3.27(2.86-5.31)		
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.828	6.828	0.0	1.000	4740553	10.8			R
498.9 > 98.9	6.828	6.828	0.0	1.000	1563983		3.03(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.828	6.828	0.0	1.000	2330434	9.44			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.828	6.828	0.0		4104170	9.56			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.848	6.848	0.0		10301856	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.848	6.848	0.0	1.000	10506665	9.64			
463.0 > 218.9	6.848	6.848	0.0	1.000	1653336		6.35(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.083	7.083	0.0		8958481	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.083	7.083	0.0	1.000	8812062	10.4			R
513.0 > 219.0	7.083	7.083	0.0	1.000	889700		9.90(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.262	7.262	0.0	1.063	4385644	10.3			
598.9 > 99.0	7.262	7.262	0.0	1.063	1234025		3.55(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.262	7.262	0.0	1.063	4385644	10.3			
598.9 > 99.0	7.262	7.262	0.0	1.063	1234025		3.55(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.281	0.0		5087594	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.281	7.281	0.0	1.000	7079499	10.7			R
563.0 > 268.9	7.281	7.281	0.0	1.000	995197		7.11(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.460	7.460	0.0		12119065	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.460	7.460	0.0	1.000	12142755	10.3			
613.0 > 168.9	7.460	7.460	0.0	1.000	1533931		7.92(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.661	7.661	0.0		13923978	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.662	7.662	0.0	1.000	15340056	10.7			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.611	7.611	0.0	1.020	15790752	10.3			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734	7.734	0.0	1.037	12153852	10.3			
712.9 > 169.0	7.734	7.734	0.0	1.037	1767081		6.88(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00084	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFC-IS_00023	Amount Added:	20.00	Units: uL

Report Date: 02-Sep-2016 11:53:38 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01045.d

Injection Date: 01-Sep-2016 16:52:26 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

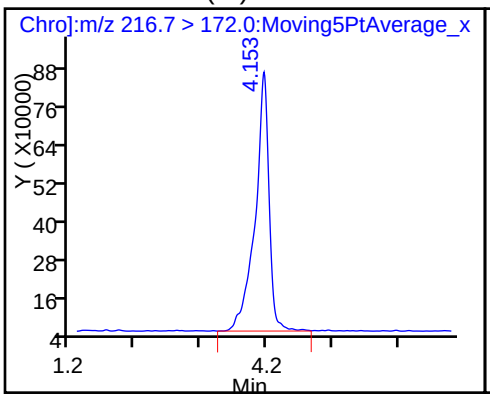
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 32

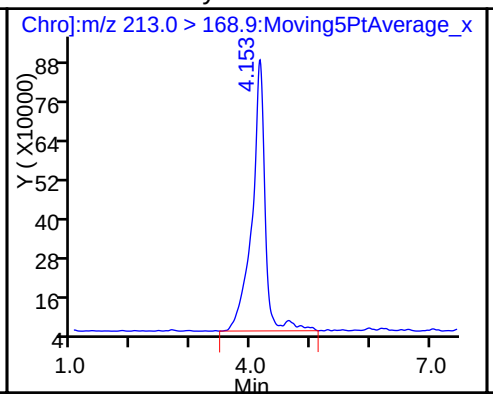
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

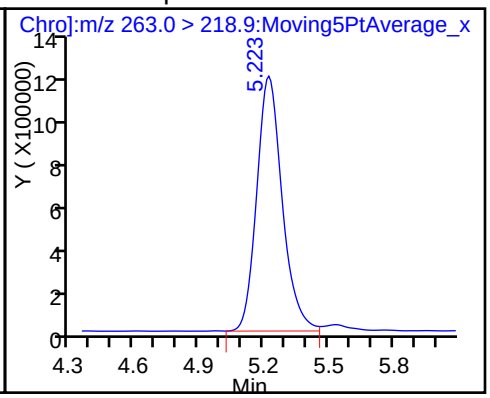
* 1 13C4 PFBA (IS)



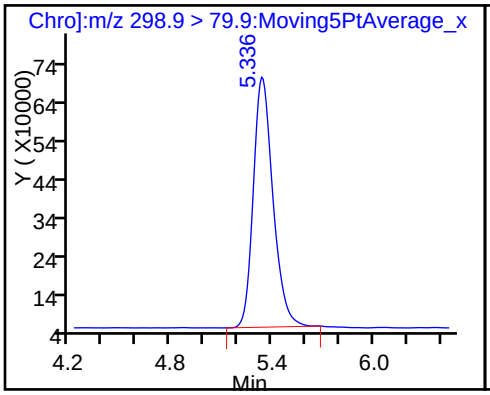
2 Perfluorobutyric acid



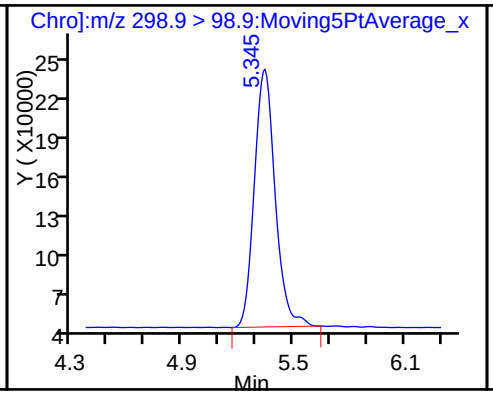
3 Perfluoropentanoic acid



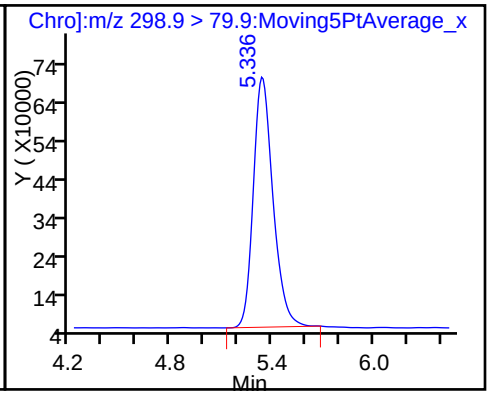
4 Perfluorobutane Sulfonate



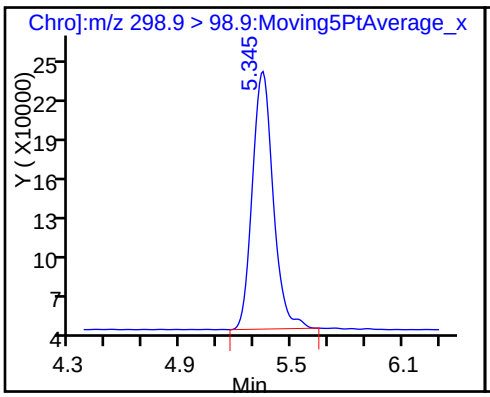
4 Perfluorobutane Sulfonate



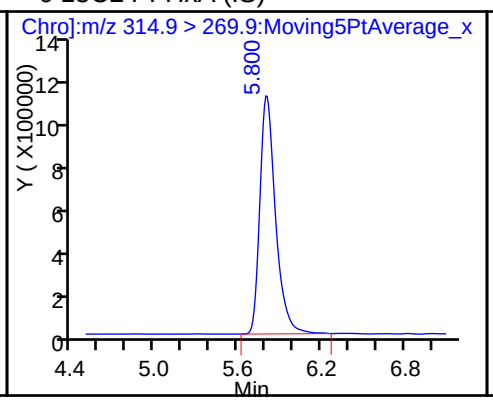
5 Perfluorobutanesulfonic acid



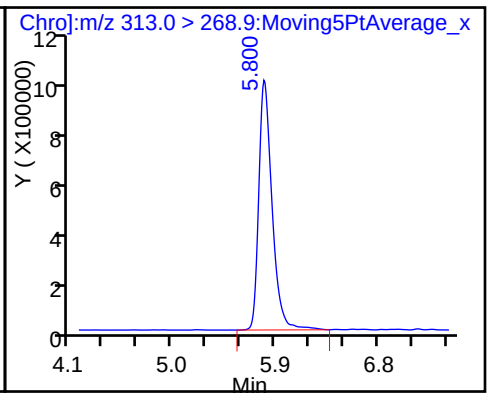
5 Perfluorobutanesulfonic acid



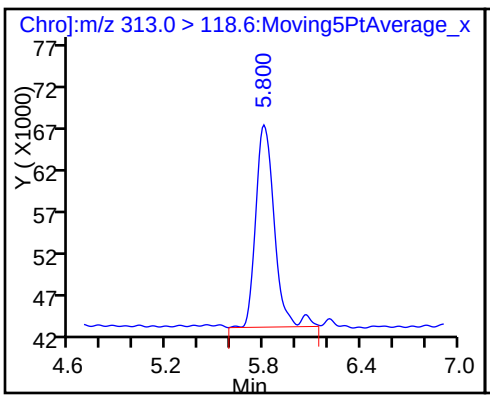
* 6 13C2 PFHxA (IS)



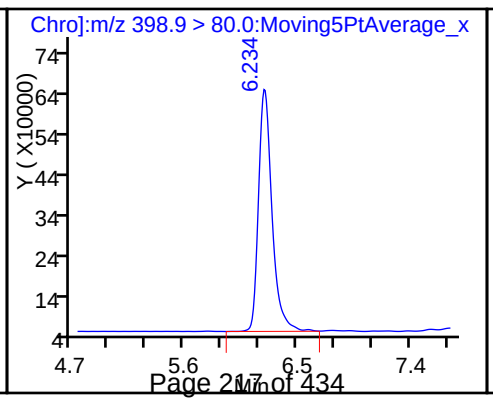
7 Perfluorohexanoic acid



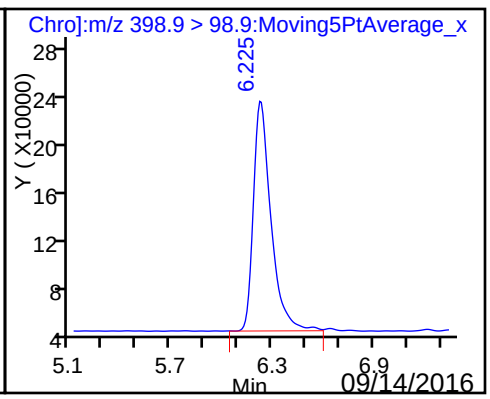
7 Perfluorohexanoic acid



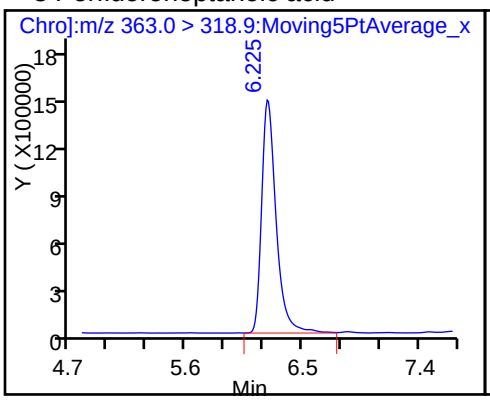
11 Perfluorohexanesulfonic acid



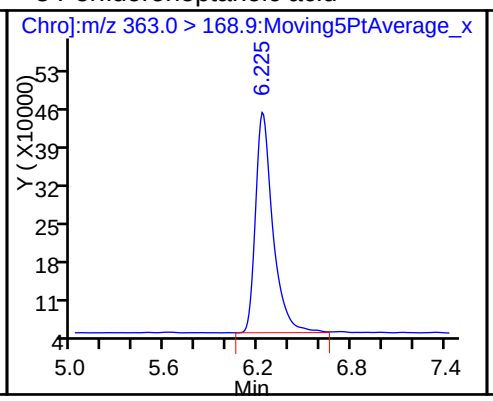
11 Perfluorohexanesulfonic acid



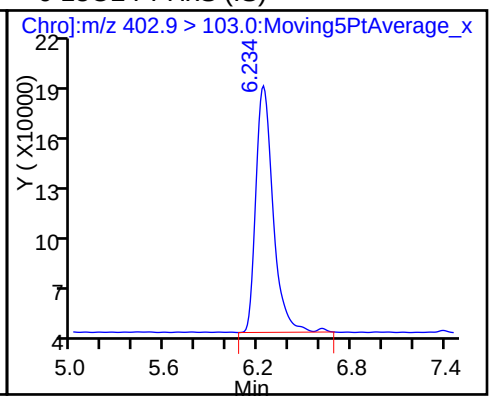
8 Perfluoroheptanoic acid



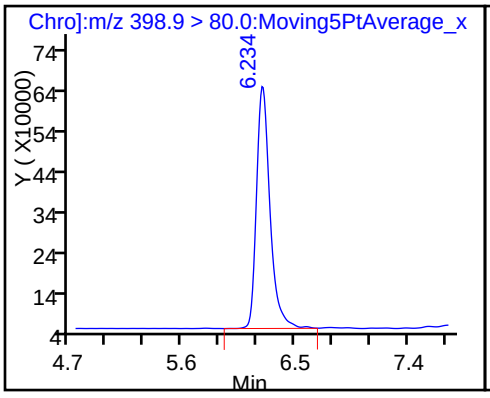
8 Perfluoroheptanoic acid



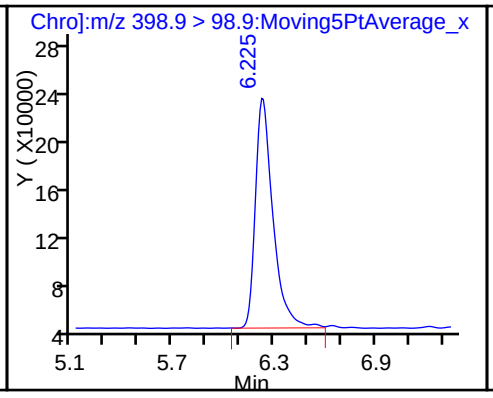
* 9 18O2 PFHxS (IS)



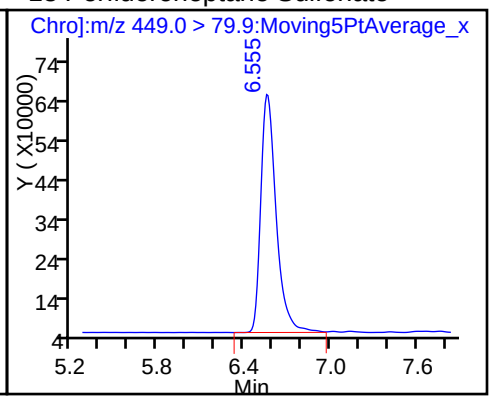
10 Perfluorohexane Sulfonate



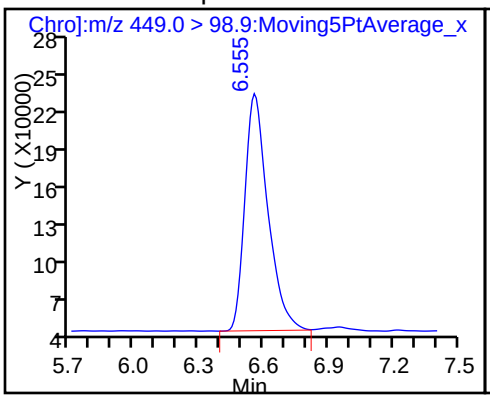
10 Perfluorohexane Sulfonate



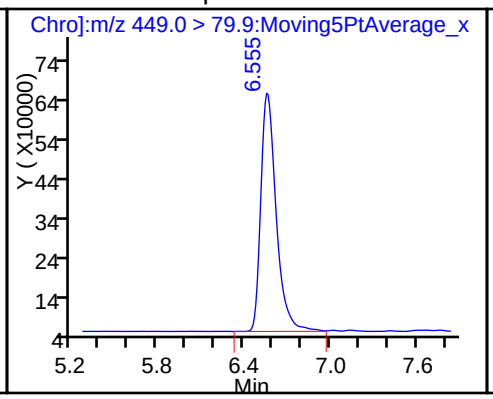
13 Perfluoroheptane Sulfonate



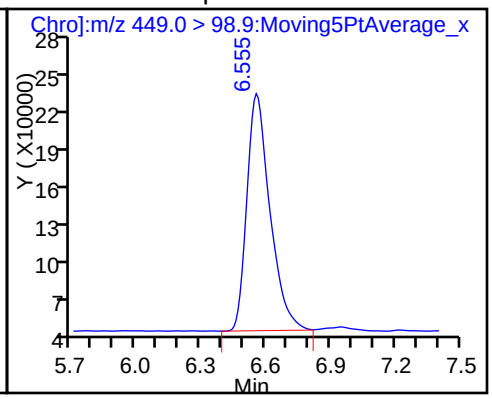
13 Perfluoroheptane Sulfonate



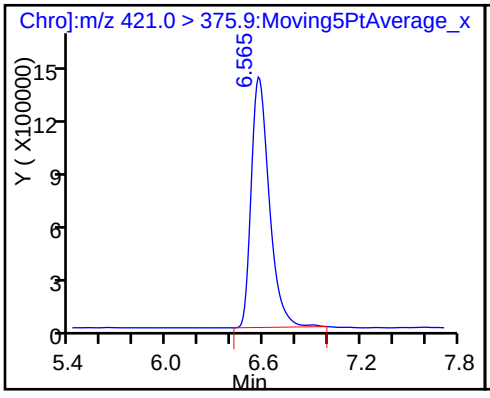
12 Perfluoroheptanesulfonic Acid



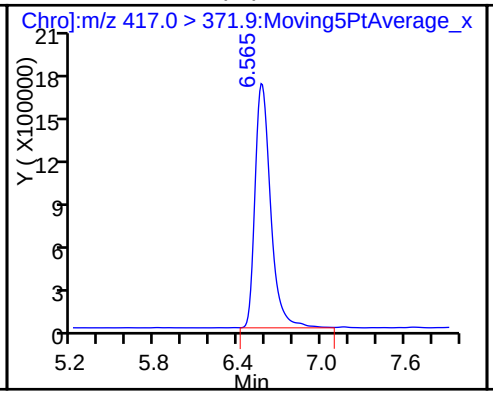
12 Perfluoroheptanesulfonic Acid



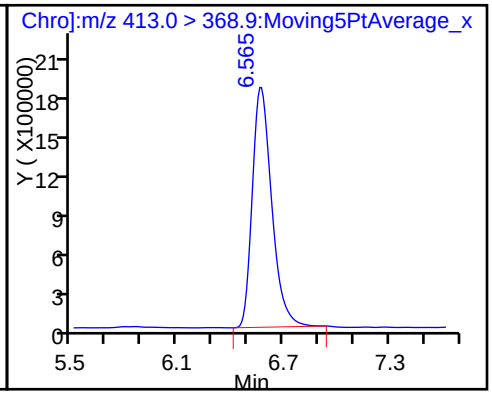
$ 14 13C8 PFOA



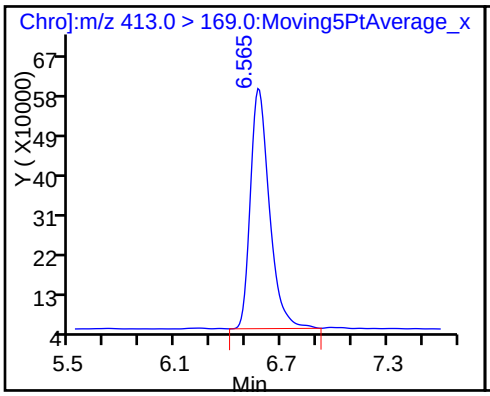
* 15 13C4 PFOA (IS)



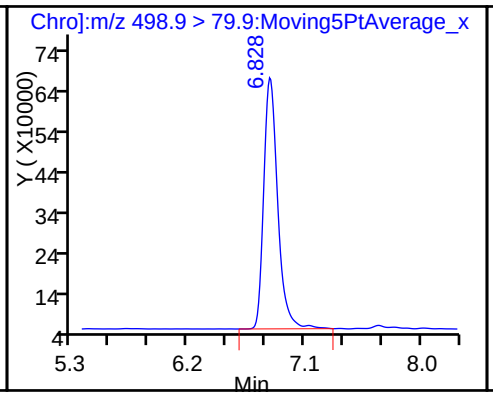
16 Perfluorooctanoic acid



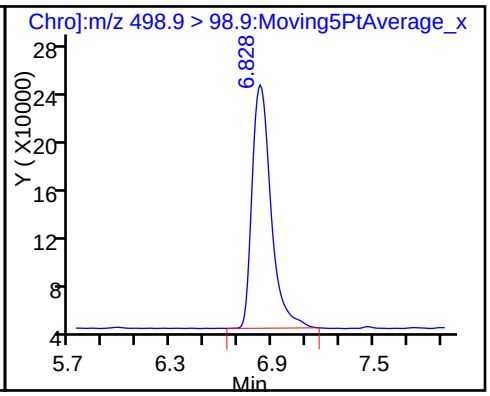
16 Perfluorooctanoic acid



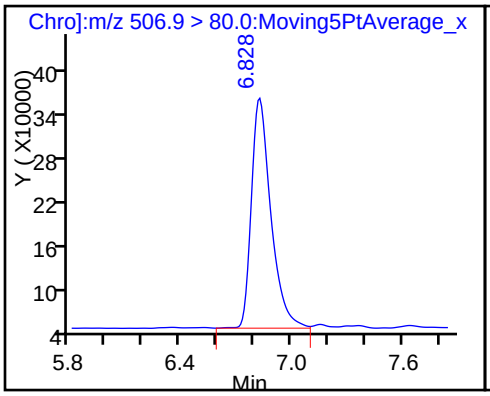
19 Perfluorooctane sulfonic acid



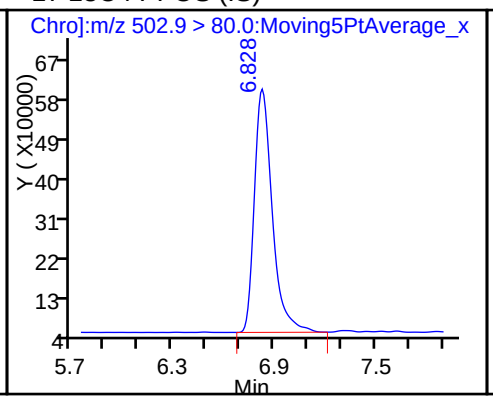
19 Perfluorooctane sulfonic acid



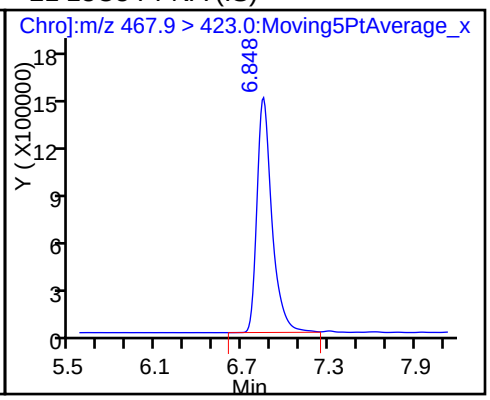
$ 18 13C8 PFOS



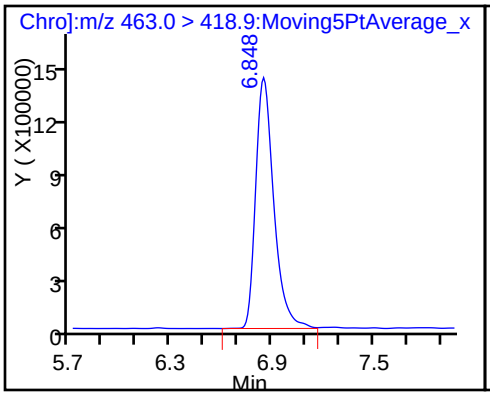
* 17 13C4 PFOS (IS)



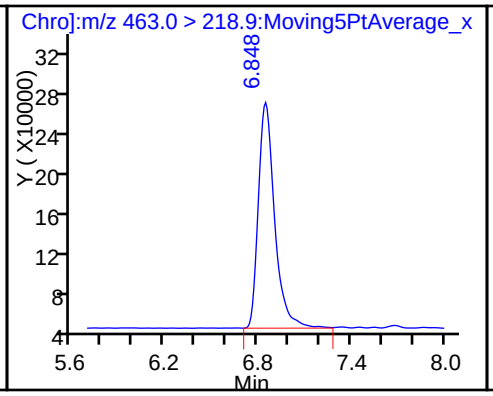
* 21 13C5 PFNA (IS)



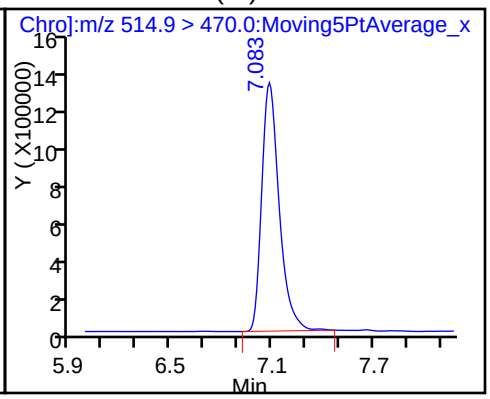
20 Perfluorononanoic acid



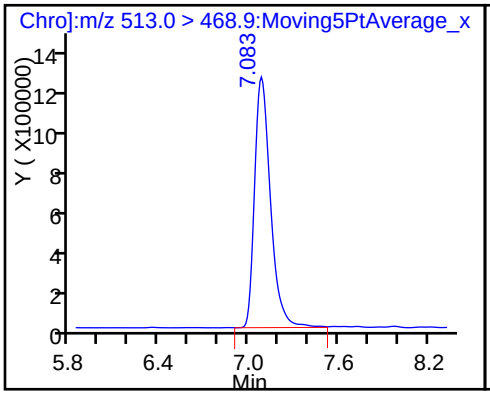
20 Perfluorononanoic acid



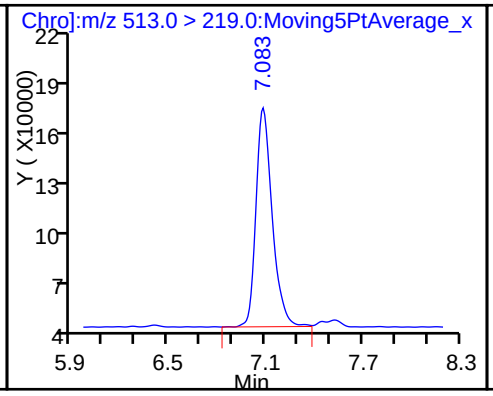
* 22 13C2 PFDA (IS)



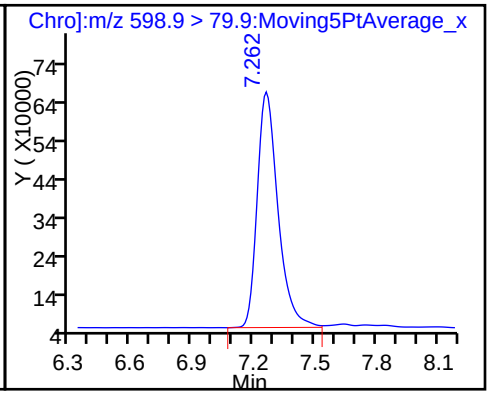
23 Perfluorodecanoic acid



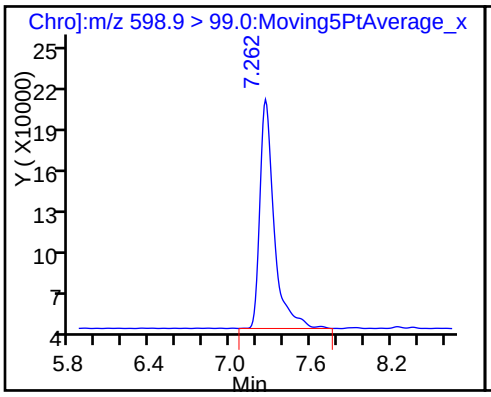
23 Perfluorodecanoic acid



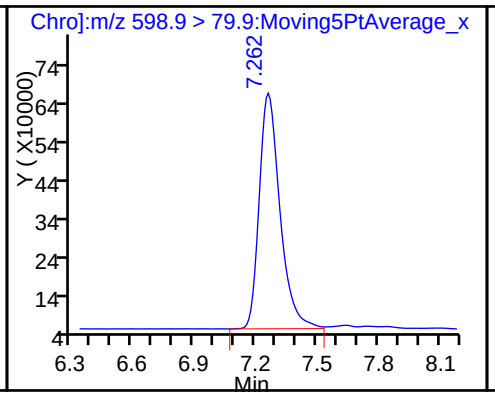
24 Perfluorodecane Sulfonic acid



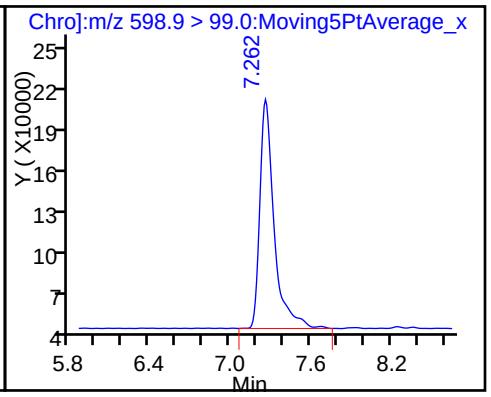
24 Perfluorodecane Sulfonic acid



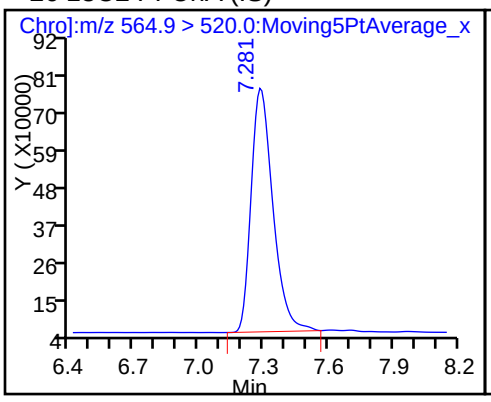
25 Perfluorodecane Sulfonate



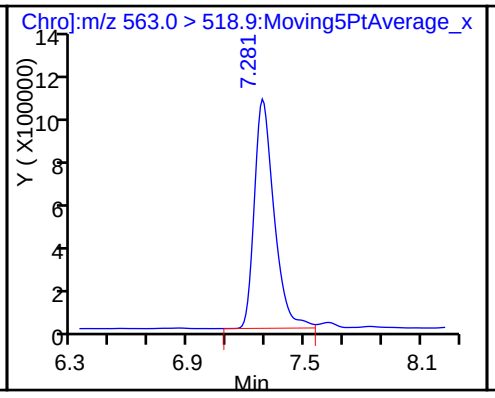
25 Perfluorodecane Sulfonate



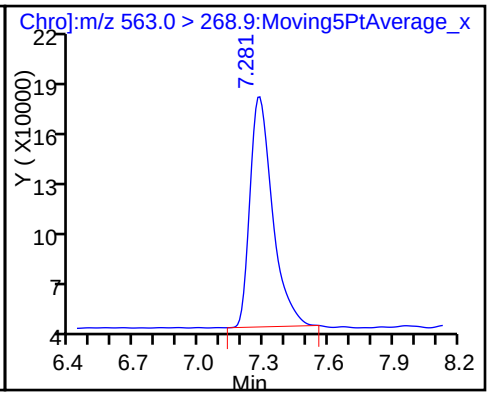
* 26 13C2 PFUnA (IS)



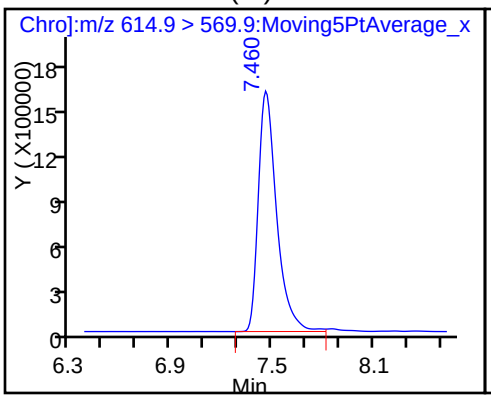
27 Perfluoroundecanoic acid



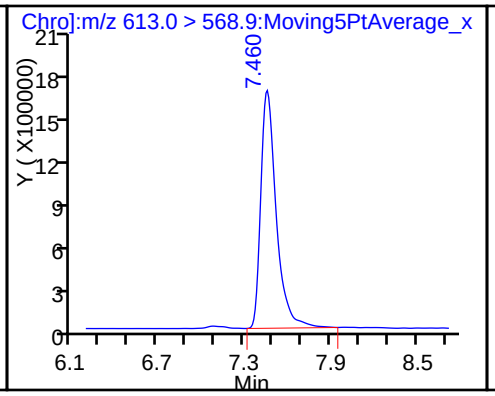
27 Perfluoroundecanoic acid



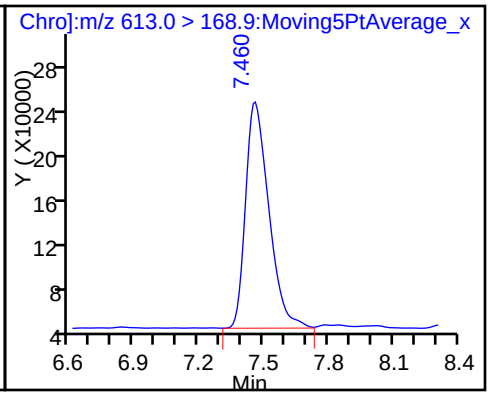
* 28 13C2 PFDoA (IS)



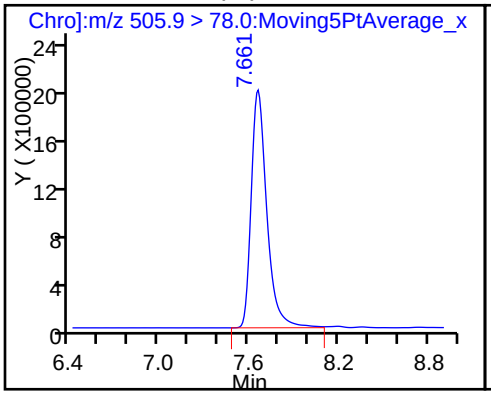
29 Perfluorododecanoic acid



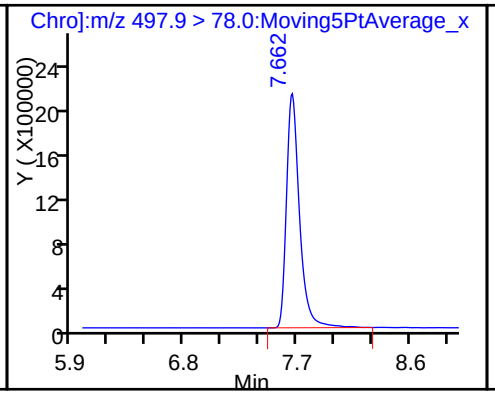
29 Perfluorododecanoic acid



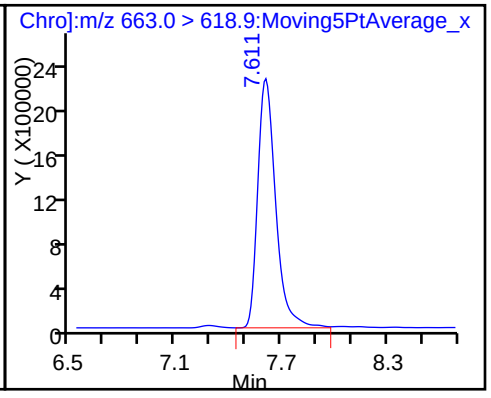
* 31 13C8 FOSA (IS)



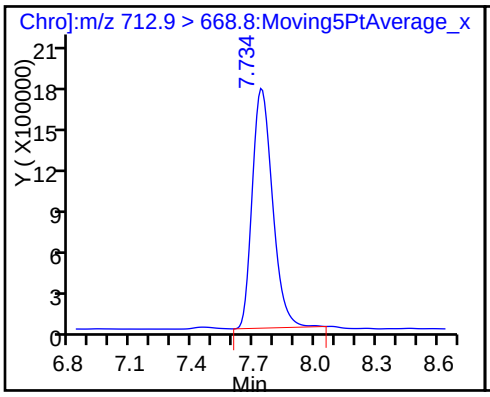
32 Perfluorooctane Sulfonamide



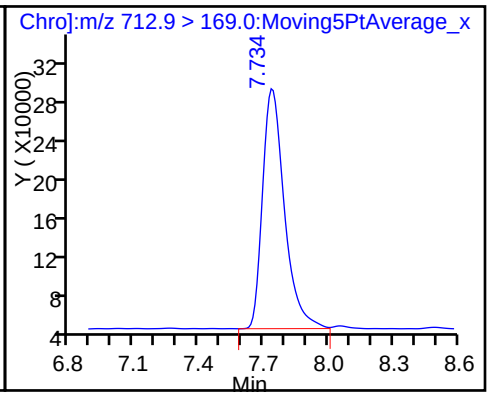
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: CCV 280-340412/59 Calibration Date: 09/01/2016 22:24

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I01072.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.9455		4.90	5.00	-1.9	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.221		5.57	5.00	11.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		3.798		3.81	4.43	-13.9	30.0
Perfluorobutanesulfonic acid	Lin2		3.798		3.81	4.43	-13.9	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8903		4.99	5.00	-0.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.621		4.28	4.73	-9.5	30.0
Perfluorohexanesulfonic acid	Lin2		3.621		4.28	4.73	-9.5	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.7798		4.64	5.00	-7.3	30.0
Perfluoroheptane Sulfonate	Lin2		1.095		4.78	4.76	0.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.095		4.78	4.76	0.3	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.044		5.29	5.00	5.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.055		4.98	4.78	4.3	30.0
Perfluorononanoic acid (PFNA)	Lin2		0.9703		4.59	5.00	-8.1	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9394		4.94	5.00	-1.3	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.116		5.41	4.83	12.0	30.0
Perfluorodecane Sulfonic acid	Lin2		1.116		5.41	4.83	12.0	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.176		4.48	5.00	-10.5	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9312		4.79	5.00	-4.2	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		0.9912		4.79	5.00	-4.3	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.072		4.21	5.00	-15.8	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7980		4.08	5.00	-18.5	30.0
13C8 PFOA	Lin1		0.8604		6.16	5.00	23.2	30.0
13C8 PFOS	Lin2		0.6930		5.72	4.78	19.7	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01072.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 01-Sep-2016 22:24:52 ALS Bottle#: 0 Worklist Smp#: 59
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:15:55

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.276	4.276	0.0		13518500	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.266	4.266	0.0	0.998	6390950	4.90			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.308	5.308	0.0	0.899	5377279	5.56			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.431	5.431	0.0	0.857	2466430	3.81			R
298.9 > 98.9	5.421	5.431	-0.010	0.855	725182		3.40(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.431	5.431	0.0	0.857	2466430	3.81			
298.9 > 98.9	5.421	5.431	-0.010	0.855	725182		3.40(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.894	5.894	0.0	0.998	3921059	4.99			
313.0 > 118.6	5.894	5.894	0.0	0.998	91390		42.90(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.904	5.904	0.0		8808726	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.338	6.338	0.0		1388252	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.329	6.329	0.0	0.999	2510460	4.28			R
398.9 > 98.9	6.339	6.329	0.010	1.000	828643		3.03(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.329	6.329	0.0	0.999	2510460	4.28			
398.9 > 98.9	6.339	6.329	0.010	1.000	828643		3.03(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.330	6.330	0.0	0.949	6326028	4.64			
363.0 > 168.9	6.330	6.330	0.0	0.949	1602837		3.95(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.659	6.659	0.0	0.959	2590247	4.77			
449.0 > 98.9	6.669	6.659	0.010	0.961	729497		3.55(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.659	6.659	0.0	0.959	2590247	4.77			
449.0 > 98.9	6.669	6.659	0.010	0.961	729497		3.55(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.669	6.669	0.0	1.000	6980097	6.16			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.669	6.669	0.0		16225199	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.669	6.669	0.0	1.000	8468719	5.29			
413.0 > 169.0	6.669	6.669	0.0	1.000	2578699		3.28(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.941	6.941	0.0	1.000	1645737	5.72			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.942	6.942	0.0		4749891	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.942	6.942	0.0	1.000	2502733	4.98			R
498.9 > 98.9	6.932	6.942	-0.010	0.999	997732		2.51(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.962	6.962	0.0		11861759	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.952	6.952	0.0	0.999	5754876	4.59			
463.0 > 218.9	6.962	6.952	0.010	1.000	823002		6.99(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.206	7.206	0.0		11177277	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.206	7.206	0.0	1.000	5250036	4.94			R
513.0 > 219.0	7.206	7.206	0.0	1.000	534568		9.82(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.375	7.375	0.0	1.062	2674654	5.40			
598.9 > 99.0	7.385	7.375	0.010	1.064	804438		3.32(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.375	7.375	0.0	1.062	2674654	5.40			
598.9 > 99.0	7.385	7.375	0.010	1.064	804438		3.32(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.414	7.414	0.0		7421220	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.414	7.414	0.0	1.000	4362128	4.48			R
563.0 > 268.9	7.395	7.414	-0.019	0.997	630458		6.92(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.583	7.583	0.0	1.000	7510456	4.79			
613.0 > 168.9	7.583	7.583	0.0	1.000	925413		8.12(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.583	7.583	0.0		16130571	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.734	7.734	0.0	1.020	8646539	4.21			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.671	7.671	0.0		15615487	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.672	7.672	0.0	1.000	7739340	4.79			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.857	7.857	0.0	1.036	6435729	4.08			
712.9 > 169.0	7.866	7.857	0.009	1.037	1037286		6.20(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00084	Amount Added:	10.00	Units: uL

Report Date: 02-Sep-2016 11:55:06 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01072.d

Injection Date: 01-Sep-2016 22:24:52 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

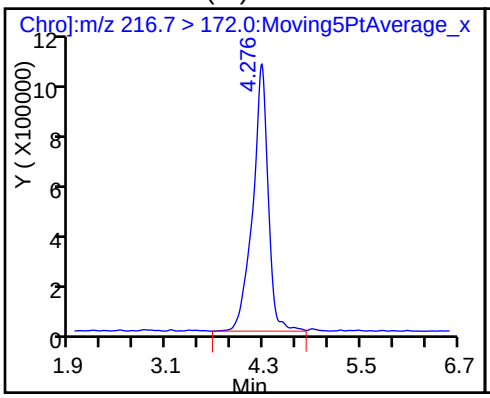
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 59

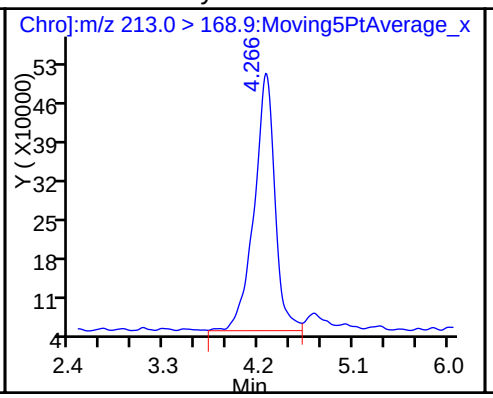
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

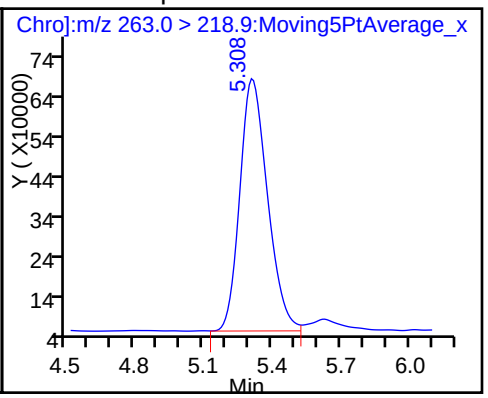
* 1 13C4 PFBA (IS)



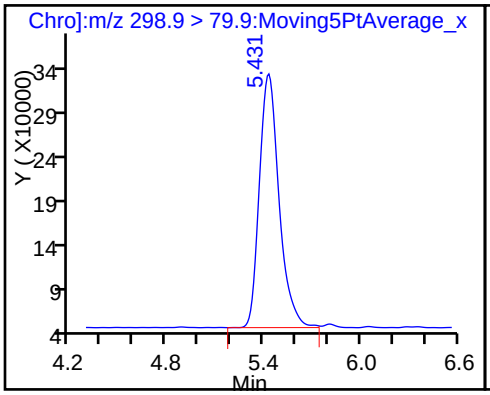
2 Perfluorobutyric acid



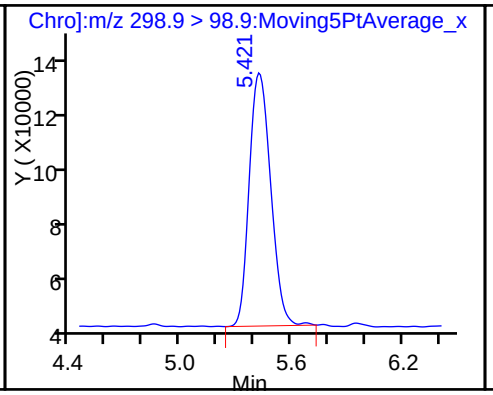
3 Perfluoropentanoic acid



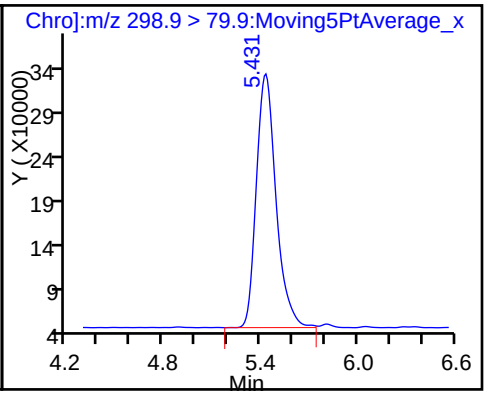
4 Perfluorobutane Sulfonate



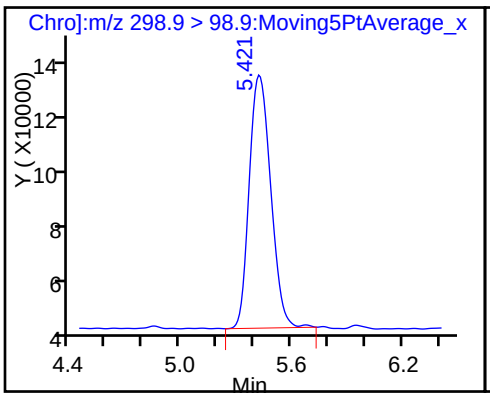
4 Perfluorobutane Sulfonate



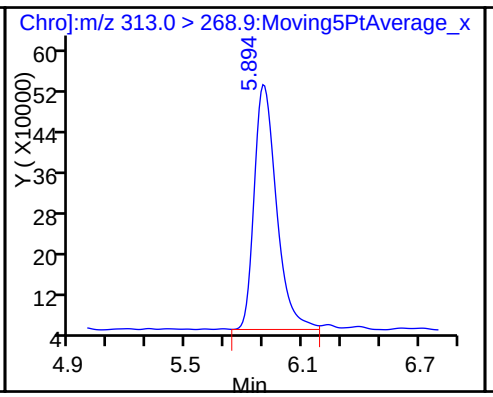
5 Perfluorobutanesulfonic acid



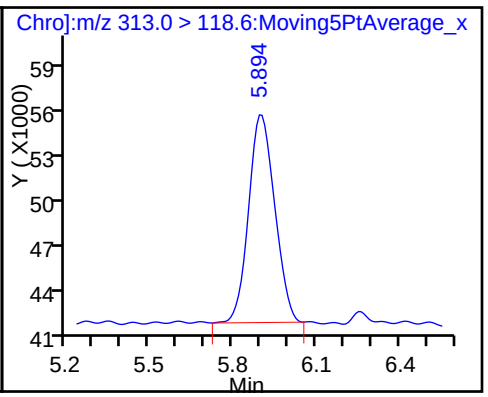
5 Perfluorobutanesulfonic acid



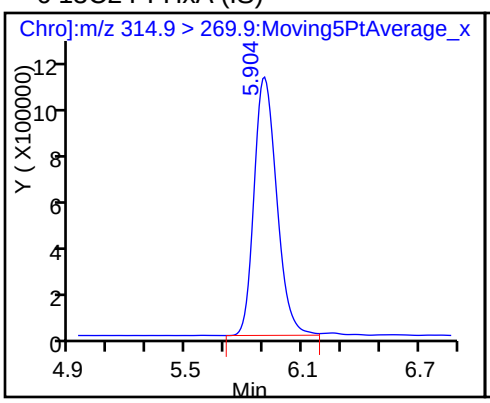
7 Perfluorohexanoic acid



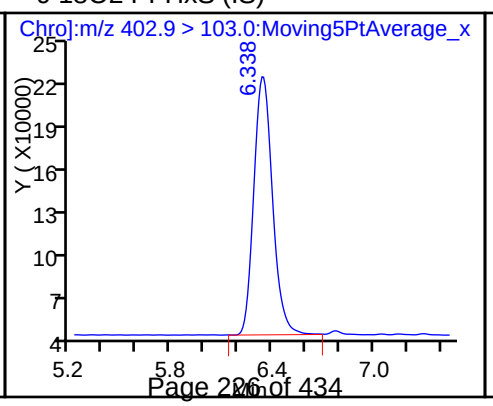
7 Perfluorohexanoic acid



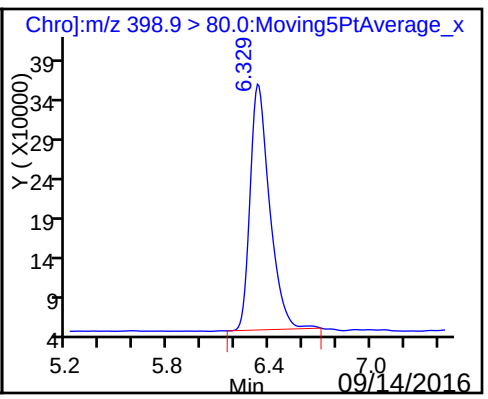
* 6 13C2 PFHxA (IS)



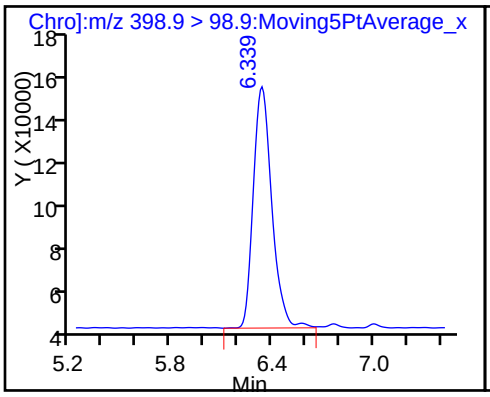
* 9 18O2 PFHxS (IS)



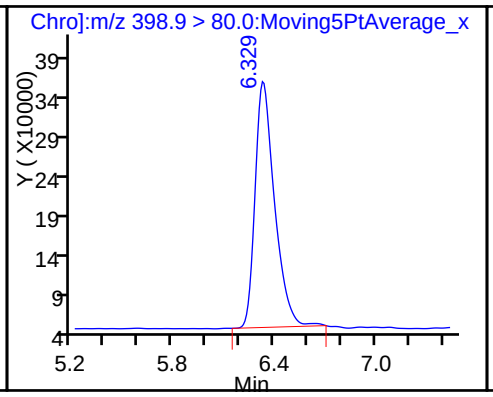
10 Perfluorohexane Sulfonate



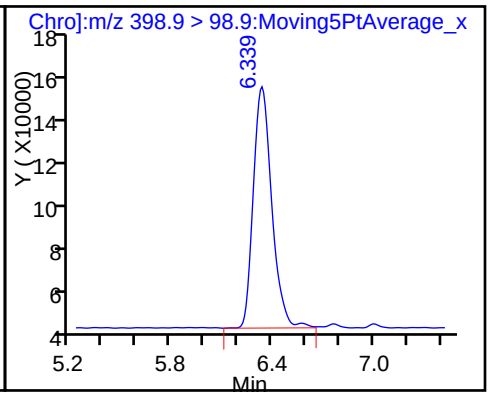
10 Perfluorohexane Sulfonate



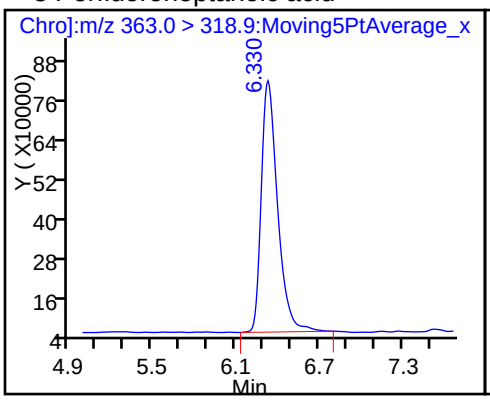
11 Perfluorohexanesulfonic acid



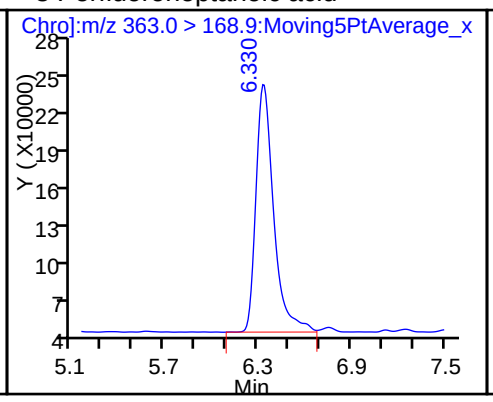
11 Perfluorohexanesulfonic acid



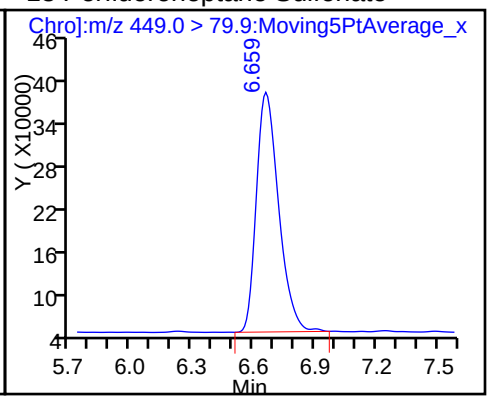
8 Perfluoroheptanoic acid



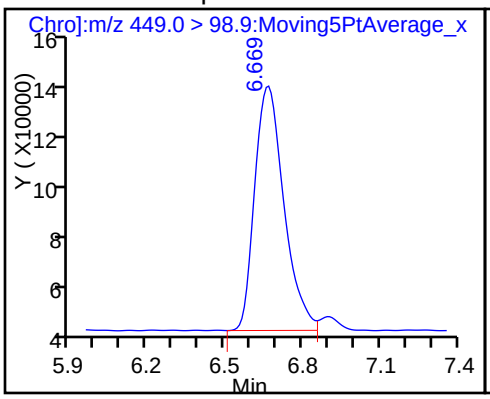
8 Perfluoroheptanoic acid



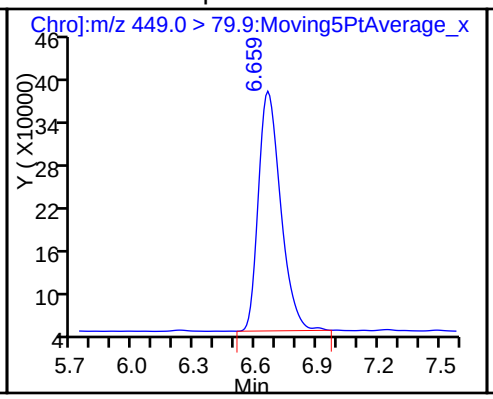
13 Perfluoroheptane Sulfonate



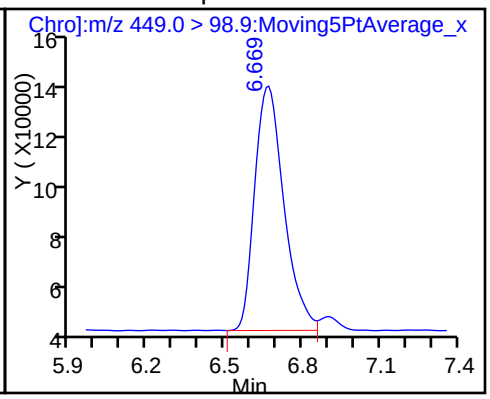
13 Perfluoroheptane Sulfonate



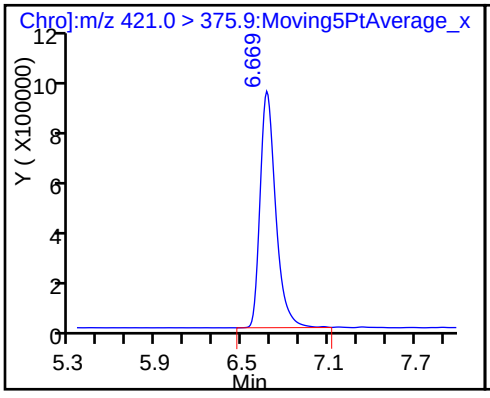
12 Perfluoroheptanesulfonic Acid



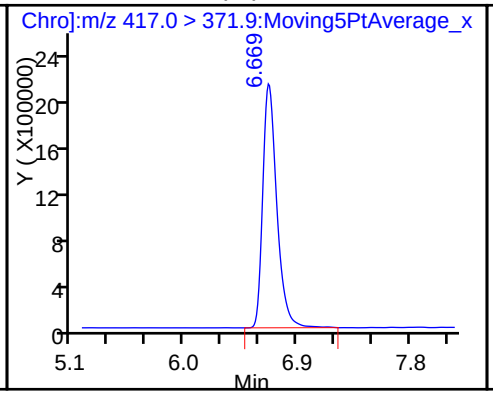
12 Perfluoroheptanesulfonic Acid



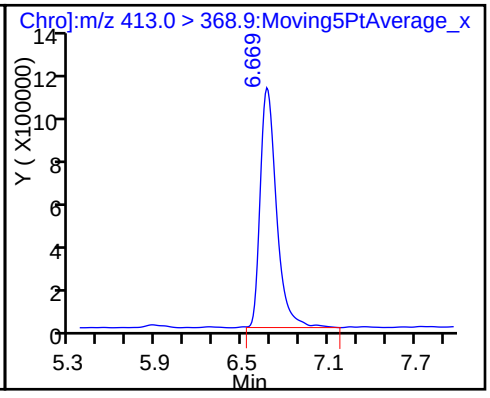
$ 14 13C8 PFOA



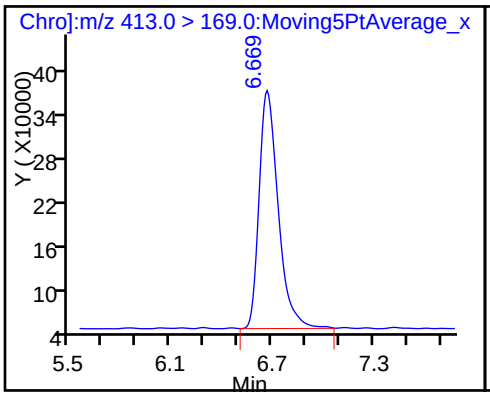
* 15 13C4 PFOA (IS)



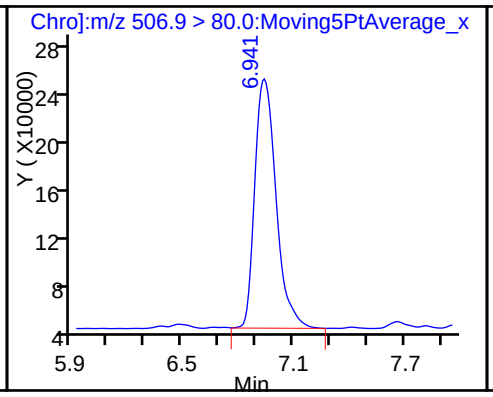
16 Perfluorooctanoic acid



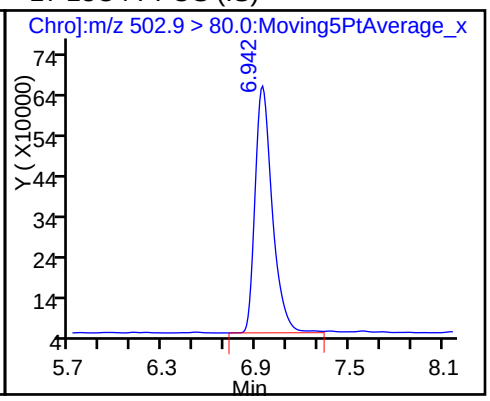
16 Perfluorooctanoic acid



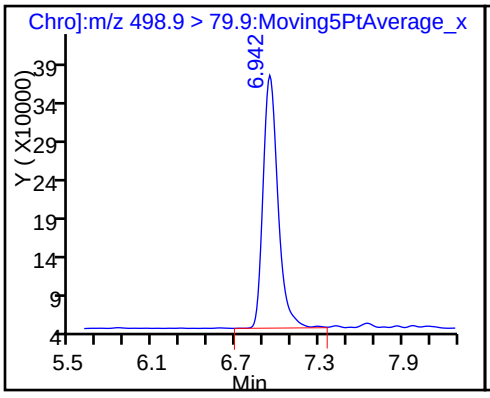
$ 18 13C8 PFOS



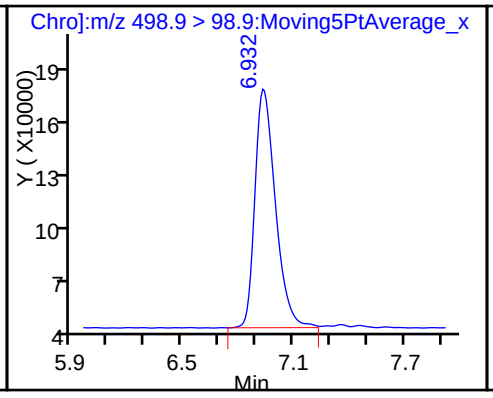
* 17 13C4 PFOS (IS)



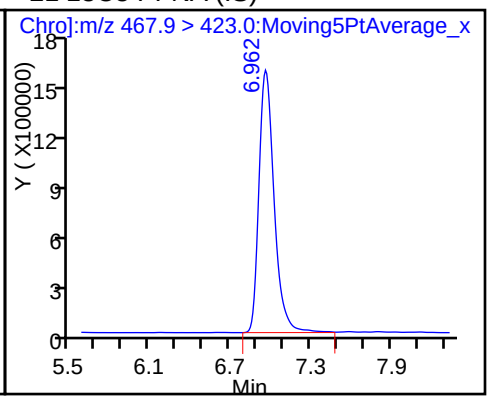
19 Perfluorooctane sulfonic acid



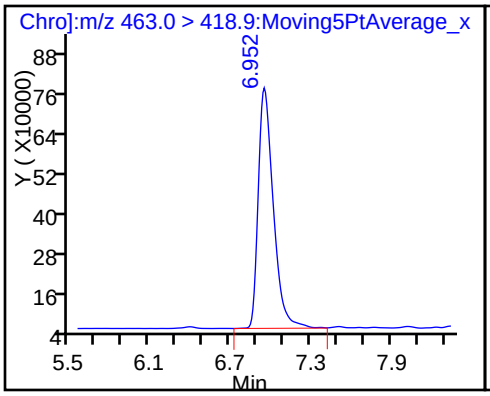
19 Perfluorooctane sulfonic acid



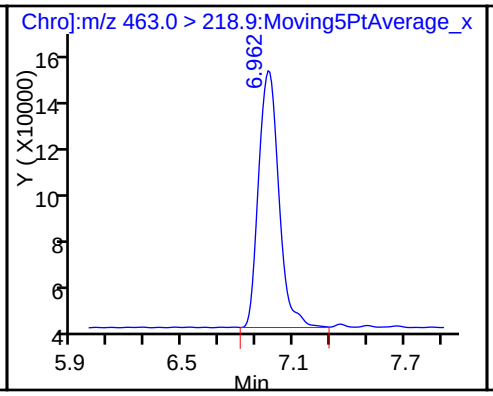
* 21 13C5 PFNA (IS)



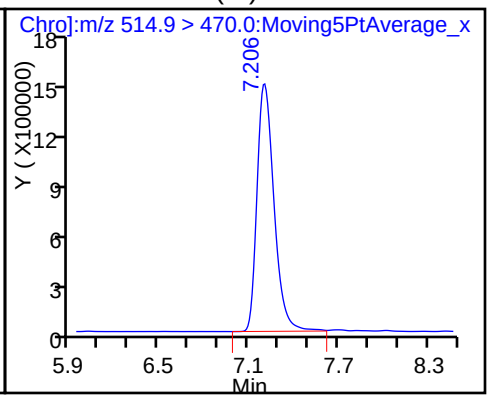
20 Perfluorononanoic acid



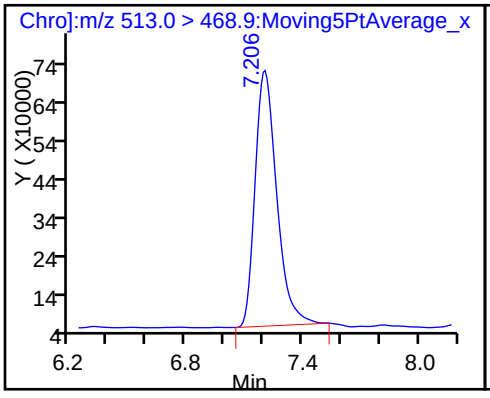
20 Perfluorononanoic acid



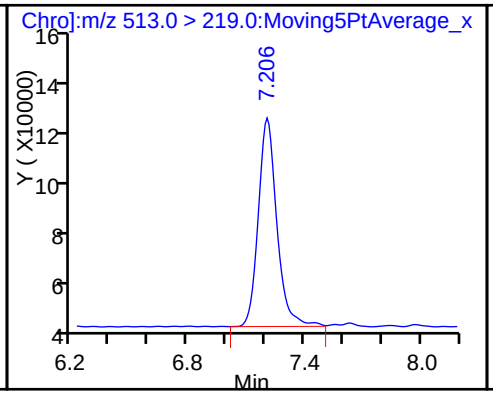
* 22 13C2 PFDA (IS)



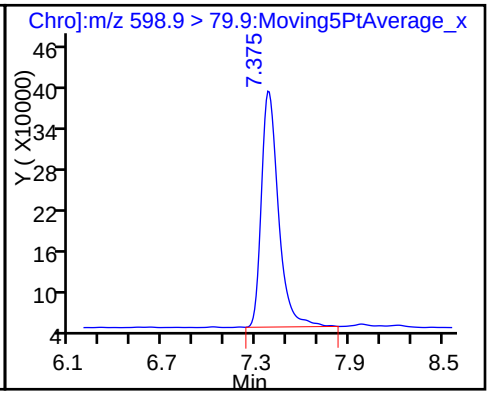
23 Perfluorodecanoic acid



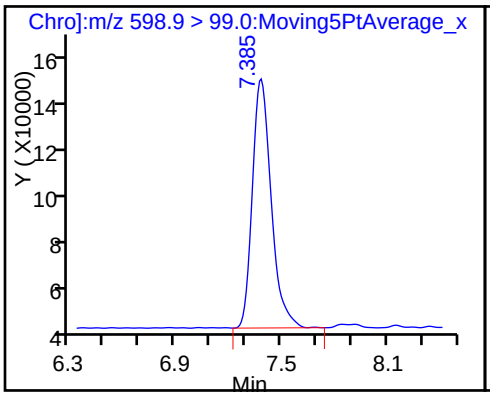
23 Perfluorodecanoic acid



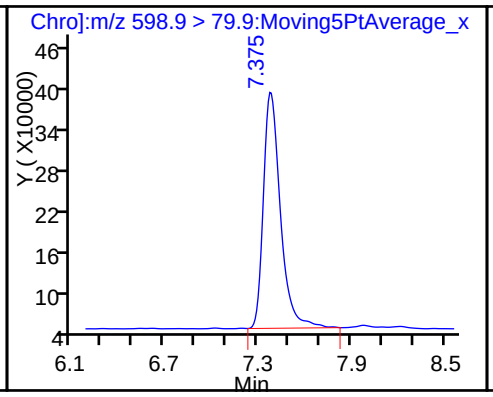
24 Perfluorodecane Sulfonic acid



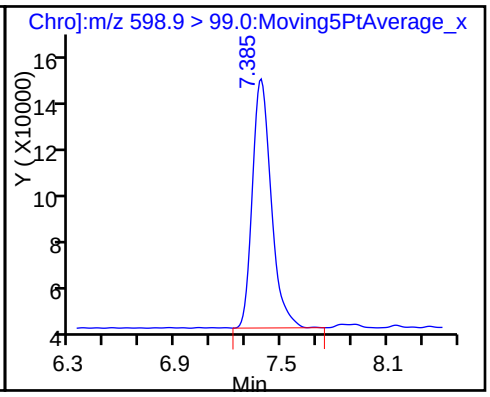
24 Perfluorodecane Sulfonic acid



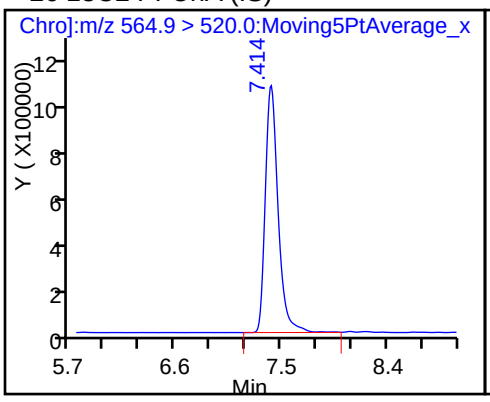
25 Perfluorodecane Sulfonate



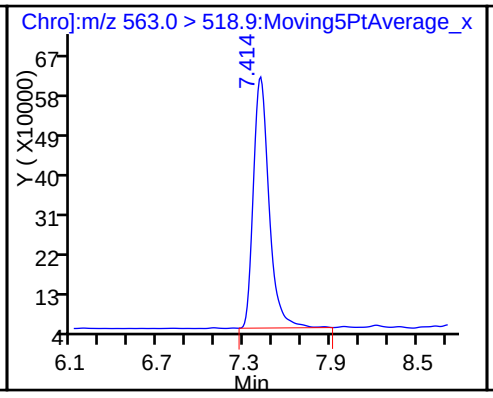
25 Perfluorodecane Sulfonate



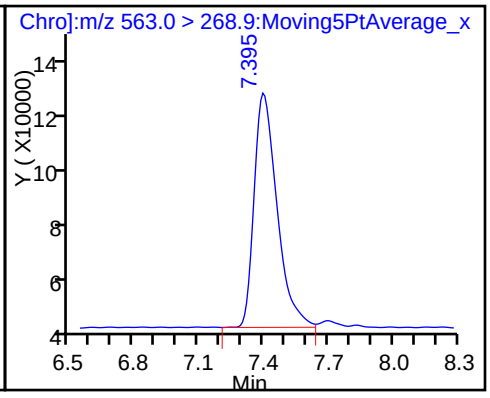
* 26 13C2 PFUnA (IS)



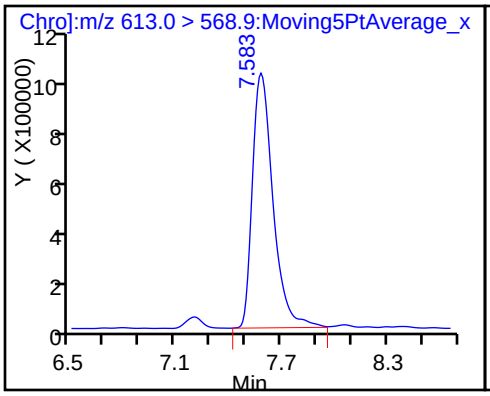
27 Perfluoroundecanoic acid



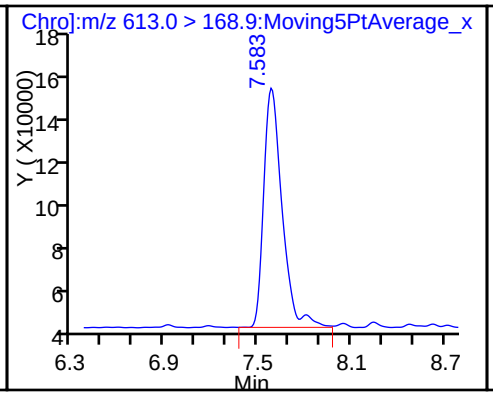
27 Perfluoroundecanoic acid



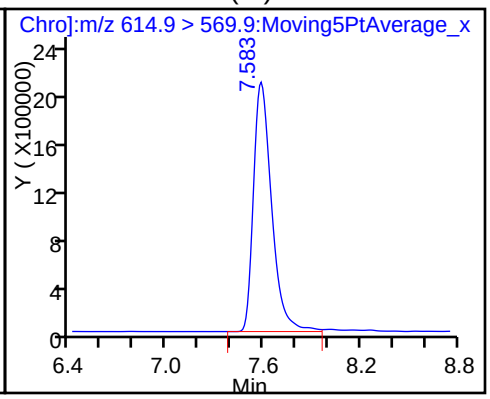
29 Perfluorododecanoic acid



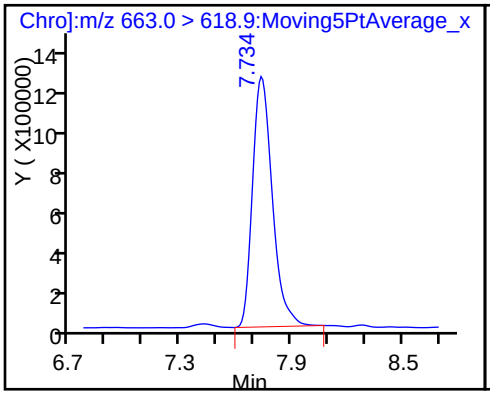
29 Perfluorododecanoic acid



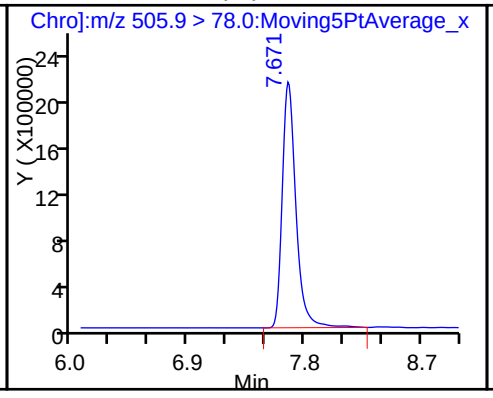
* 28 13C2 PFDoA (IS)



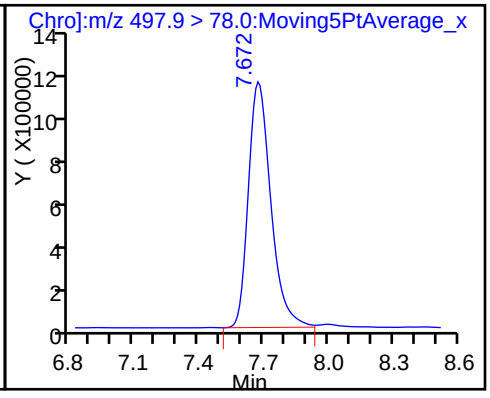
30 Perfluorotridecanoic acid



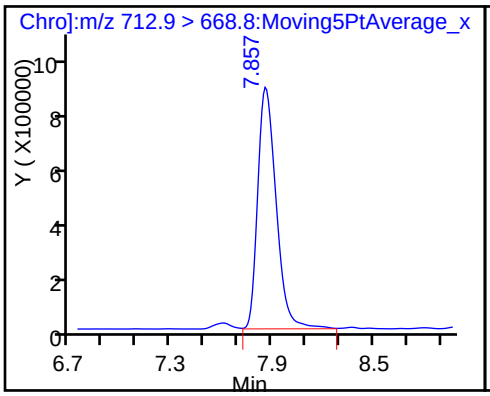
* 31 13C8 FOSA (IS)



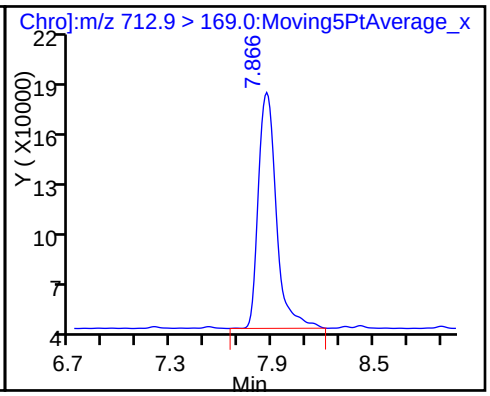
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: CCV 280-340412/70 Calibration Date: 09/02/2016 00:40

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I01083.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.9235		9.58	10.0	-4.2	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.106		10.1	10.0	1.4	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.312		8.66	8.85	-2.1	30.0
Perfluorobutanesulfonic acid	Lin2		4.312		8.66	8.85	-2.1	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8687		9.78	10.0	-2.2	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8523		10.2	10.0	1.5	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.106		9.70	9.45	2.7	30.0
Perfluorohexanesulfonic acid	Lin2		4.106		9.70	9.45	2.7	30.0
Perfluoroheptane Sulfonate	Lin2		1.080		9.38	9.52	-1.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.080		9.38	9.52	-1.5	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.047		10.7	10.0	7.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.088		10.2	9.55	6.7	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.000		9.45	10.0	-5.5	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.016		10.7	10.0	7.1	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		0.9727		9.46	9.65	-2.0	30.0
Perfluorodecane Sulfonic acid	Lin2		0.9727		9.46	9.65	-2.0	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.301		10.0	10.0	0.0	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9926		10.2	10.0	2.1	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.048		10.1	10.0	1.4	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.373		10.9	10.0	8.6	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		1.107		11.4	10.0	14.0	30.0
13C8 PFOA	Lin1		0.7821		11.4	10.0	13.9	30.0
13C8 PFOS	Lin2		0.5721		9.52	9.56	-0.5	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01083.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 00:40:32 ALS Bottle#: 0 Worklist Smp#: 70
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:37 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:21:18

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.058	0.0		12786274	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.058	4.058	0.0	1.000	11807783	9.58			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.138	5.138	0.0	0.898	9922631	10.1			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.251	5.251	0.0	0.851	4932339	8.66			R
298.9 > 98.9	5.251	5.251	0.0	0.851	1429717		3.45(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.251	5.251	0.0	0.851	4932339	8.66			
298.9 > 98.9	5.251	5.251	0.0	0.851	1429717		3.45(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.724	0.0		8975065	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.724	5.724	0.0	1.000	7796993	9.78			
313.0 > 118.6	5.714	5.724	-0.010	0.998	235603		33.09(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.159	6.159	0.0	0.945	12142259	10.2			
363.0 > 168.9	6.169	6.159	0.010	0.946	3088064		3.93(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.168	6.168	0.0		1222840	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.168	6.168	0.0	1.000	5015516	9.70			R
398.9 > 98.9	6.168	6.168	0.0	1.000	1469182		3.41(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.168	6.168	0.0	1.000	5015516	9.70			
398.9 > 98.9	6.168	6.168	0.0	1.000	1469182		3.41(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.508	6.508	0.0	0.958	4765221	9.38			
449.0 > 98.9	6.508	6.508	0.0	0.958	1314731		3.62(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.508	6.508	0.0	0.958	4765221	9.38			
449.0 > 98.9	6.508	6.508	0.0	0.958	1314731		3.62(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.517	0.0	1.000	11142194	11.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.518	0.0		14246689	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.518	6.518	0.0	1.000	14920711	10.7			
413.0 > 169.0	6.508	6.518	-0.010	0.999	4548505		3.28(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.790	0.0	1.000	2535536	9.52			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.790	0.0		4431664	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.790	6.790	0.0	1.000	4815395	10.2			R
498.9 > 98.9	6.790	6.790	0.0	1.000	1881541		2.56(1.31-2.43)		
20 Perfluorononanoic acid									
463.0 > 418.9	6.810	6.810	0.0	1.000	11306676	9.45			
463.0 > 218.9	6.810	6.810	0.0	1.000	1645646		6.87(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.810	0.0		11308023	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.054	0.0		10367627	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.054	7.054	0.0	1.000	10536476	10.7			R
513.0 > 219.0	7.054	7.054	0.0	1.000	1049882		10.04(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.243	7.243	0.0	1.067	4351317	9.46			
598.9 > 99.0	7.243	7.243	0.0	1.067	1503189		2.89(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.243	7.243	0.0	1.067	4351317	9.46			
598.9 > 99.0	7.243	7.243	0.0	1.067	1503189		2.89(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.262	7.262	0.0		6544465	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.272	7.272	0.0	1.001	8512027	10.0			R
563.0 > 268.9	7.262	7.272	-0.010	1.000	1047166		8.13(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.450	0.0		13759096	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.451	7.451	0.0	1.000	13656909	10.2			
613.0 > 168.9	7.441	7.451	-0.010	0.999	1631582		8.37(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.602	0.0	1.020	18888054	10.9			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.530	0.0	1.000	15452162	10.1			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.529	0.0		14741305	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734	7.734	0.0	1.038	15229841	11.4			
712.9 > 169.0	7.743	7.734	0.009	1.039	2356819		6.46(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00084	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFC-IS_00023	Amount Added:	20.00	Units: uL

Report Date: 02-Sep-2016 11:55:38 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01083.d

Injection Date: 02-Sep-2016 00:40:32 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

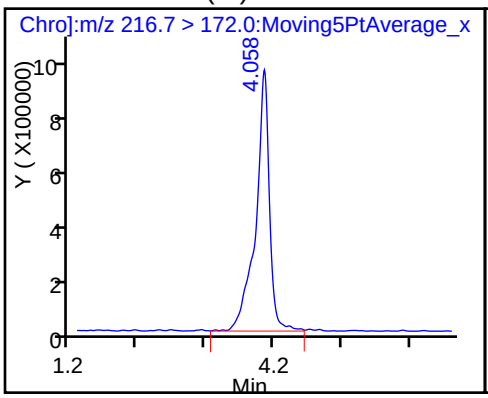
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 70

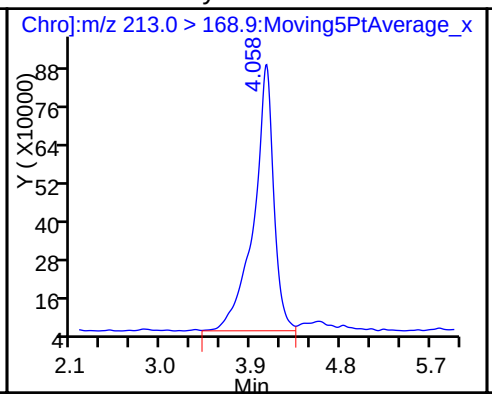
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

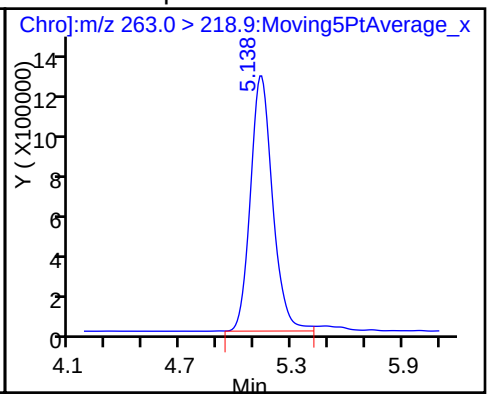
* 1 13C4 PFBA (IS)



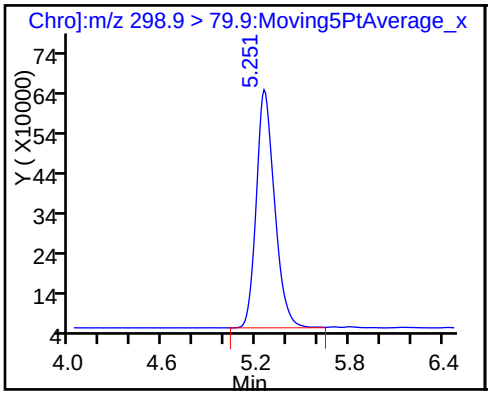
2 Perfluorobutyric acid



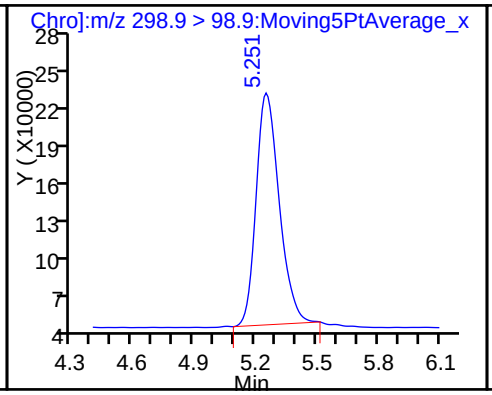
3 Perfluoropentanoic acid



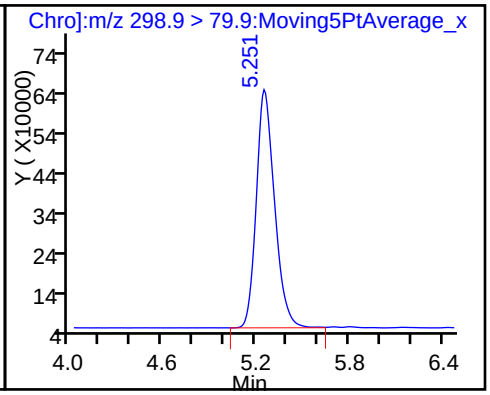
4 Perfluorobutane Sulfonate



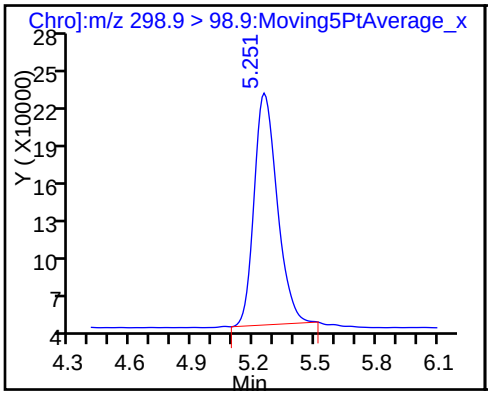
4 Perfluorobutane Sulfonate



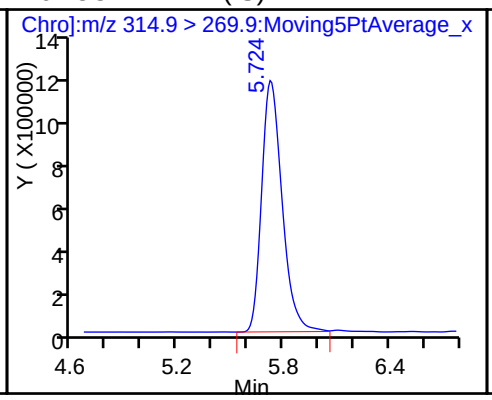
5 Perfluorobutanesulfonic acid



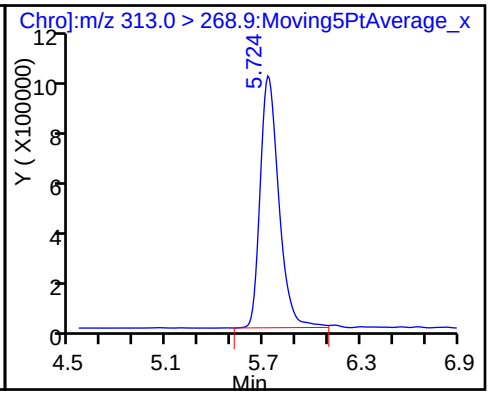
5 Perfluorobutanesulfonic acid



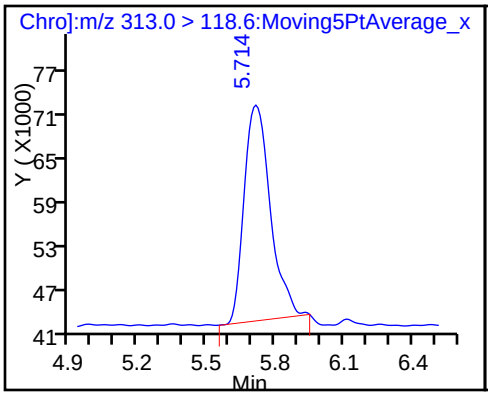
* 6 13C2 PFHxA (IS)



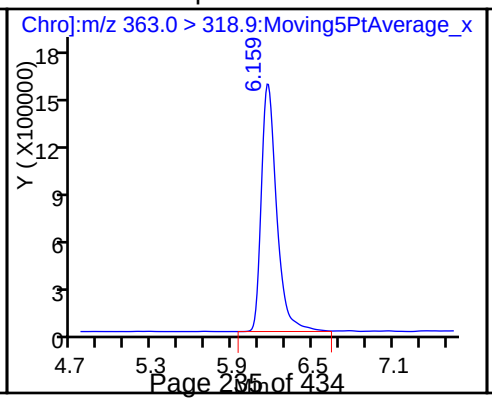
7 Perfluorohexanoic acid



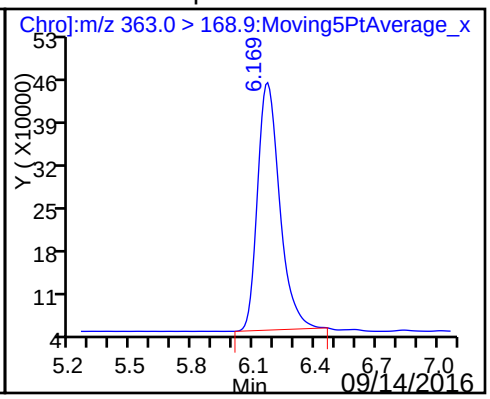
7 Perfluorohexanoic acid



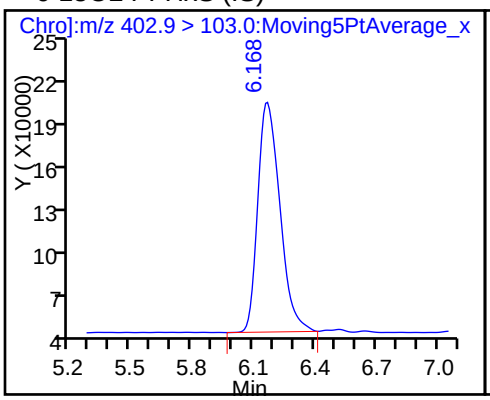
8 Perfluoroheptanoic acid



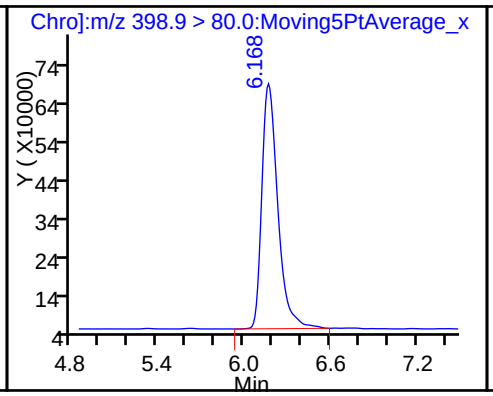
8 Perfluoroheptanoic acid



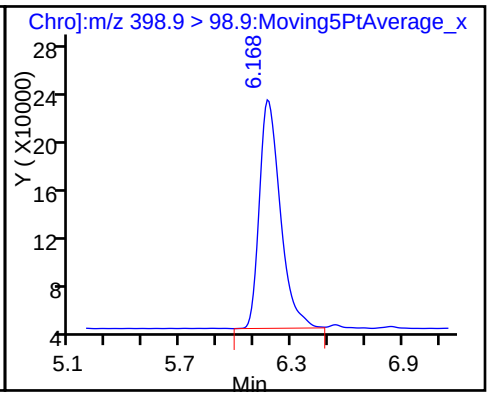
* 9 18O2 PFHxS (IS)



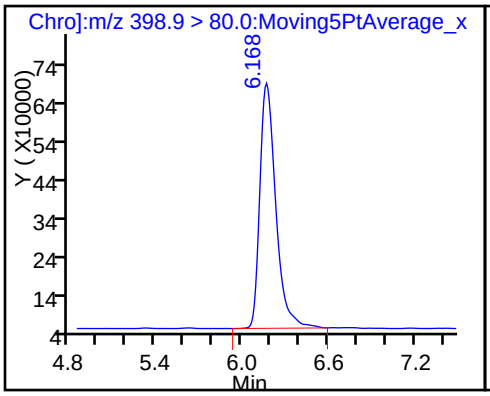
10 Perfluorohexane Sulfonate



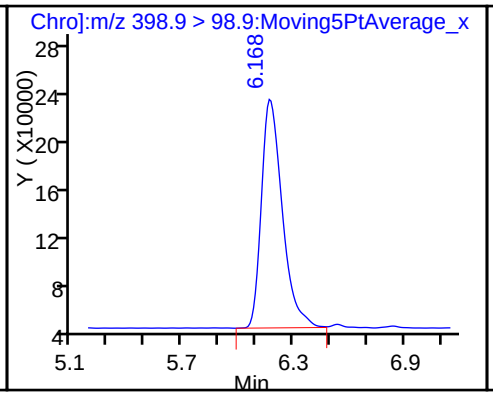
10 Perfluorohexane Sulfonate



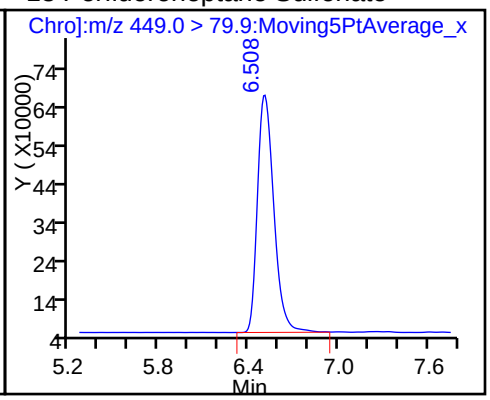
11 Perfluorohexanesulfonic acid



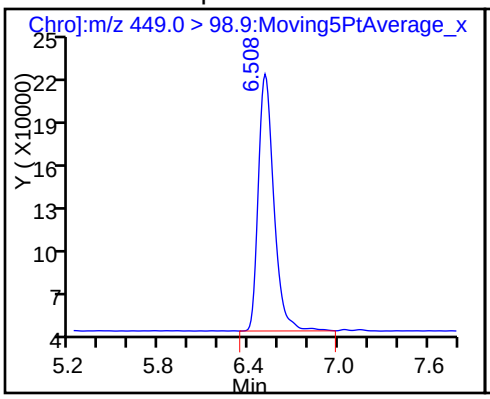
11 Perfluorohexanesulfonic acid



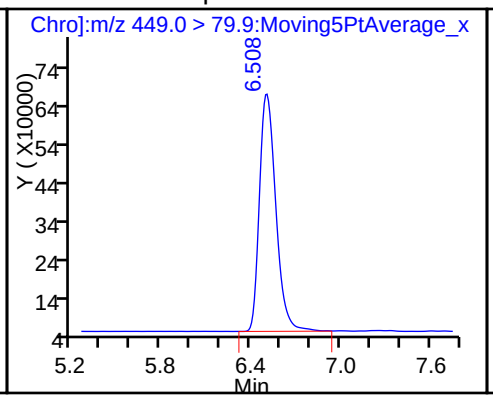
13 Perfluoroheptane Sulfonate



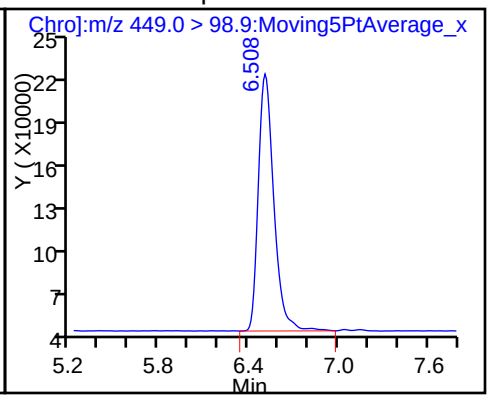
13 Perfluoroheptane Sulfonate



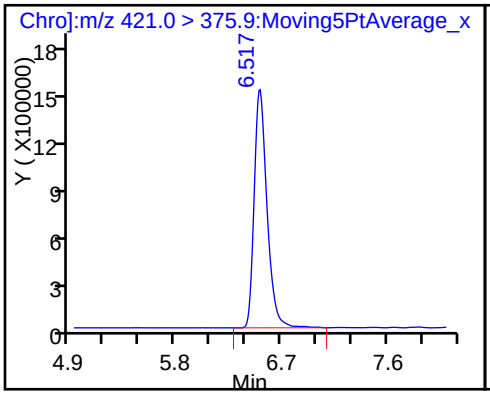
12 Perfluoroheptanesulfonic Acid



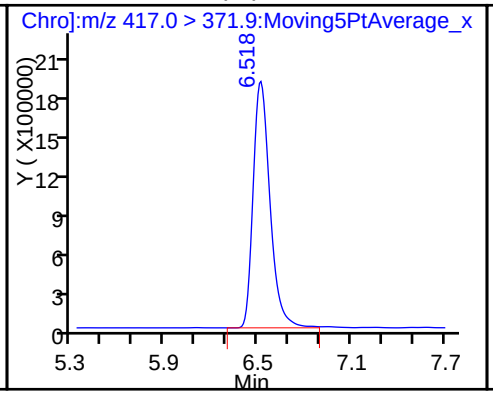
12 Perfluoroheptanesulfonic Acid



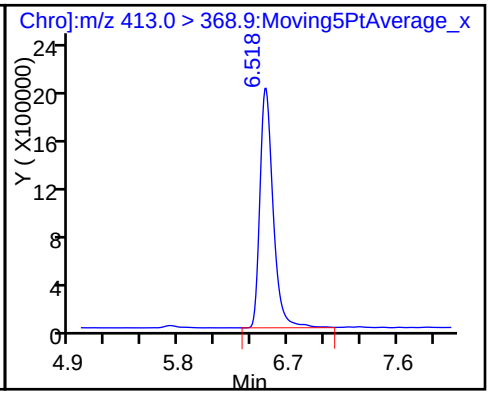
$ 14 13C8 PFOA



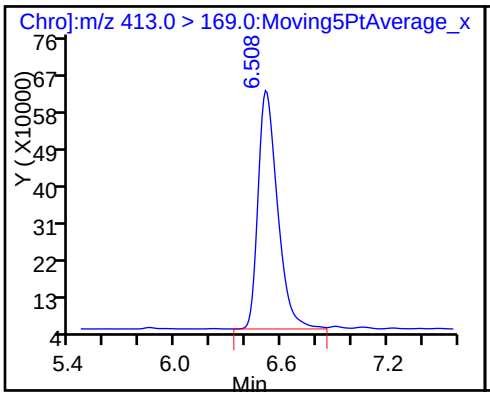
* 15 13C4 PFOA (IS)



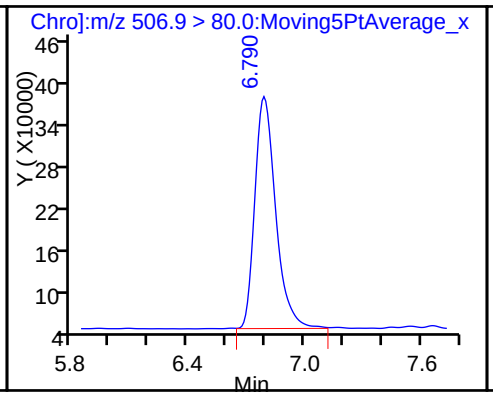
16 Perfluorooctanoic acid



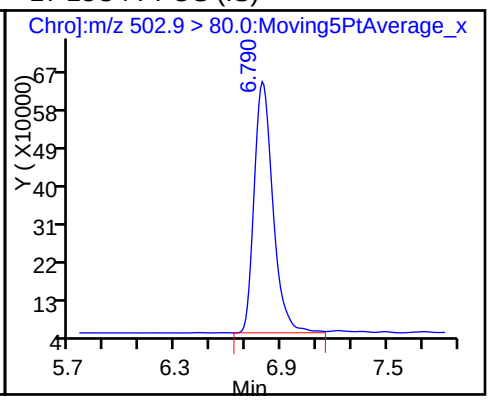
16 Perfluorooctanoic acid



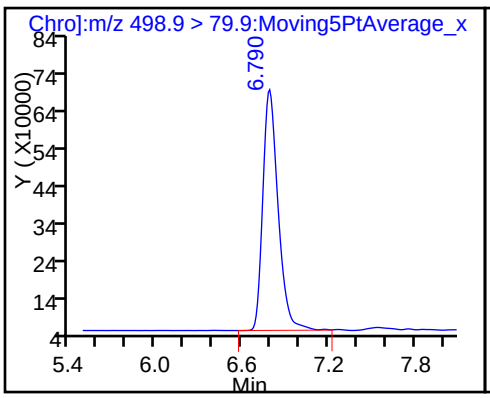
$ 18 13C8 PFOS



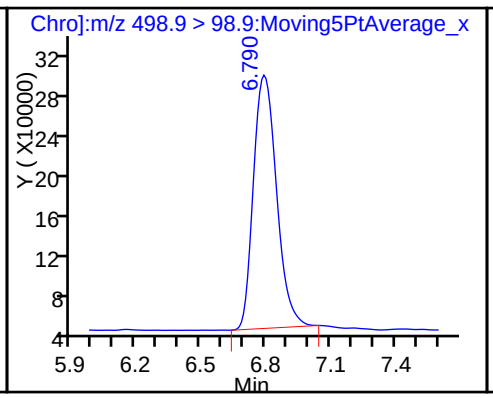
* 17 13C4 PFOS (IS)



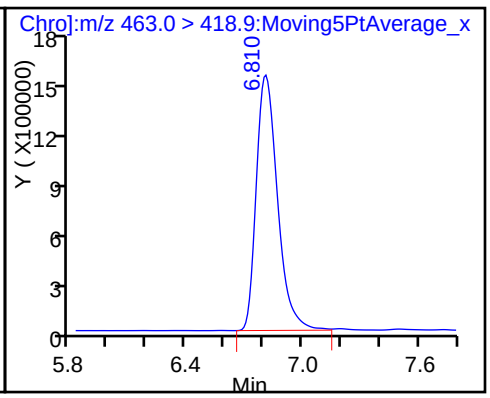
19 Perfluorooctane sulfonic acid



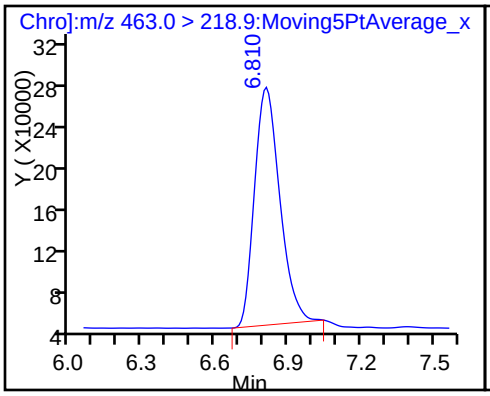
19 Perfluorooctane sulfonic acid



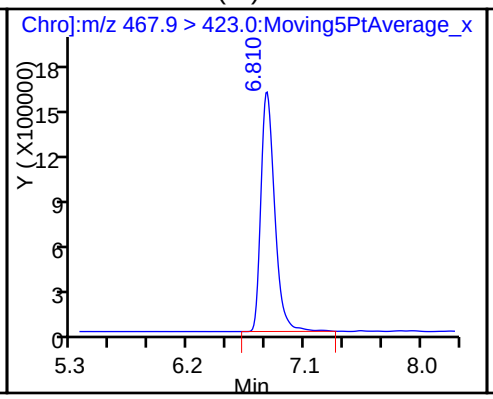
20 Perfluorononanoic acid



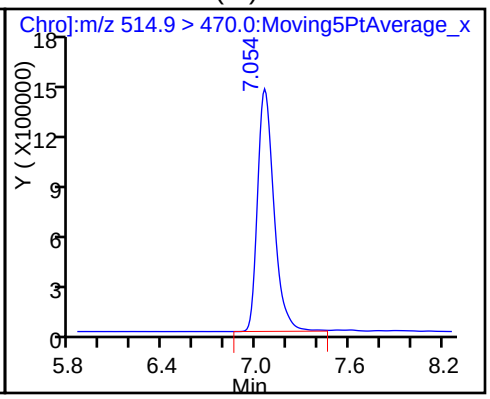
20 Perfluorononanoic acid



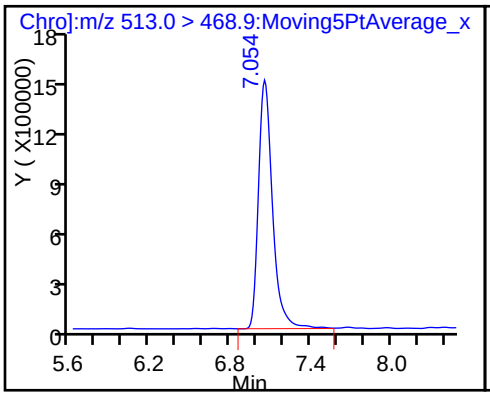
* 21 13C5 PFNA (IS)



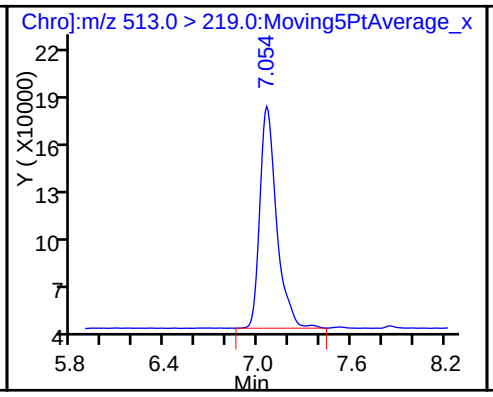
* 22 13C2 PFDA (IS)



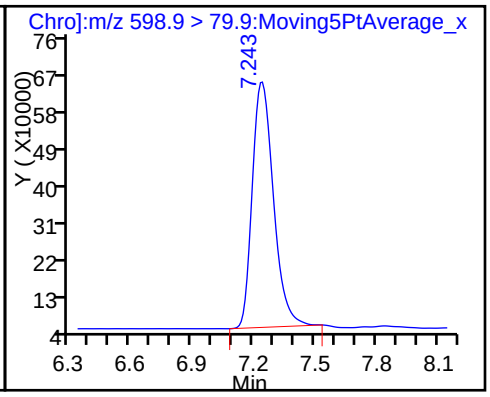
23 Perfluorodecanoic acid



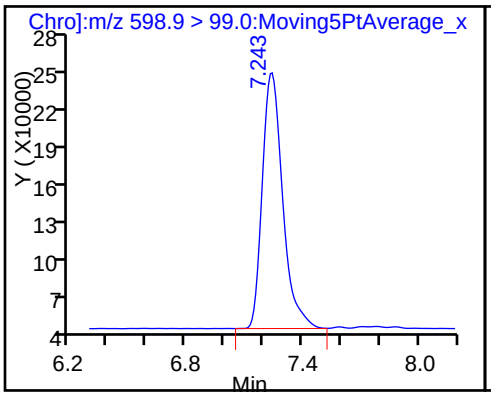
23 Perfluorodecanoic acid



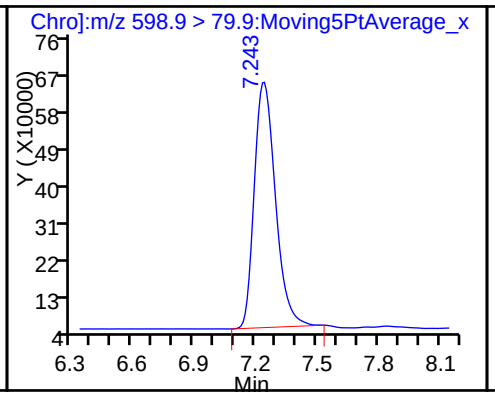
24 Perfluorodecane Sulfonic acid



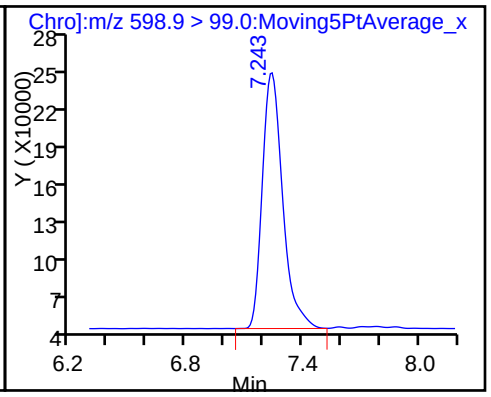
24 Perfluorodecane Sulfonic acid



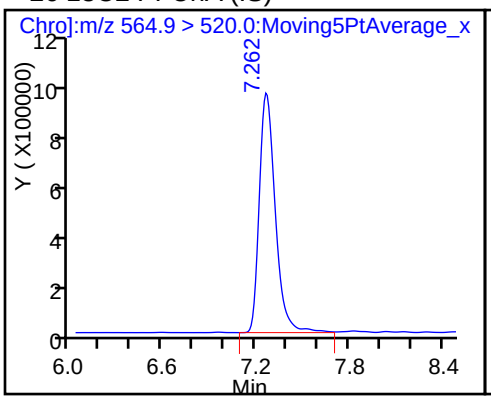
25 Perfluorodecane Sulfonate



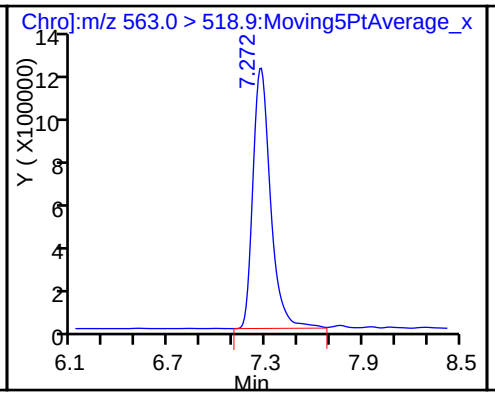
25 Perfluorodecane Sulfonate



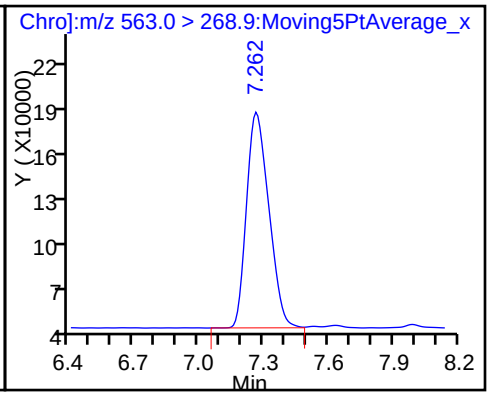
* 26 13C2 PFUnA (IS)



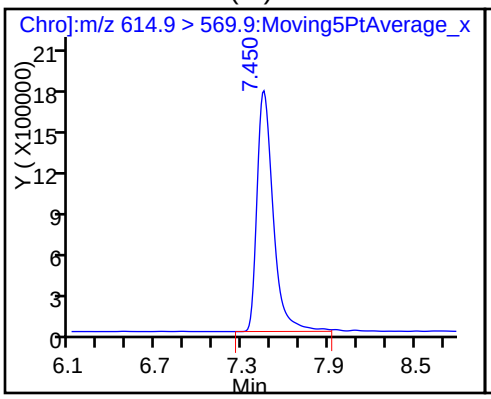
27 Perfluoroundecanoic acid



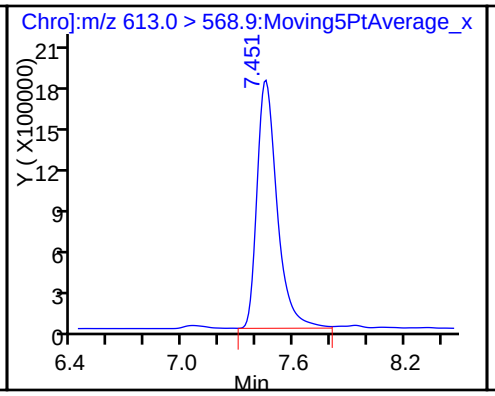
27 Perfluoroundecanoic acid



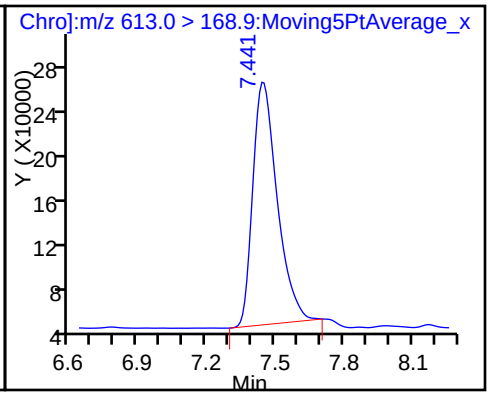
* 28 13C2 PFDoA (IS)



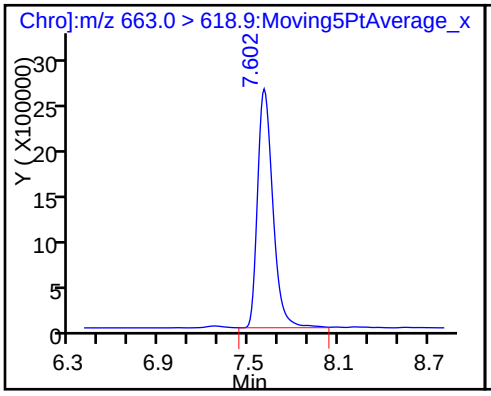
29 Perfluorododecanoic acid



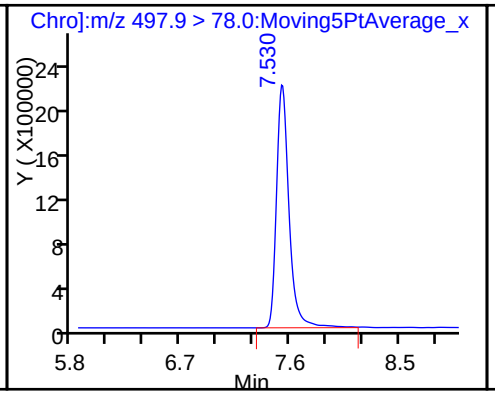
29 Perfluorododecanoic acid



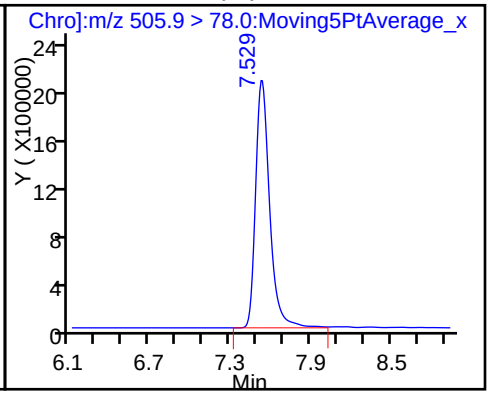
30 Perfluorotridecanoic acid



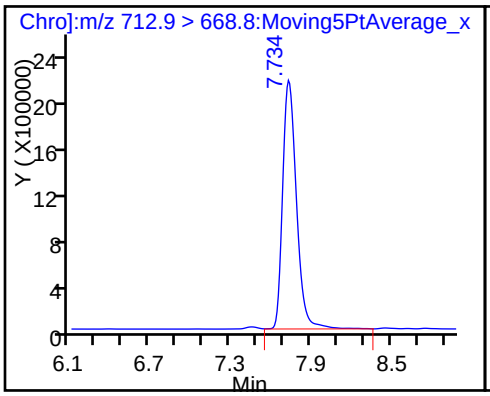
32 Perfluorooctane Sulfonamide



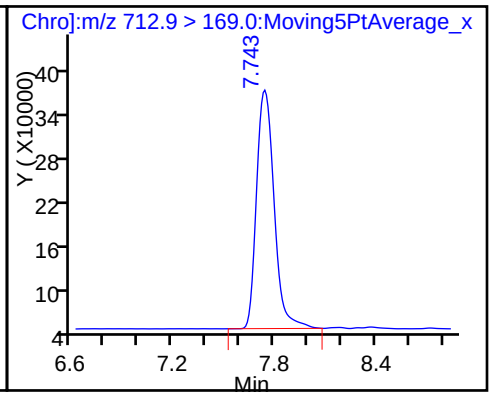
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: CCV 280-340694/92 Calibration Date: 09/02/2016 05:11

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I01105.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.9144		9.48	10.0	-5.2	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.076		9.87	10.0	-1.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.057		8.15	8.85	-7.9	30.0
Perfluorobutanesulfonic acid	Lin2		4.057		8.15	8.85	-7.9	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8506		9.58	10.0	-4.2	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8397		10.0	10.0	0.0	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.401		10.4	9.45	10.0	30.0
Perfluorohexanesulfonic acid	Lin2		4.401		10.4	9.45	10.0	30.0
Perfluoroheptane Sulfonate	Lin2		1.001		8.69	9.52	-8.7	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.001		8.69	9.52	-8.7	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.001		10.2	10.0	2.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		0.9500		8.91	9.55	-6.7	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.052		9.95	10.0	-0.5	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.8725		9.19	10.0	-8.1	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.076		10.5	9.65	8.5	30.0
Perfluorodecane Sulfonic acid	Lin2		1.076		10.5	9.65	8.5	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.314		10.1	10.0	1.1	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9121		9.39	10.0	-6.2	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.062		10.3	10.0	2.8	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.205		9.53	10.0	-4.7	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.8871		9.12	10.0	-8.8	30.0
13C8 PFOA	Lin1		0.7935		11.6	10.0	15.6	30.0
13C8 PFOS	Lin2		0.5427		9.02	9.56	-5.6	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01105.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 05:11:39 ALS Bottle#: 0 Worklist Smp#: 92
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:51 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:40:45

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
2 Perfluorobutyric acid									
213.0 > 168.9	4.020	4.020	0.0	1.000	11429729	9.48			
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.020	4.020	0.0		12500063	10.0			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.119	5.119	0.0	0.894	9565373	9.87			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.241	5.241	0.0	0.850	4377225	8.15			R
298.9 > 98.9	5.241	5.241	0.0	0.850	1259989		3.47(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.241	5.241	0.0	0.850	4377225	8.15			
298.9 > 98.9	5.241	5.241	0.0	0.850	1259989		3.47(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.724	5.724	0.0	1.000	7562294	9.58			
313.0 > 118.6	5.733	5.724	0.009	1.002	184207		41.05(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.724	0.0		8890908	10.0			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.168	6.168	0.0	1.000	5069918	10.4			
398.9 > 98.9	6.168	6.168	0.0	1.000	1504678		3.37(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.168	6.168	0.0	1.000	5069918	10.4			R
398.9 > 98.9	6.168	6.168	0.0	1.000	1504678		3.37(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.159	6.159	0.0	0.946	12210584	10.0			
363.0 > 168.9	6.159	6.159	0.0	0.946	3210028		3.80(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.168	6.168	0.0		1153316	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.498	6.498	0.0	0.957	4832697	8.69			
449.0 > 98.9	6.508	6.498	0.010	0.958	1432487		3.37(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.498	6.498	0.0	0.957	4832697	8.69			
449.0 > 98.9	6.508	6.498	0.010	0.958	1432487		3.37(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.508	0.0	1.000	11537976	11.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.508	0.0		14540907	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	1.000	14549212	10.2			
413.0 > 169.0	6.508	6.508	0.0	1.000	4792519		3.04(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.790	0.0	1.000	2631644	9.02			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.790	0.0		4849190	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.790	6.790	0.0	1.000	4602020	8.91			R
498.9 > 98.9	6.790	6.790	0.0	1.000	1754612		2.62(1.31-2.43)		
20 Perfluorononanoic acid									
463.0 > 418.9	6.810	6.810	0.0	1.000	11918568	9.95			
463.0 > 218.9	6.810	6.810	0.0	1.000	1747868		6.82(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.810	0.0		11325936	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.054	0.0		11679694	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.054	7.054	0.0	1.000	10190362	9.19			R
513.0 > 219.0	7.054	7.054	0.0	1.000	1143351		8.91(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.243	7.243	0.0	1.067	5267975	10.5			
598.9 > 99.0	7.243	7.243	0.0	1.067	1278193		4.12(2.84-2.84)		
25 Perfluorodecane Sulfonate									R
598.9 > 79.9	7.243	7.243	0.0	1.067	5267975	10.5			R
598.9 > 99.0	7.243	7.243	0.0	1.067	1278193		4.12(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.262	7.262	0.0		6602767	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.262	7.262	0.0	1.000	8673125	10.1			R
563.0 > 268.9	7.262	7.262	0.0	1.000	1091800		7.94(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.441	7.441	0.0		15810214	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.441	7.441	0.0	1.000	14421051	9.38			
613.0 > 168.9	7.441	7.441	0.0	1.000	1797491		8.02(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.529	0.0		14868716	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.530	0.0	1.000	15797471	10.3			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.602	0.0	1.022	19057168	9.53			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734	7.734	0.0	1.039	14025735	9.12			
712.9 > 169.0	7.734	7.734	0.0	1.039	2128530		6.59(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00084	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

Report Date: 02-Sep-2016 11:55:52 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01105.d

Injection Date: 02-Sep-2016 05:11:39 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

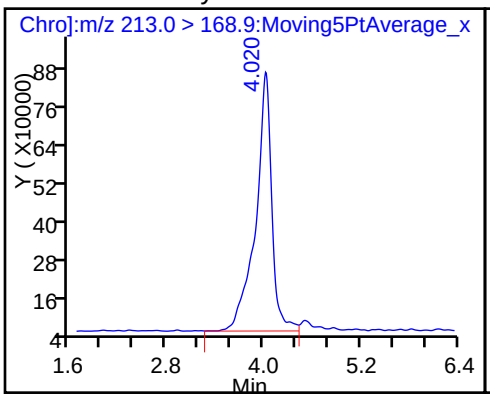
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 92

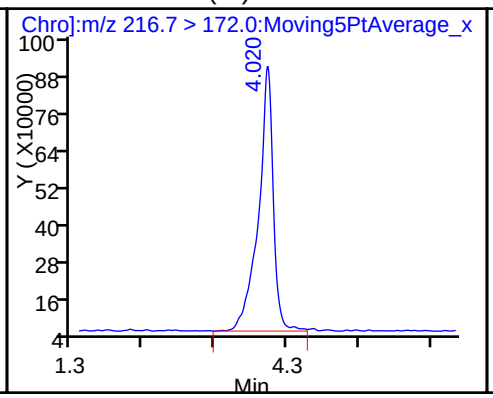
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

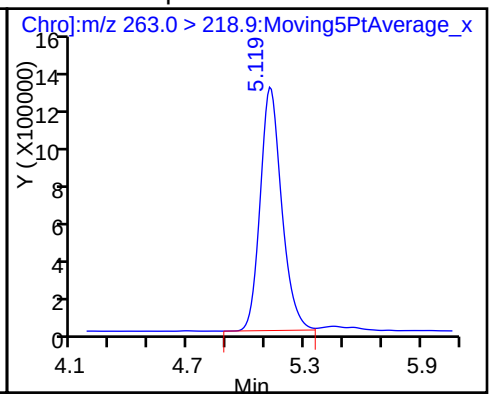
2 Perfluorobutyric acid



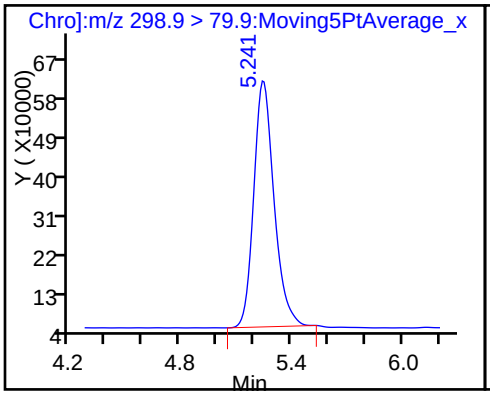
* 1 13C4 PFBA (IS)



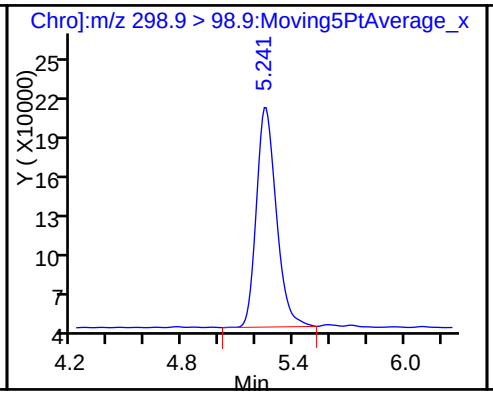
3 Perfluoropentanoic acid



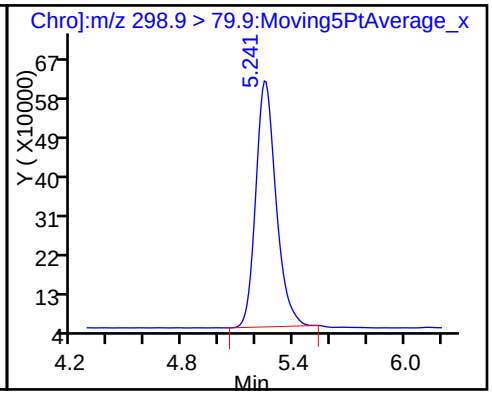
4 Perfluorobutane Sulfonate



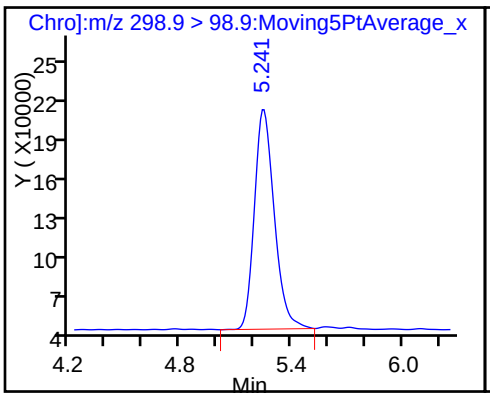
4 Perfluorobutane Sulfonate



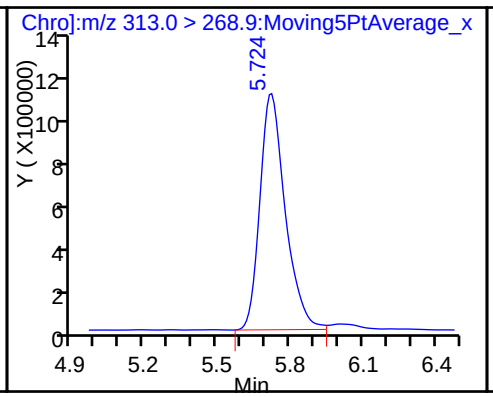
5 Perfluorobutanesulfonic acid



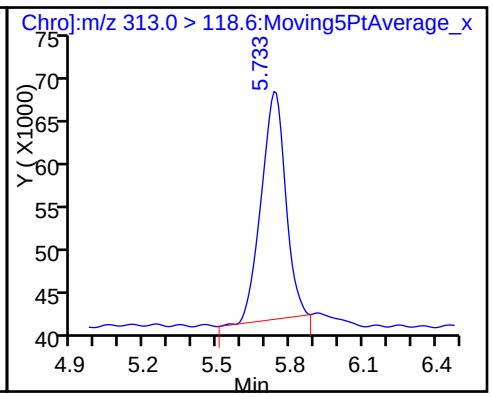
5 Perfluorobutanesulfonic acid



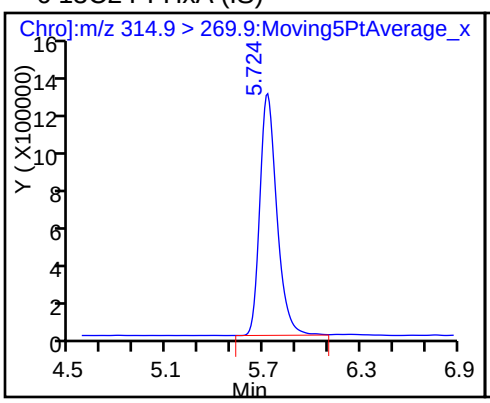
7 Perfluorohexanoic acid



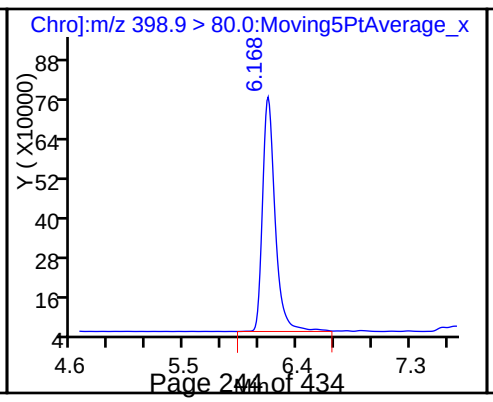
7 Perfluorohexanoic acid



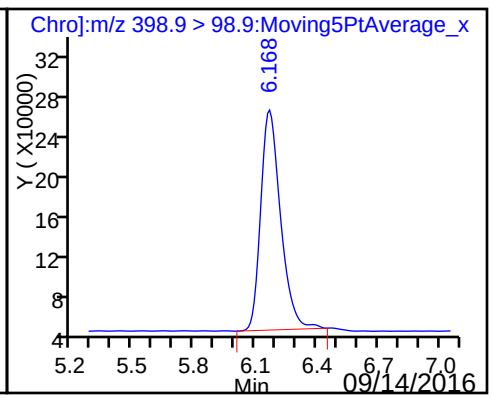
* 6 13C2 PFHxA (IS)



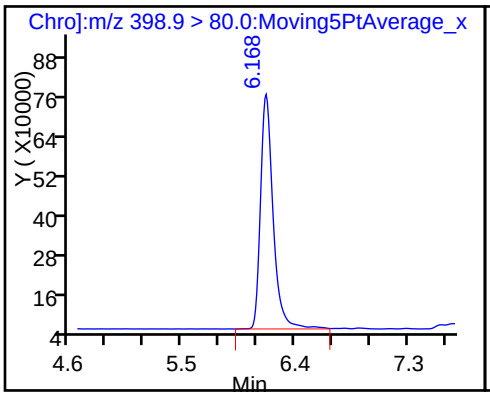
11 Perfluorohexanesulfonic acid



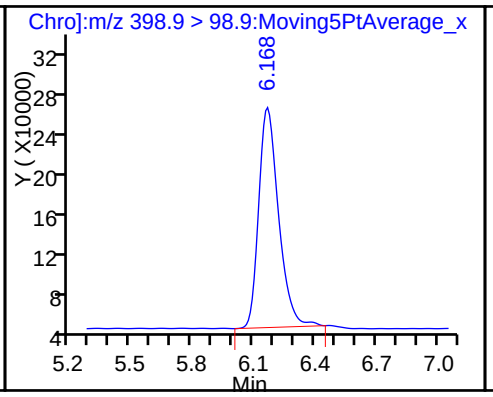
11 Perfluorohexanesulfonic acid



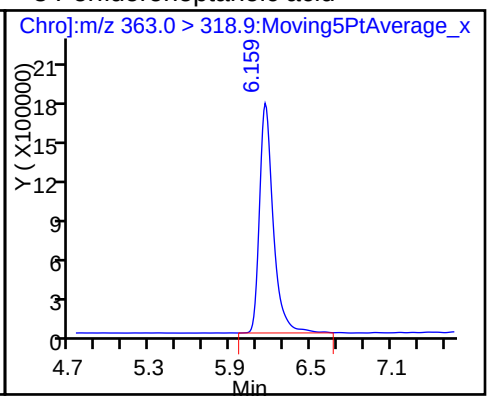
10 Perfluorohexane Sulfonate



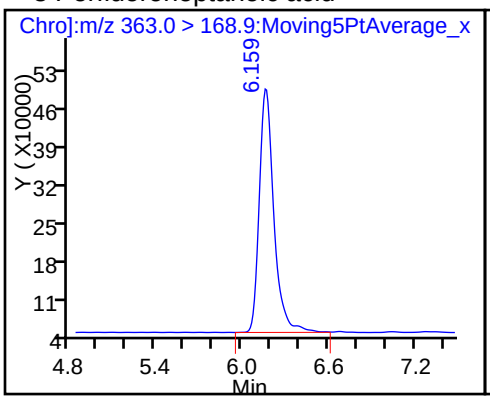
10 Perfluorohexane Sulfonate



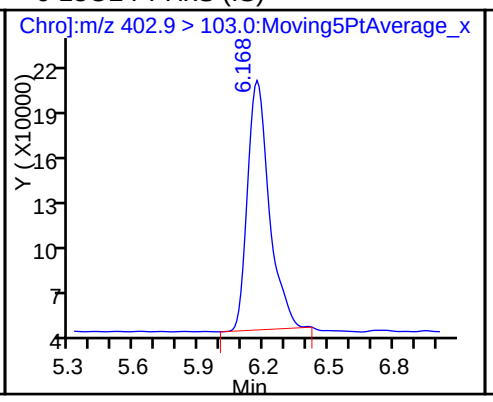
8 Perfluoroheptanoic acid



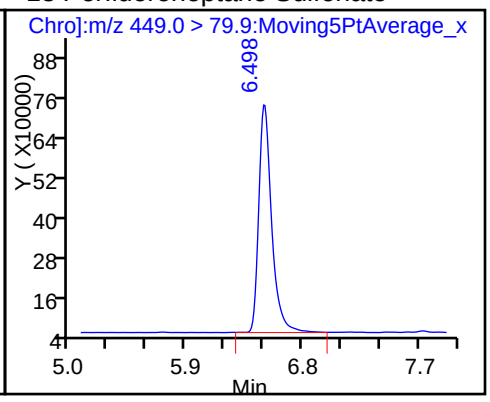
8 Perfluoroheptanoic acid



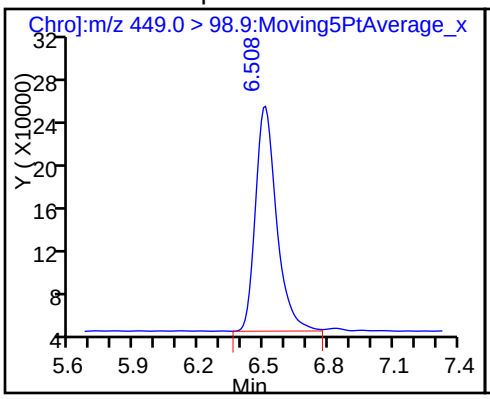
* 9 18O2 PFHxS (IS)



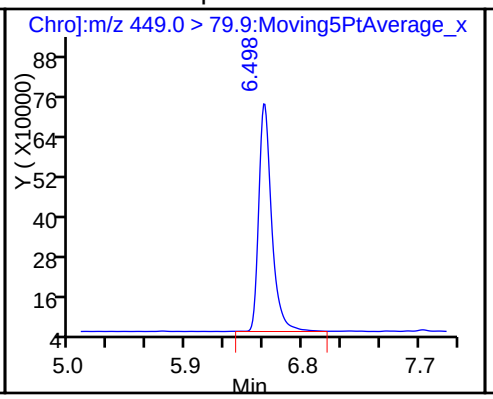
13 Perfluoroheptane Sulfonate



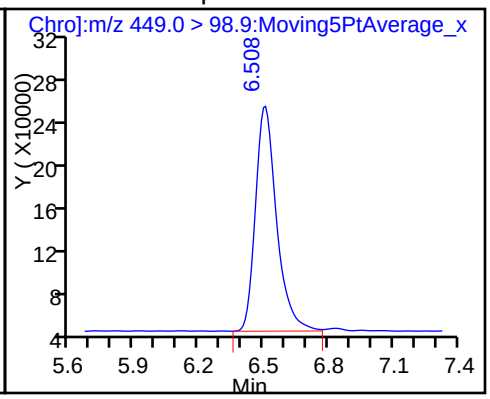
13 Perfluoroheptane Sulfonate



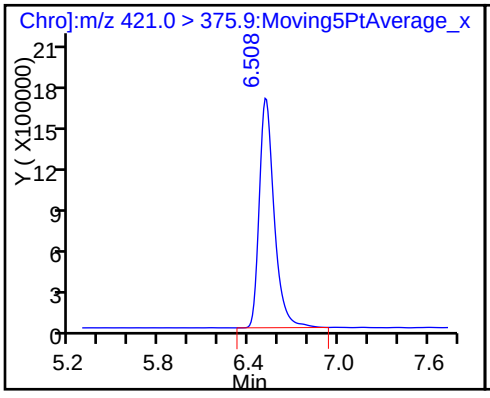
12 Perfluoroheptanesulfonic Acid



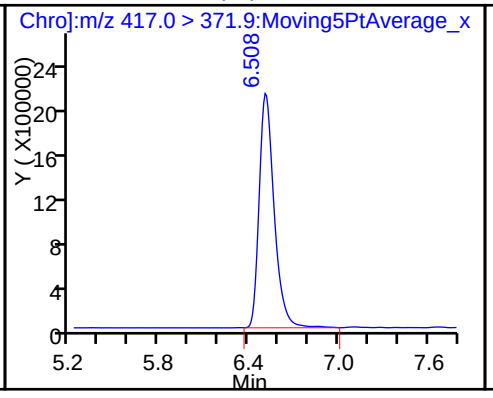
12 Perfluoroheptanesulfonic Acid



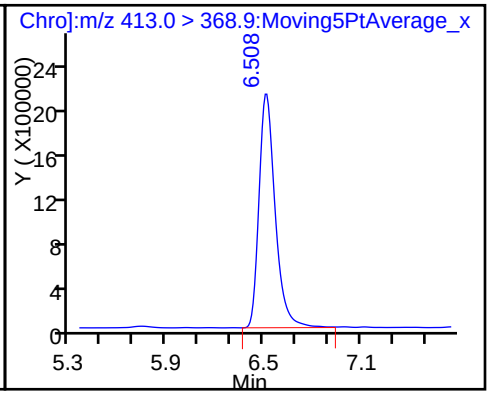
$ 14 13C8 PFOA



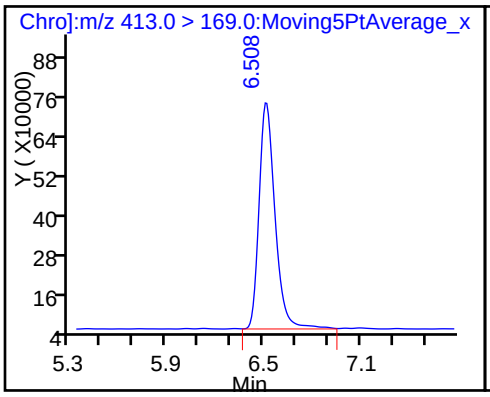
* 15 13C4 PFOA (IS)



16 Perfluorooctanoic acid



16 Perfluorooctanoic acid



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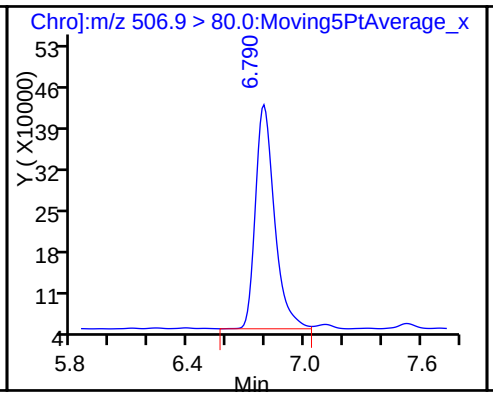
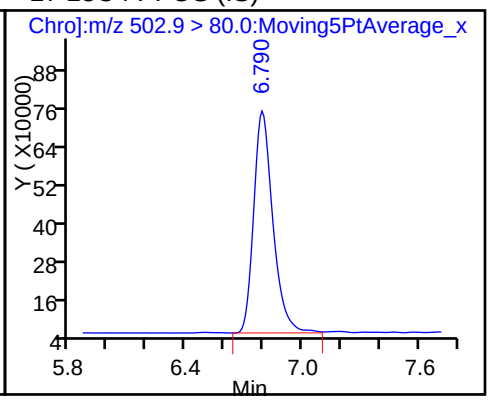
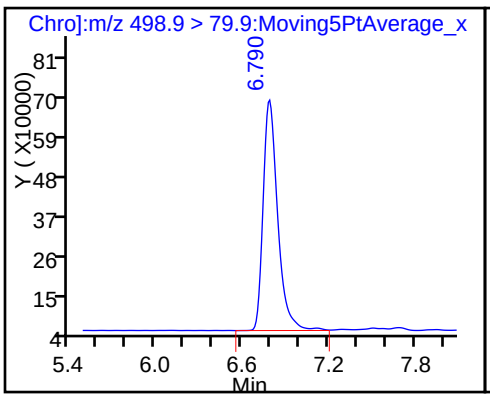


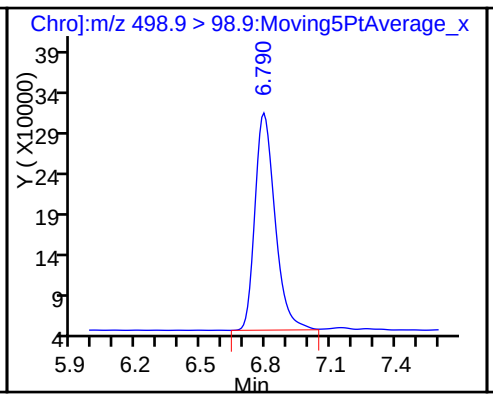
* 17 13C4 PFOS (IS)



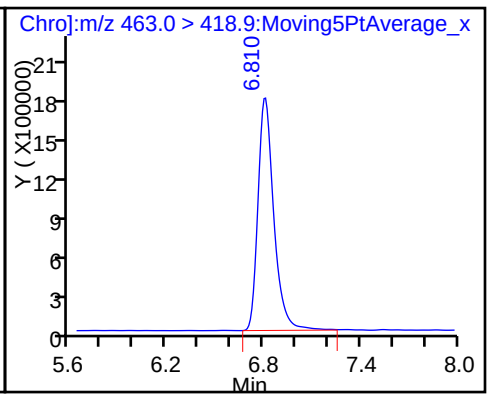
19 Perfluorooctane sulfonic acid



19 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid



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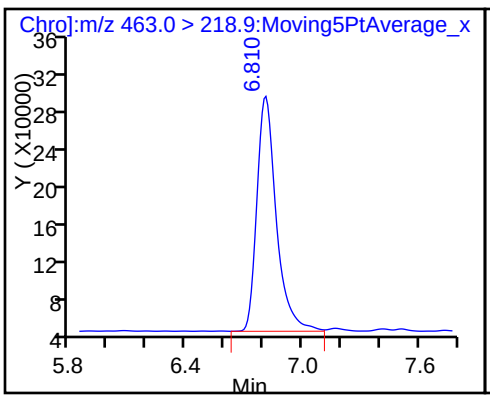
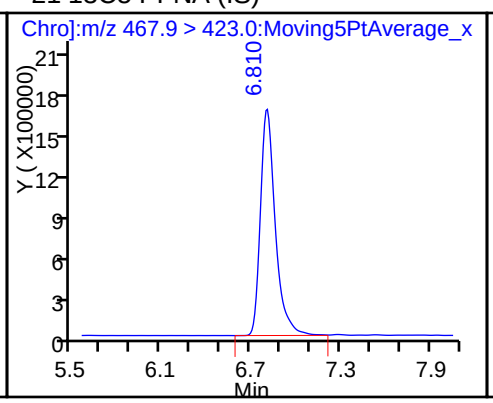
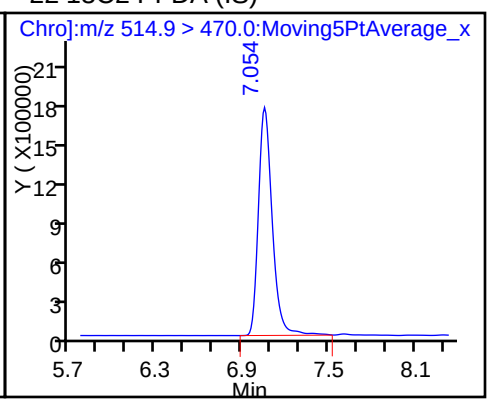


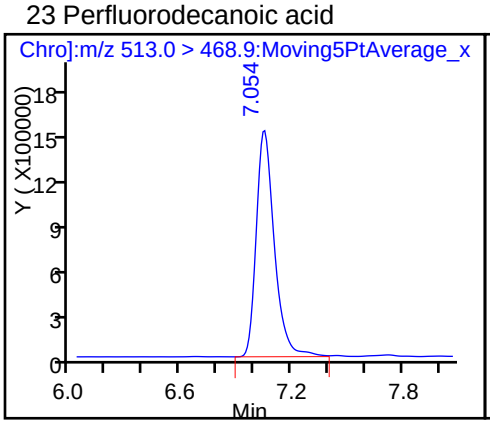
* 21 13C5 PFNA (IS)



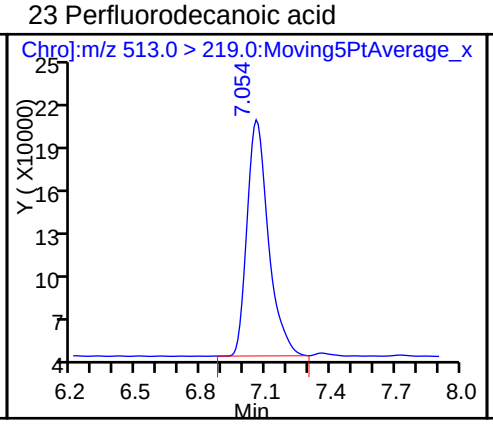
* 22 13C2 PFDA (IS)



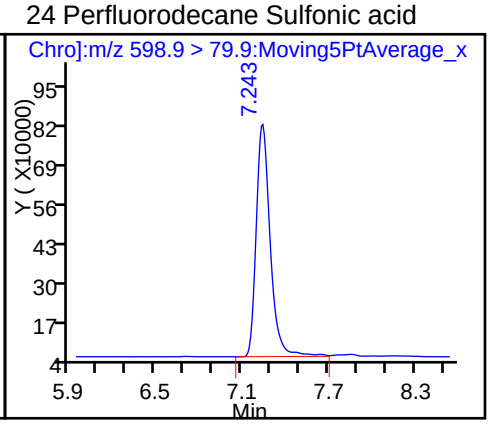
23 Perfluorodecanoic acid



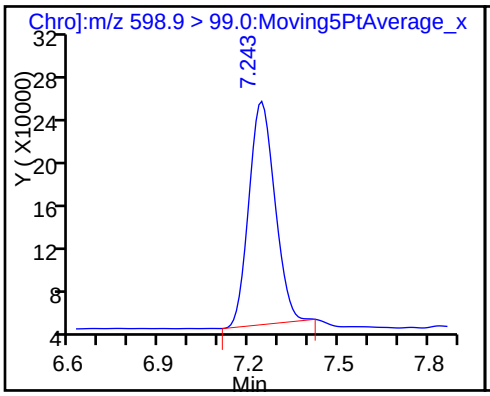
23 Perfluorodecanoic acid



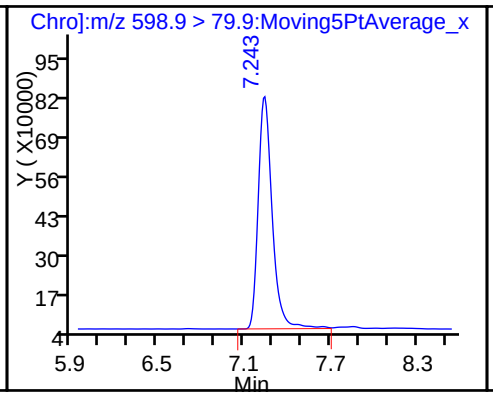
24 Perfluorodecane Sulfonic acid



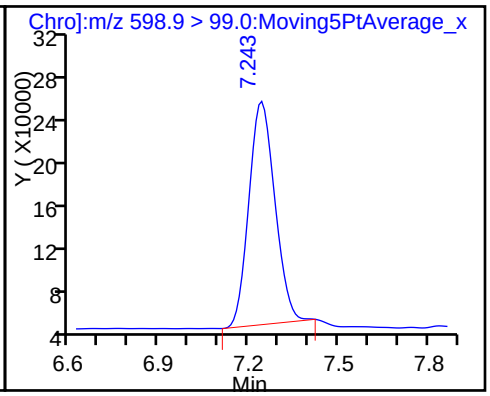
24 Perfluorodecane Sulfonic acid



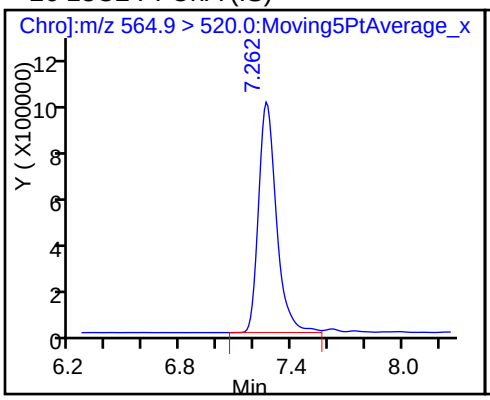
25 Perfluorodecane Sulfonate



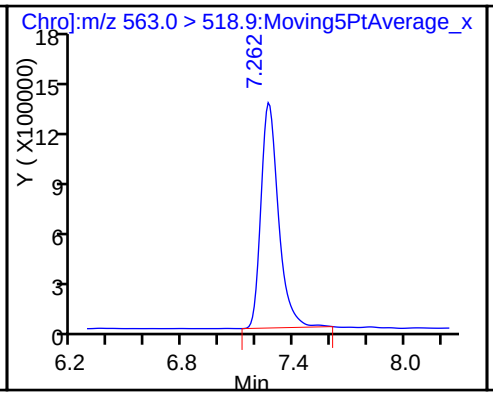
25 Perfluorodecane Sulfonate



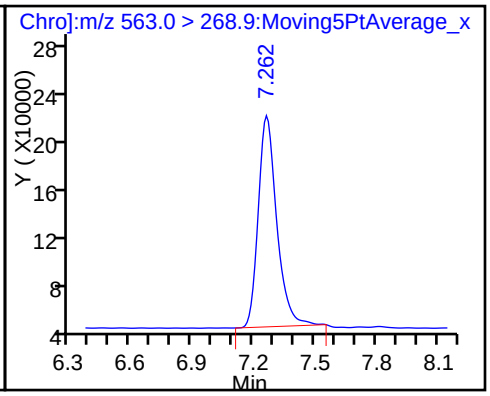
* 26 13C2 PFUnA (IS)



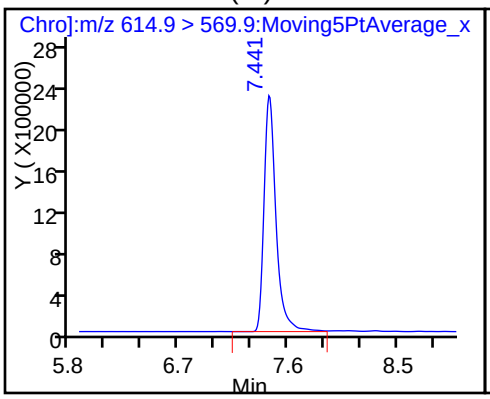
27 Perfluoroundecanoic acid



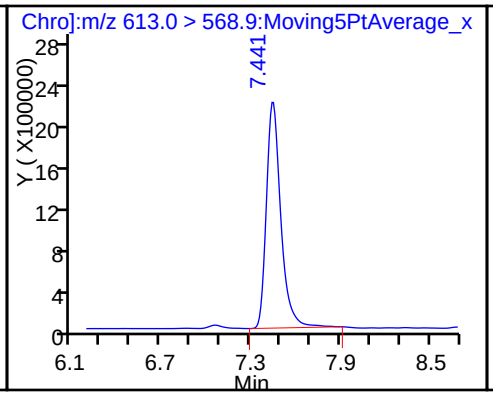
27 Perfluoroundecanoic acid



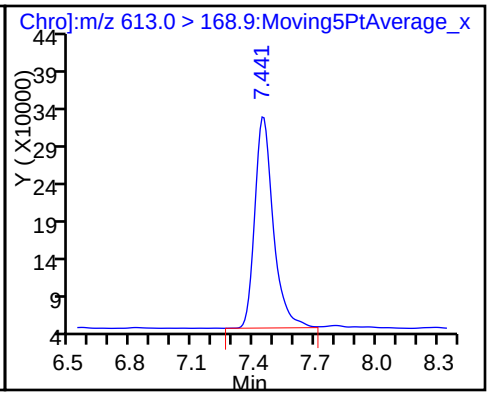
* 28 13C2 PFDoA (IS)



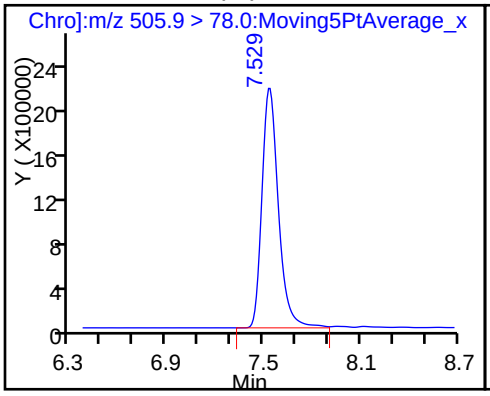
29 Perfluorododecanoic acid



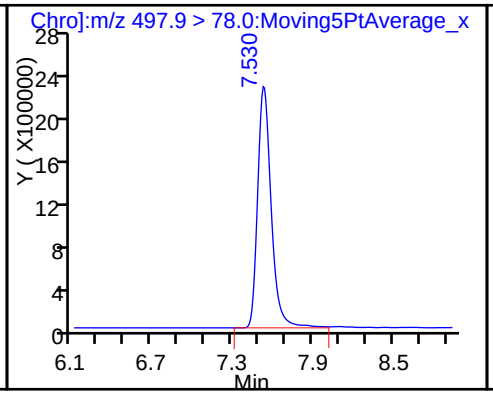
29 Perfluorododecanoic acid



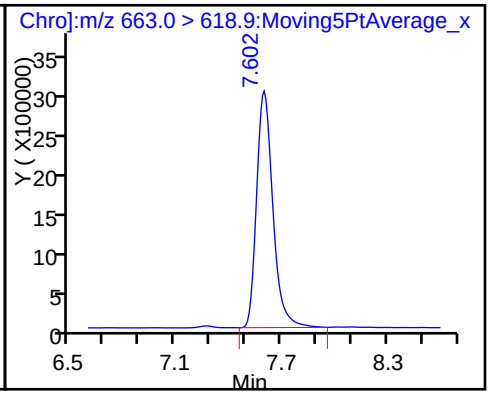
* 31 13C8 FOSA (IS)



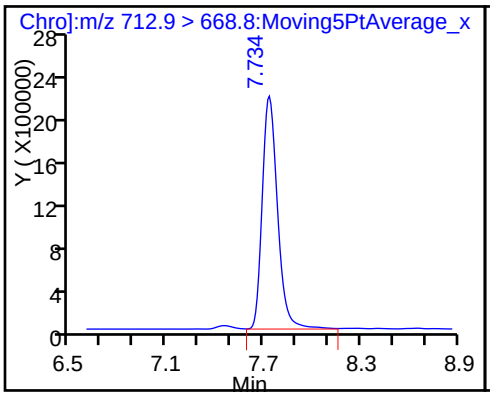
32 Perfluorooctane Sulfonamide



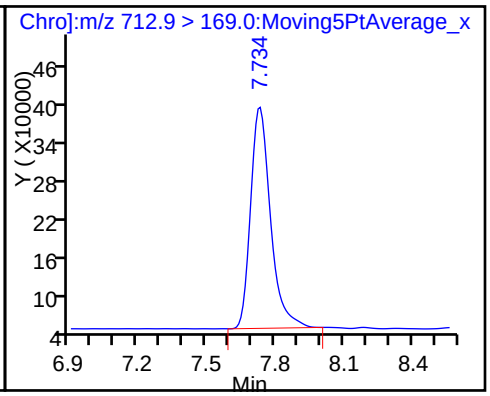
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: CCV 280-340694/99 Calibration Date: 09/02/2016 06:37

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I01112.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.8071		4.19	5.00	-16.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.049		4.77	5.00	-4.6	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		3.723		3.73	4.43	-15.6	30.0
Perfluorobutanesulfonic acid	Lin2		3.723		3.73	4.43	-15.6	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9211		5.16	5.00	3.3	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.7700		4.58	5.00	-8.4	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.998		4.72	4.73	-0.0	30.0
Perfluorohexanesulfonic acid	Lin2		3.998		4.72	4.73	-0.0	30.0
Perfluoroheptane Sulfonate	Lin2		1.072		4.67	4.76	-1.8	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.072		4.67	4.76	-1.8	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.9592		4.85	5.00	-2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		0.9649		4.56	4.78	-4.5	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.003		4.75	5.00	-5.1	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9282		4.88	5.00	-2.5	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		0.9141		4.42	4.83	-8.4	30.0
Perfluorodecane Sulfonic acid	Lin2		0.9141		4.42	4.83	-8.4	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.265		4.82	5.00	-3.6	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9175		4.72	5.00	-5.6	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.150		4.52	5.00	-9.6	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		0.9872		4.77	5.00	-4.7	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.8841		4.52	5.00	-9.6	30.0
13C8 PFOA	Lin1		0.9090		6.52	5.00	30.4*	30.0
13C8 PFOS	Lin2		0.6473		5.34	4.78	11.7	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01112.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 06:37:53 ALS Bottle#: 0 Worklist Smp#: 99
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:56:13 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:45:01

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.276	4.276	0.0		13992383	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.276	4.276	0.0	1.000	5646590	4.19			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.308	5.308	0.0	0.902	4588281	4.77			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.421	5.421	0.0	0.859	2179875	3.73			
298.9 > 98.9	5.412	5.421	-0.009	0.858	667179		3.27(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.421	5.421	0.0	0.859	2179875	3.73			
298.9 > 98.9	5.412	5.421	-0.009	0.858	667179		3.27(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.885	5.885	0.0		8747576	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.885	5.885	0.0	1.000	4028617	5.16			
313.0 > 118.6	5.913	5.885	0.028	1.005	154095		26.14(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.301	6.301	0.0	0.949	5840199	4.58			
363.0 > 168.9	6.301	6.301	0.0	0.949	1600851		3.65(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.310	6.310	0.0		1251874	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.301	6.301	0.0	0.999	2500038	4.72			R
398.9 > 98.9	6.310	6.301	0.009	1.000	684814		3.65(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.301	6.301	0.0	0.999	2500038	4.72			
398.9 > 98.9	6.310	6.301	0.009	1.000	684814		3.65(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.631	6.631	0.0	0.962	2553161	4.67			
449.0 > 98.9	6.631	6.631	0.0	0.962	679656		3.76(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.631	6.631	0.0	0.962	2553161	4.67			
449.0 > 98.9	6.631	6.631	0.0	0.962	679656		3.76(0.00-0.00)		
$ 14 13C8 PFOA									M
421.0 > 375.9	6.641	6.641	0.0	1.000	6894677	6.52			M
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.641	6.641	0.0		15169952	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.641	6.641	0.0	1.000	7275752	4.85			
413.0 > 169.0	6.641	6.641	0.0	1.000	2425304		3.00(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.903	6.903	0.0	1.001	1548251	5.34			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.894	6.894	0.0		4783548	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.904	6.904	0.0	1.001	2305378	4.56			R
498.9 > 98.9	6.895	6.904	-0.009	1.000	909553		2.53(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.914	6.914	0.0		11191532	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.914	6.914	0.0	1.000	5612244	4.75			
463.0 > 218.9	6.914	6.914	0.0	1.000	857502		6.54(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.149	7.149	0.0		11018774	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.149	7.149	0.0	1.000	5113716	4.88			
513.0 > 219.0	7.149	7.149	0.0	1.000	486930		10.50(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.328	7.328	0.0	1.063	2206902	4.42			
598.9 > 99.0	7.318	7.328	-0.010	1.062	746881		2.95(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.328	7.328	0.0	1.063	2206902	4.42			
598.9 > 99.0	7.318	7.328	-0.010	1.062	746881		2.95(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.357	7.357	0.0		6880969	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.347	7.347	0.0	0.999	4350741	4.82			R
563.0 > 268.9	7.347	7.347	0.0	0.999	570610		7.62(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.526	7.526	0.0		14544846	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.526	7.526	0.0	1.000	6672581	4.72			
613.0 > 168.9	7.526	7.526	0.0	1.000	833028		8.01(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.699	7.699	0.0		16459115	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.700	7.700	0.0	1.000	8123922	4.77			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.668	7.668	0.0	1.019	8365261	4.52			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.800	7.800	0.0	1.036	6429452	4.52			
712.9 > 169.0	7.800	7.800	0.0	1.036	1088111		5.91(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-LCS_00084	Amount Added:	10.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-IS_00023	Amount Added:	20.00	Units: uL

Report Date: 02-Sep-2016 11:56:14 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01112.d

Injection Date: 02-Sep-2016 06:37:53 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

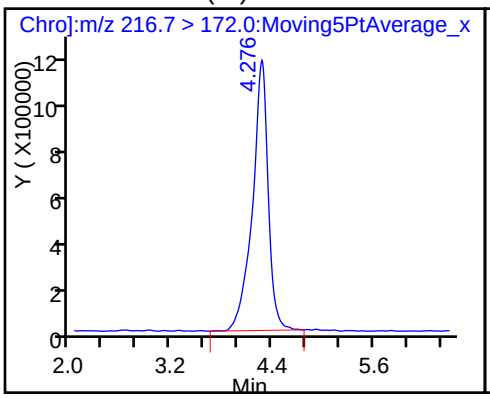
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 99

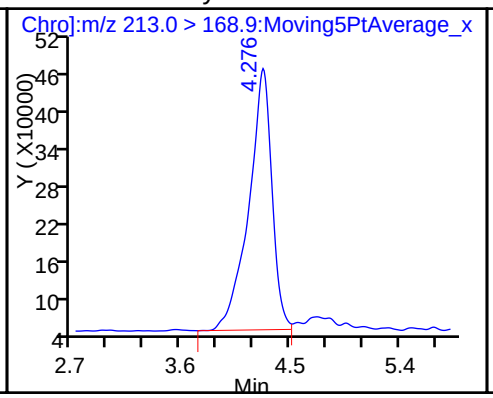
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

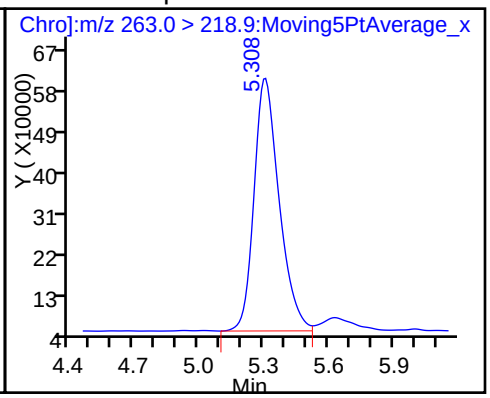
* 1 13C4 PFBA (IS)



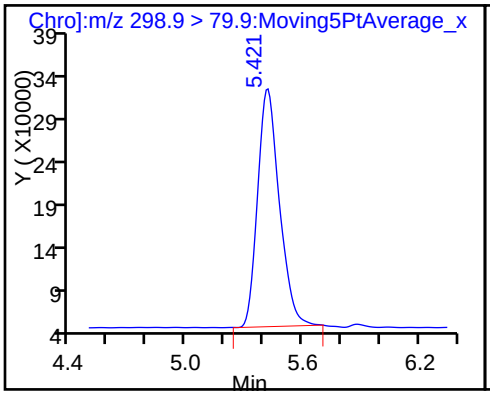
2 Perfluorobutyric acid



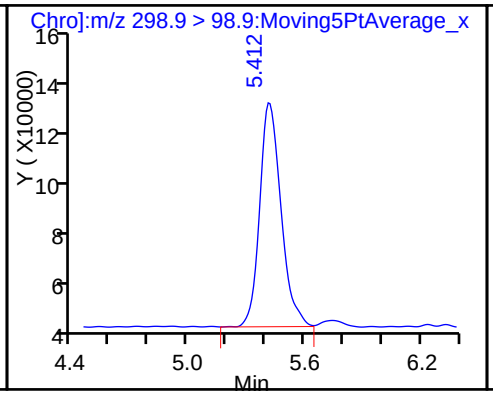
3 Perfluoropentanoic acid



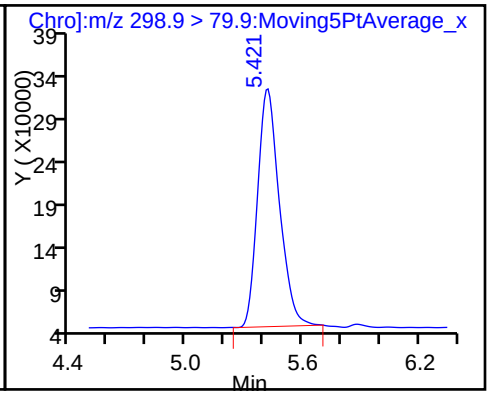
4 Perfluorobutane Sulfonate



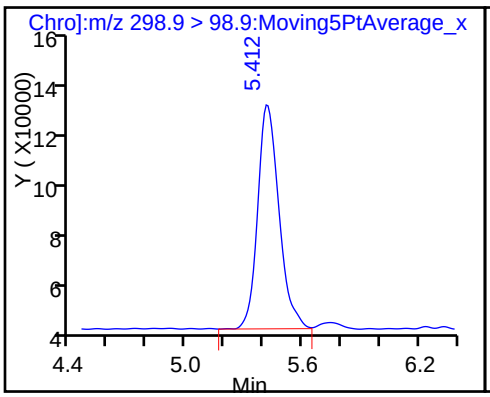
4 Perfluorobutane Sulfonate



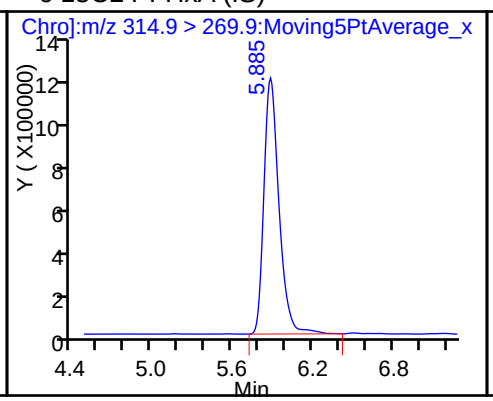
5 Perfluorobutanesulfonic acid



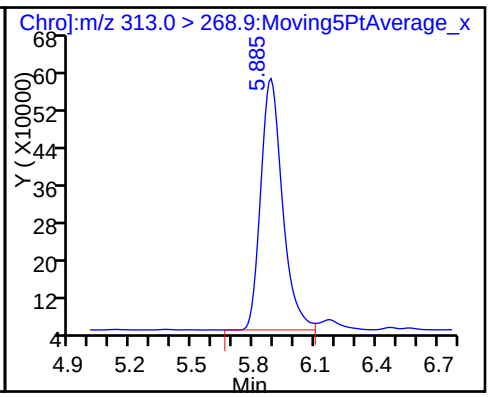
5 Perfluorobutanesulfonic acid



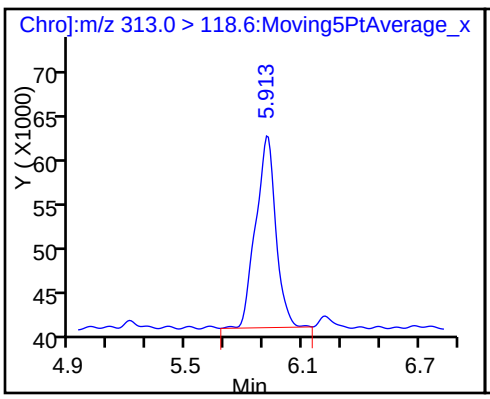
* 6 13C2 PFHxA (IS)



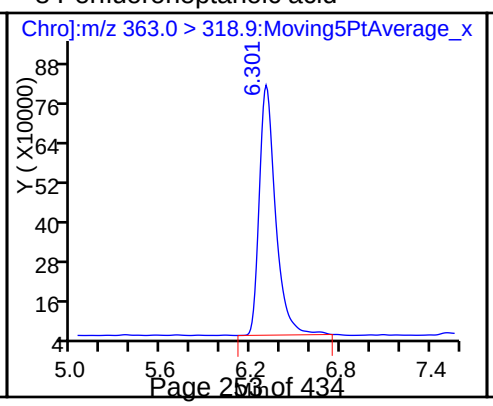
7 Perfluorohexanoic acid



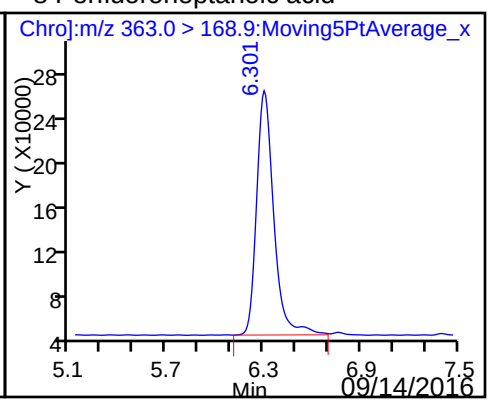
7 Perfluorohexanoic acid



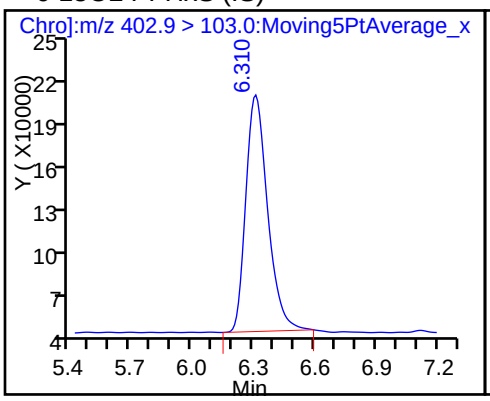
8 Perfluoroheptanoic acid



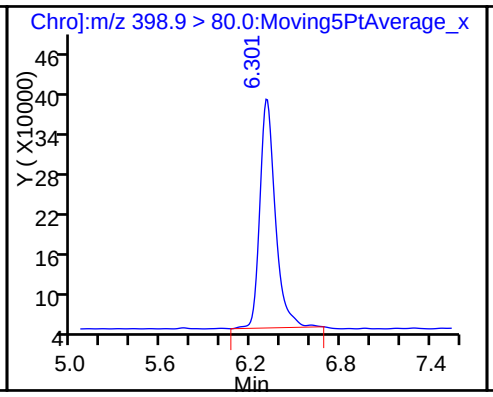
8 Perfluoroheptanoic acid



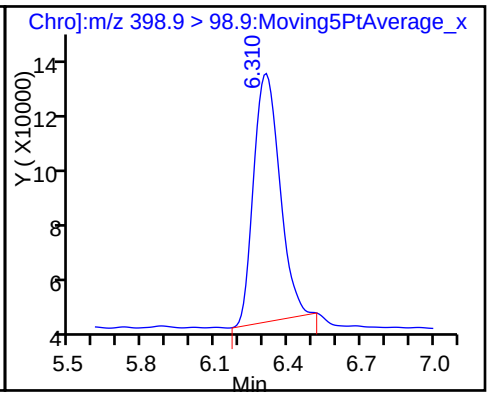
* 9 18O2 PFHxS (IS)



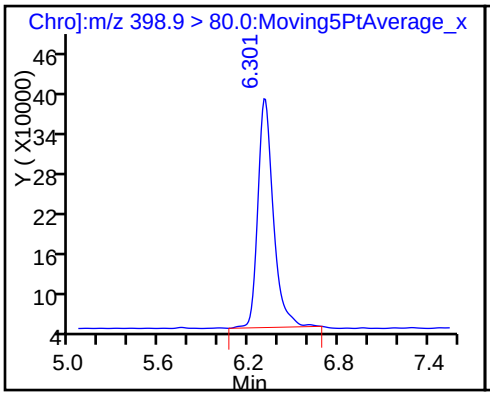
10 Perfluorohexane Sulfonate



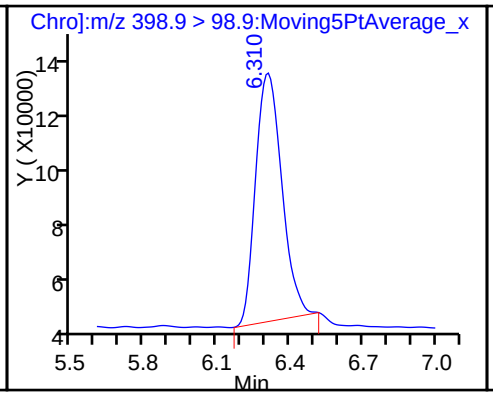
10 Perfluorohexane Sulfonate



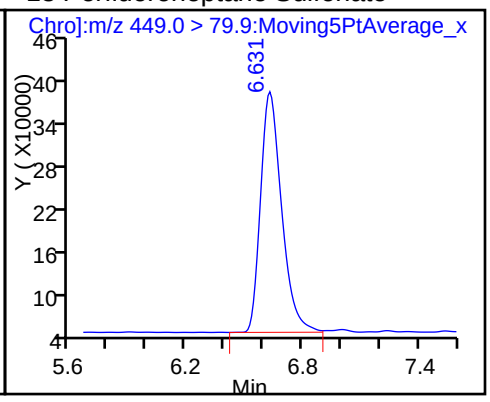
11 Perfluorohexanesulfonic acid



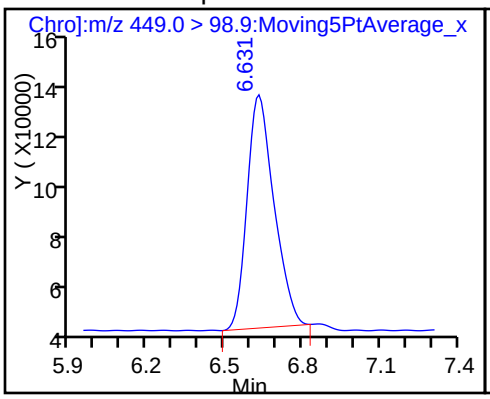
11 Perfluorohexanesulfonic acid



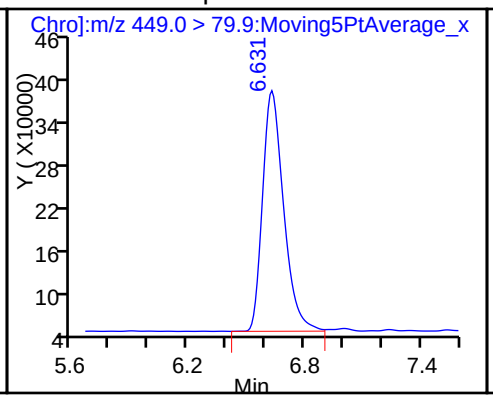
13 Perfluoroheptane Sulfonate



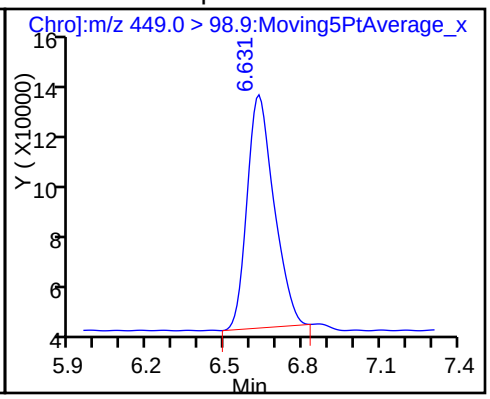
13 Perfluoroheptane Sulfonate



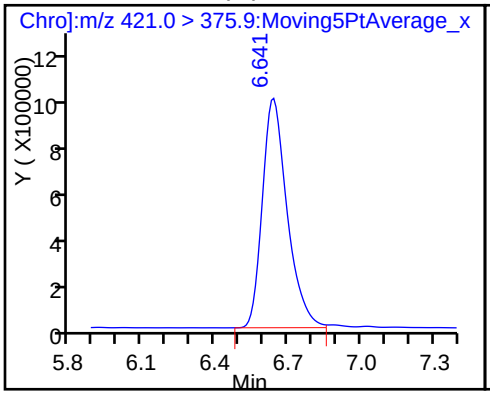
12 Perfluoroheptanesulfonic Acid



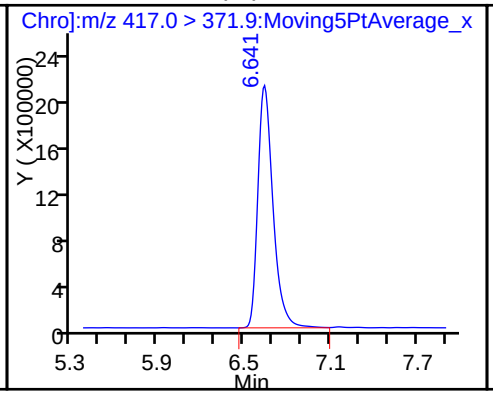
12 Perfluoroheptanesulfonic Acid



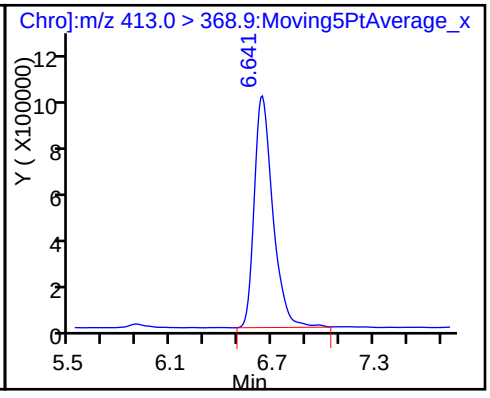
$ 14 13C8 PFOA (M)



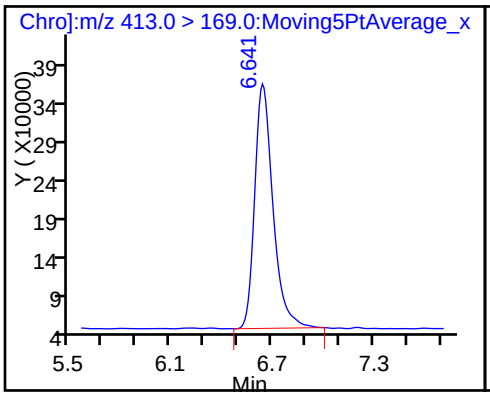
* 15 13C4 PFOA (IS)



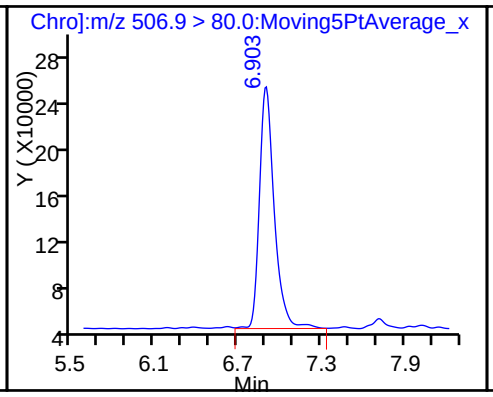
16 Perfluorooctanoic acid



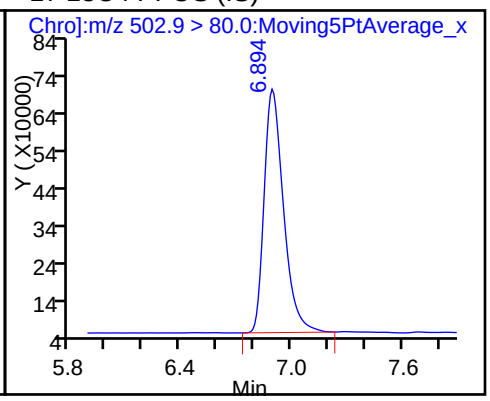
16 Perfluorooctanoic acid



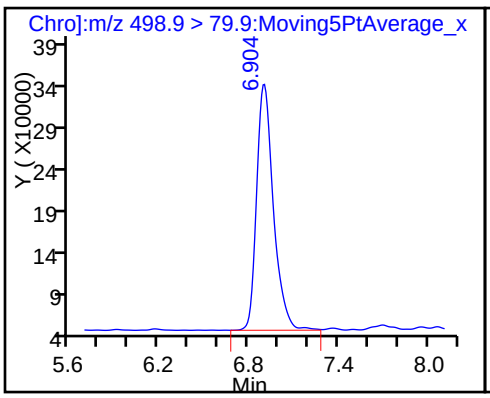
$ 18 13C8 PFOS



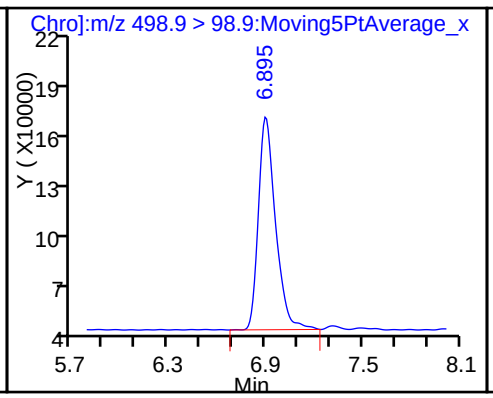
* 17 13C4 PFOS (IS)



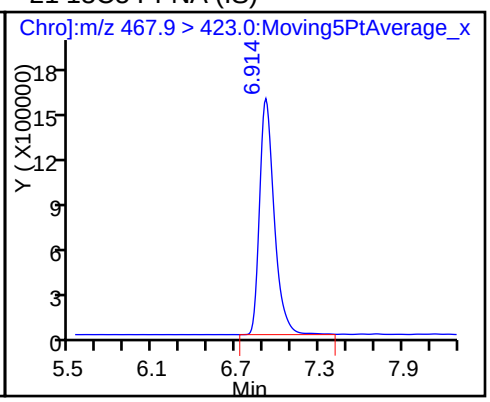
19 Perfluorooctane sulfonic acid



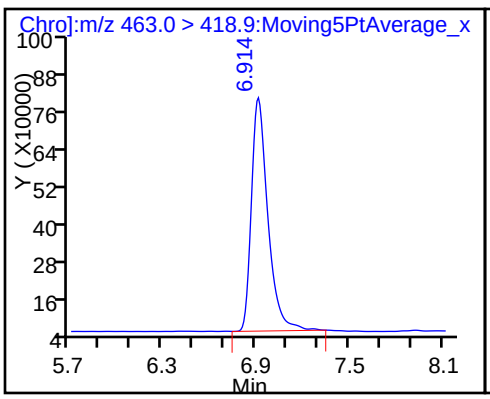
19 Perfluorooctane sulfonic acid



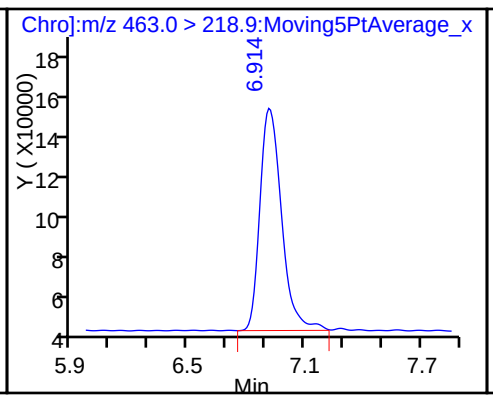
* 21 13C5 PFNA (IS)



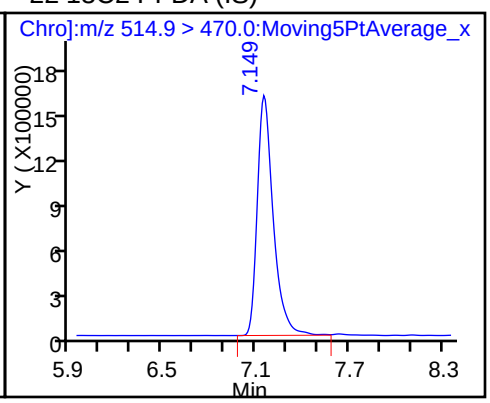
20 Perfluorononanoic acid



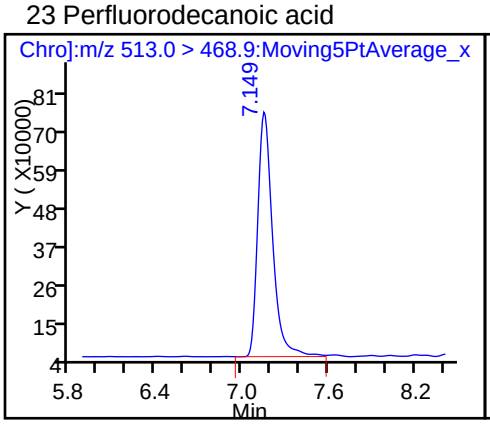
20 Perfluorononanoic acid



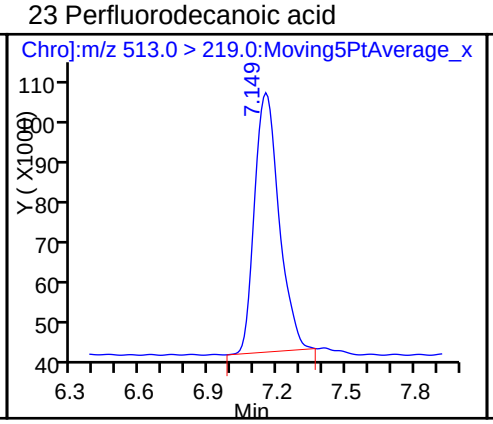
* 22 13C2 PFDA (IS)



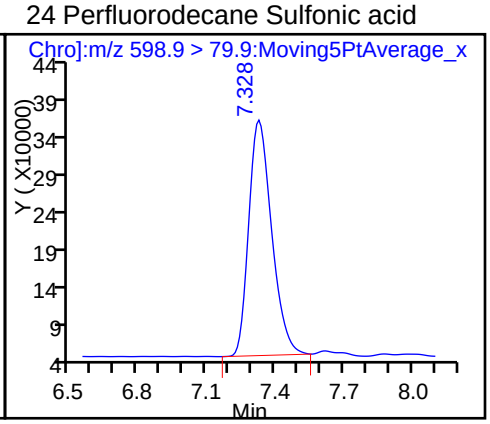
23 Perfluorodecanoic acid



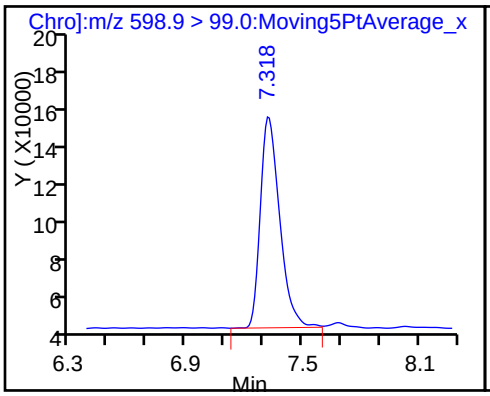
23 Perfluorodecanoic acid



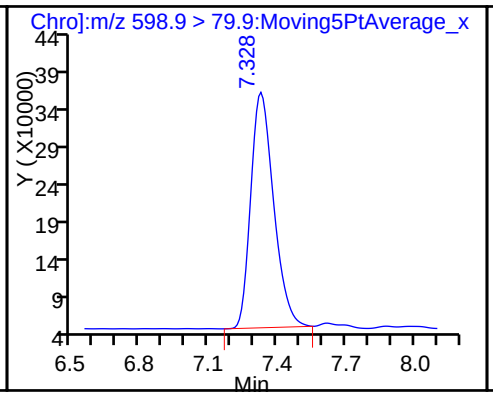
24 Perfluorodecane Sulfonic acid



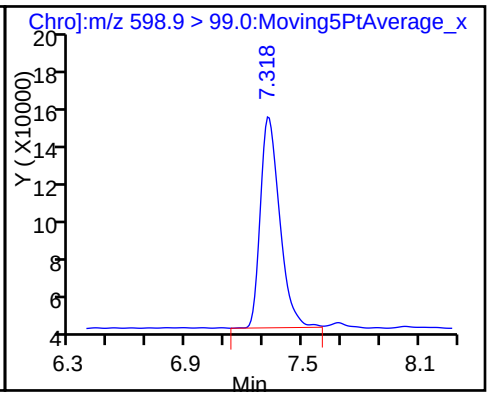
24 Perfluorodecane Sulfonic acid



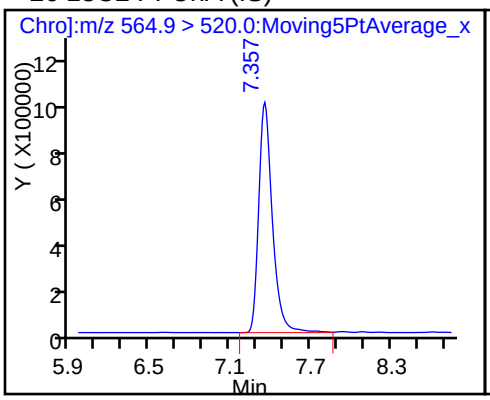
25 Perfluorodecane Sulfonate



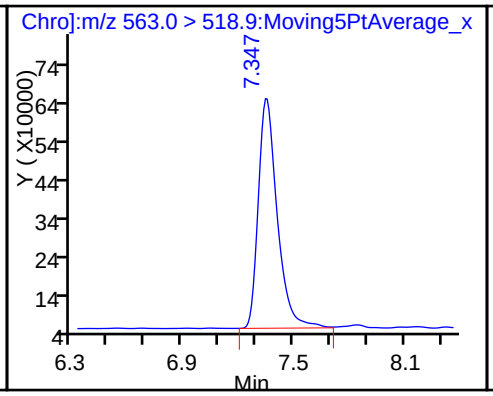
25 Perfluorodecane Sulfonate



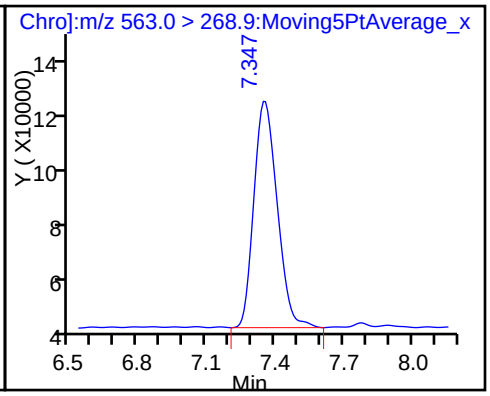
* 26 13C2 PFUnA (IS)



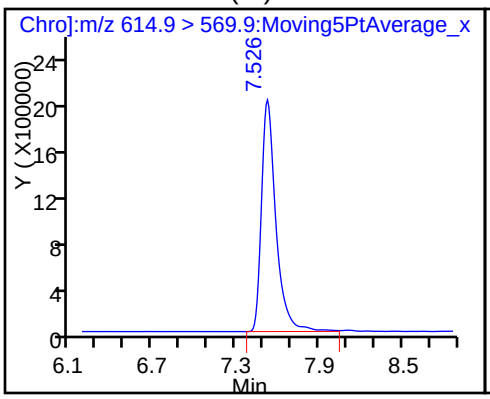
27 Perfluoroundecanoic acid



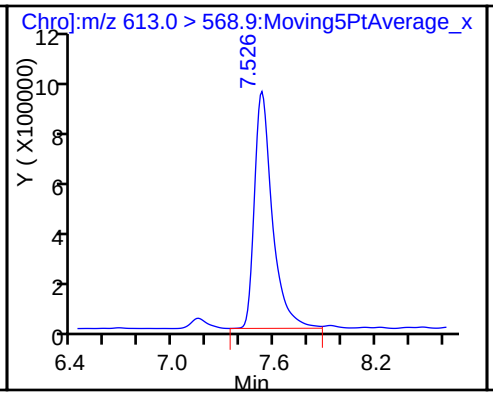
27 Perfluoroundecanoic acid



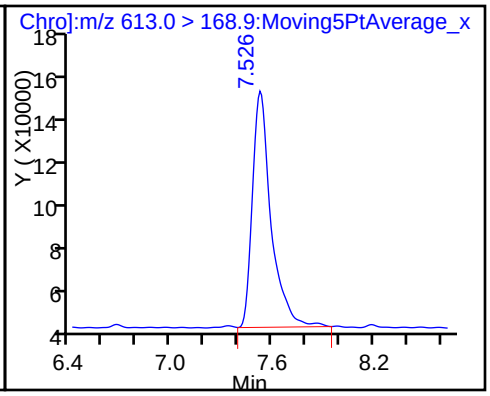
* 28 13C2 PFDoA (IS)



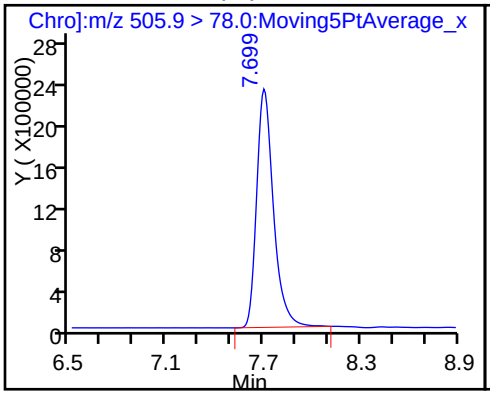
29 Perfluorododecanoic acid



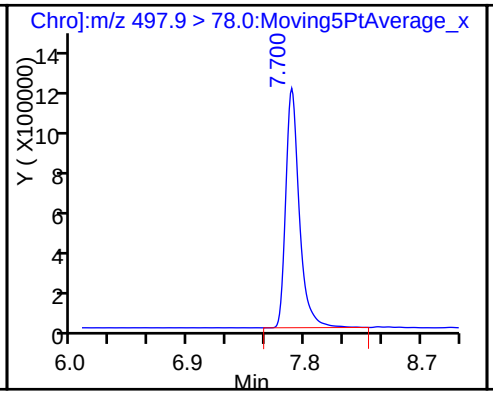
29 Perfluorododecanoic acid



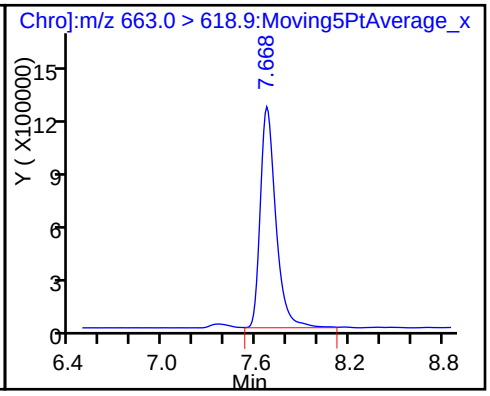
* 31 13C8 FOSA (IS)



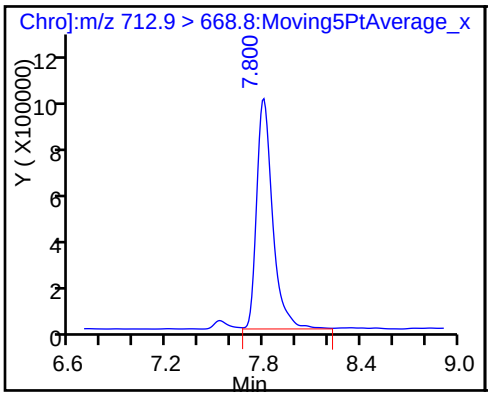
32 Perfluorooctane Sulfonamide



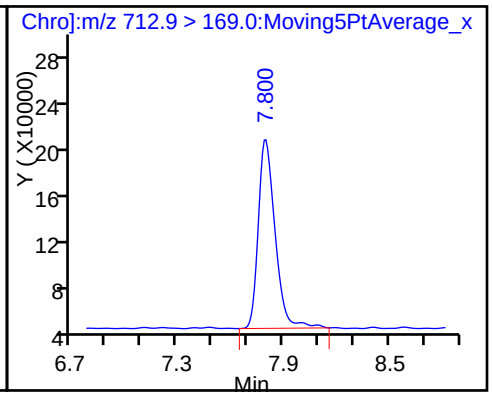
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



Manual Integration/User Assign Peak Report

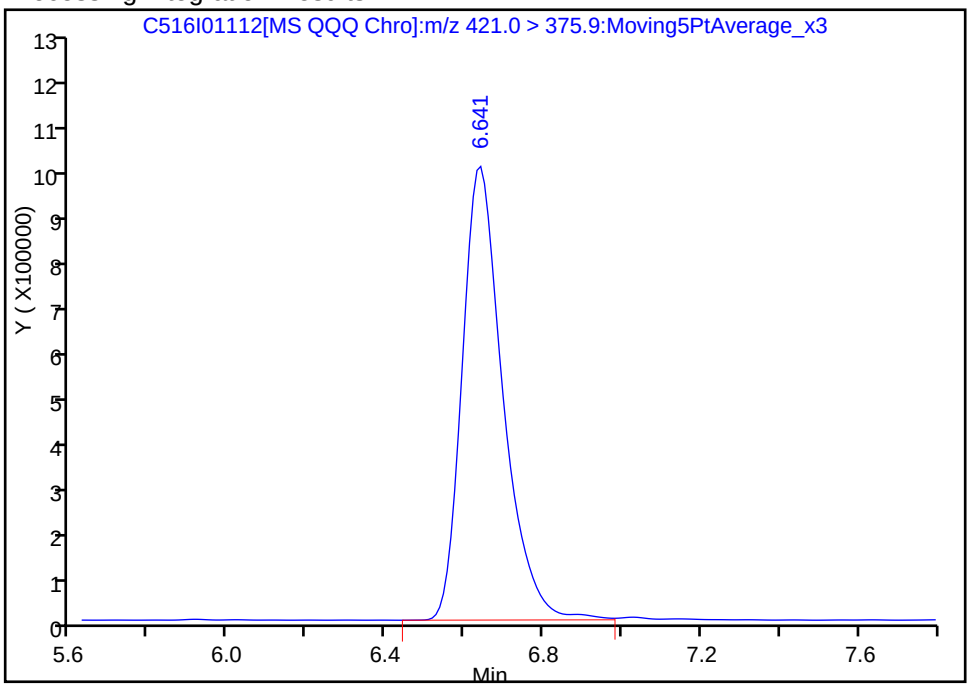
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01112.d
Injection Date: 02-Sep-2016 06:37:53 Instrument ID: LC_LCMS5
Lims ID: CCV PFC L5
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 99
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

$ 14 13C8 PFOA, CAS: STL01052

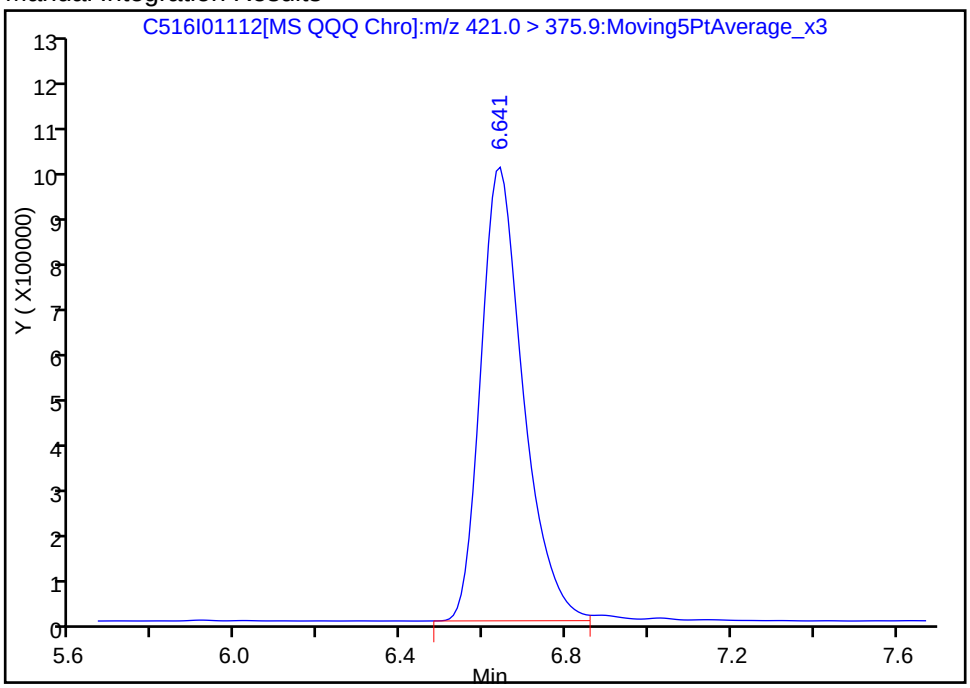
Processing Integration Results

RT: 6.64
Area: 6957363
Amount: 6.580610
Amount Units: ug/L



Manual Integration Results

RT: 6.64
Area: 6894677
Amount: 6.519189
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 11:51:19
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: CCV 280-340694/105 Calibration Date: 09/02/2016 07:51

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I01118.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.9018		9.35	10.0	-6.5	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.142		10.5	10.0	4.8	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		3.970		7.97	8.85	-9.9	30.0
Perfluorobutanesulfonic acid	Lin2		3.970		7.97	8.85	-9.9	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9494		10.7	10.0	7.0	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8555		10.2	10.0	1.9	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.629		8.58	9.45	-9.3	30.0
Perfluorohexanesulfonic acid	Lin2		3.629		8.58	9.45	-9.3	30.0
Perfluoroheptane Sulfonate	Lin2		1.092		9.48	9.52	-0.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.092		9.48	9.52	-0.4	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.009		10.3	10.0	3.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.071		10.0	9.55	5.1	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.070		10.1	10.0	1.2	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9617		10.1	10.0	1.3	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.050		10.2	9.65	5.8	30.0
Perfluorodecane Sulfonic acid	Lin2		1.050		10.2	9.65	5.8	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.326		10.2	10.0	2.0	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9923		10.2	10.0	2.1	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.242		9.82	10.0	-1.8	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.039		10.1	10.0	0.5	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.9832		10.1	10.0	1.2	30.0
13C8 PFOA	Lin1		0.8376		12.2	10.0	22.1	30.0
13C8 PFOS	Lin2		0.5834		9.70	9.56	1.5	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01118.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 07:51:44 ALS Bottle#: 0 Worklist Smp#: 105
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:56:30 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:48:58

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.020	4.020	0.0		12731765	10.0			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.030	4.030	0.0	1.002	11481321	9.35			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.109	0.0	0.899	9834630	10.5			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.222	5.222	0.0	0.853	4829540	7.97			R
298.9 > 98.9	5.232	5.222	0.010	0.855	1371810		3.52(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.222	5.222	0.0	0.853	4829540	7.97			
298.9 > 98.9	5.232	5.222	0.010	0.855	1371810		3.52(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.686	5.686	0.0		8613480	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.686	0.0	1.000	8177414	10.7			
313.0 > 118.6	5.686	5.686	0.0	1.000	258453		31.64(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.121	6.121	0.0	0.947	11961045	10.2			
363.0 > 168.9	6.112	6.121	-0.009	0.946	3128962		3.82(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.120	0.0		1300212	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.121	0.0	1.000	4713763	8.58			R
398.9 > 98.9	6.130	6.121	0.009	1.002	1526915		3.09(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.121	0.0	1.000	4713763	8.58			
398.9 > 98.9	6.130	6.121	0.009	1.002	1526915		3.09(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.460	6.460	0.0	0.959	4734096	9.48			
449.0 > 98.9	6.460	6.460	0.0	0.959	1355353		3.49(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.460	6.460	0.0	0.959	4734096	9.48			
449.0 > 98.9	6.460	6.460	0.0	0.959	1355353		3.49(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.461	0.0	1.000	11710706	12.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.461	0.0		13980904	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.461	0.0	1.000	14105293	10.3			
413.0 > 169.0	6.461	6.461	0.0	1.000	4840098		2.91(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	1.000	2540128	9.70			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.733	0.0		4354184	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.734	6.734	0.0	1.000	4659505	10.0			R
498.9 > 98.9	6.734	6.734	0.0	1.000	1815148		2.57(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.753	0.0		10957446	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.753	0.0	1.000	11727892	10.1			
463.0 > 218.9	6.753	6.753	0.0	1.000	1763796		6.65(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	6.997	0.0		10562149	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.998	6.998	0.0	1.000	10157977	10.1			R
513.0 > 219.0	6.998	6.998	0.0	1.000	1107061		9.18(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.176	7.176	0.0	1.066	4614330	10.2			
598.9 > 99.0	7.176	7.176	0.0	1.066	1601817		2.88(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.176	7.176	0.0	1.066	4614330	10.2			
598.9 > 99.0	7.176	7.176	0.0	1.066	1601817		2.88(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.205	7.205	0.0		6217510	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.196	7.196	0.0	0.999	8241825	10.2			R
563.0 > 268.9	7.205	7.196	0.009	1.000	1020836		8.07(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.384	0.0		13807965	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.375	7.375	0.0	0.999	13702078	10.2			
613.0 > 168.9	7.375	7.375	0.0	0.999	1752152		7.82(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.548	7.548	0.0		15554520	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.539	0.0	0.999	16161618	10.1			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.535	7.535	0.0	1.020	17155196	9.82			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.668	7.668	0.0	1.038	13576031	10.1			
712.9 > 169.0	7.668	7.668	0.0	1.038	2306290		5.89(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-LCS_00084	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFC-IS_00023	Amount Added:	20.00	Units: uL

Report Date: 02-Sep-2016 11:56:30 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01118.d

Injection Date: 02-Sep-2016 07:51:44 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

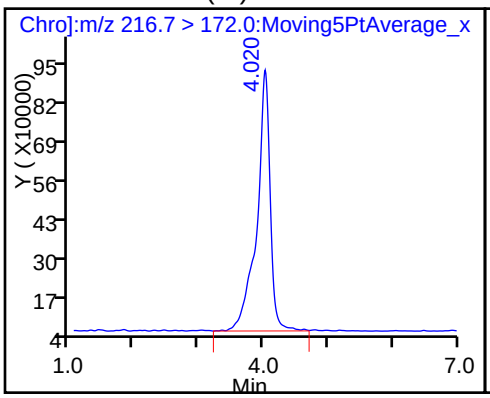
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 105

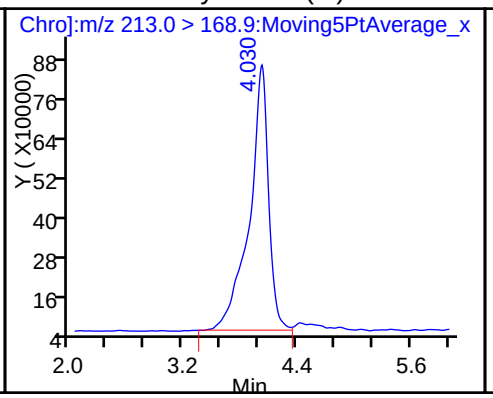
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

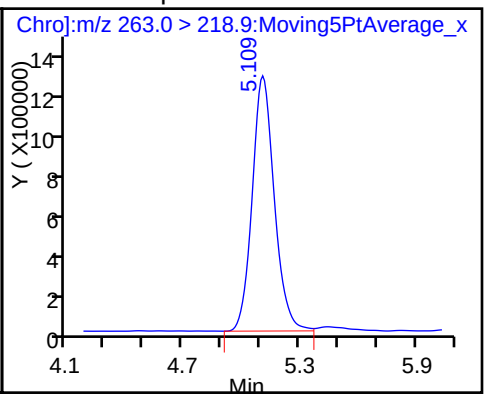
* 1 13C4 PFBA (IS)



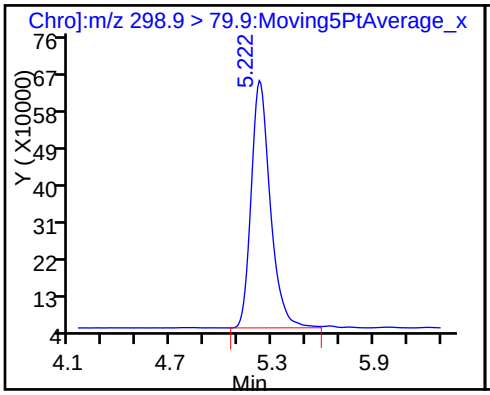
2 Perfluorobutyric acid (M)



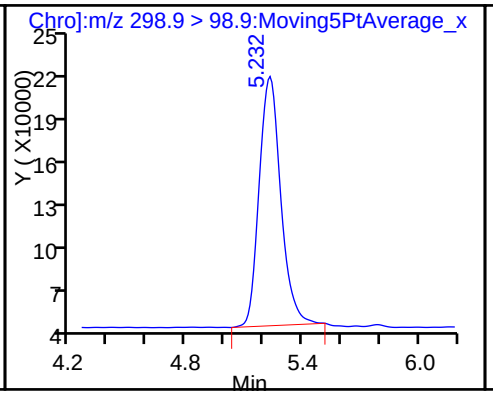
3 Perfluoropentanoic acid



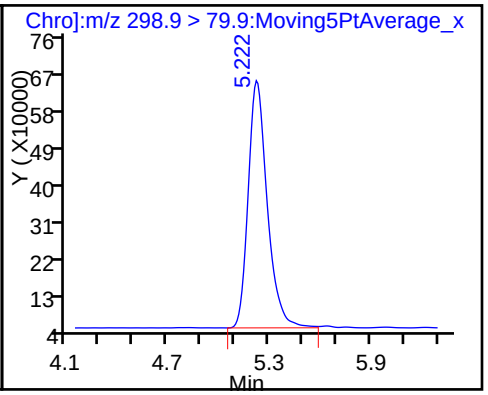
4 Perfluorobutane Sulfonate



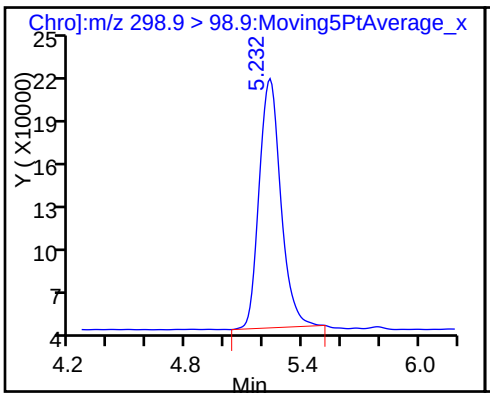
4 Perfluorobutane Sulfonate



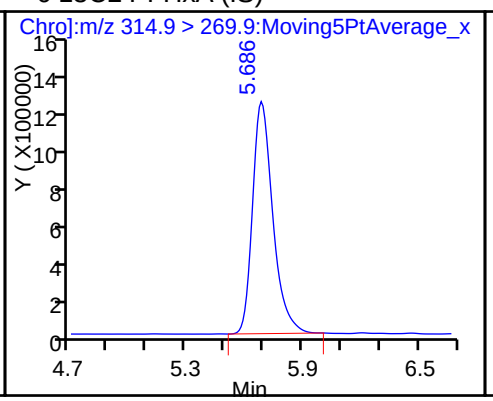
5 Perfluorobutanesulfonic acid



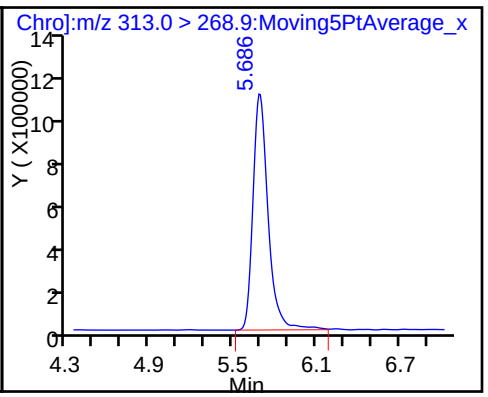
5 Perfluorobutanesulfonic acid



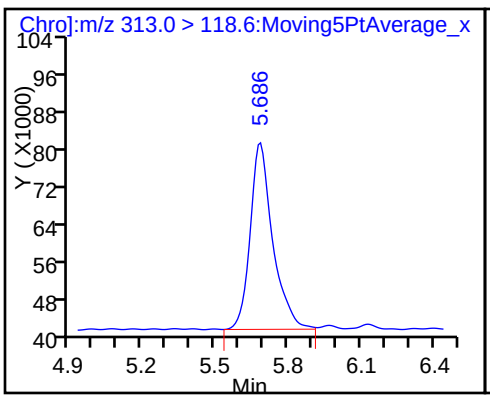
* 6 13C2 PFHxA (IS)



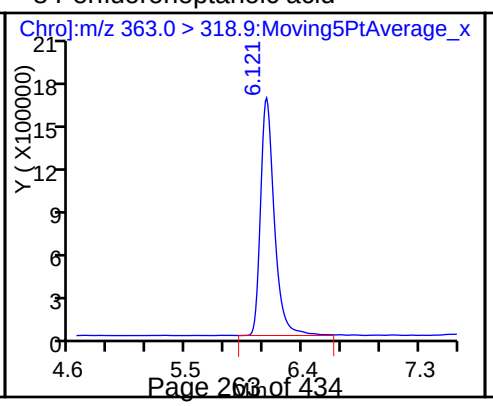
7 Perfluorohexanoic acid



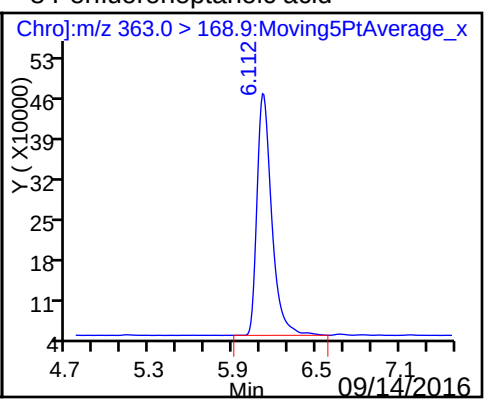
7 Perfluorohexanoic acid



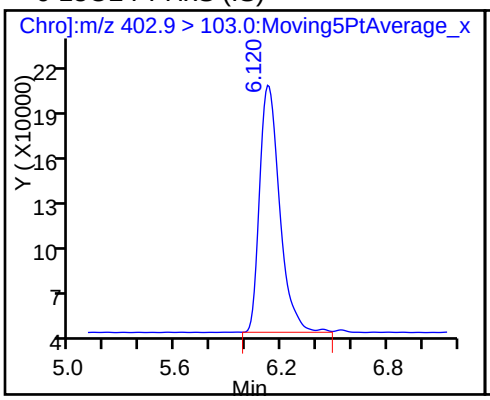
8 Perfluoroheptanoic acid



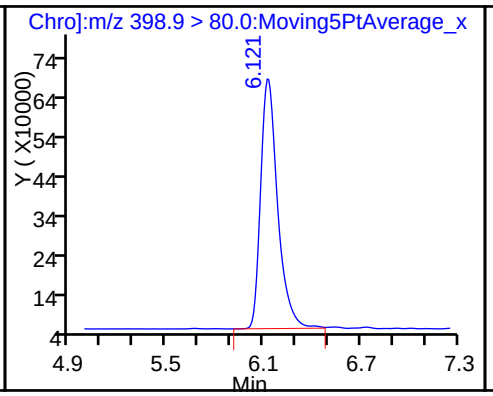
8 Perfluoroheptanoic acid



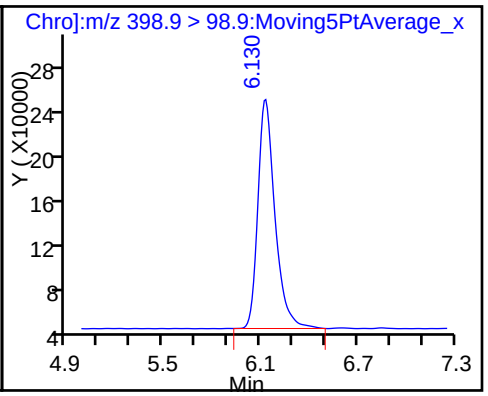
* 9 18O2 PFHxS (IS)



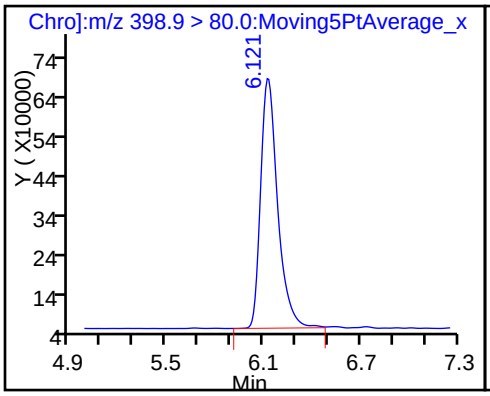
10 Perfluorohexane Sulfonate



10 Perfluorohexane Sulfonate



11 Perfluorohexanesulfonic acid



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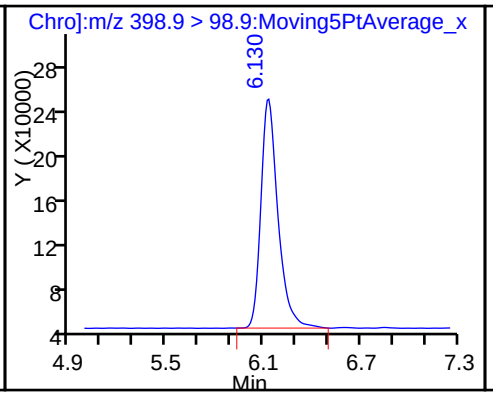
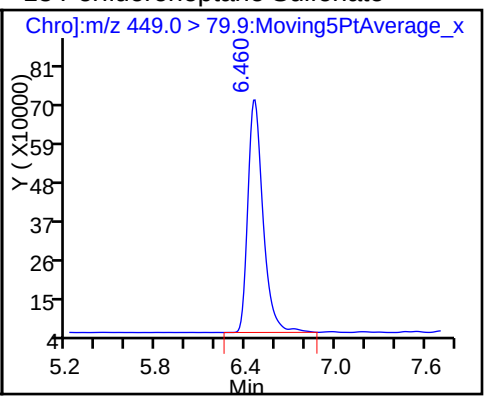
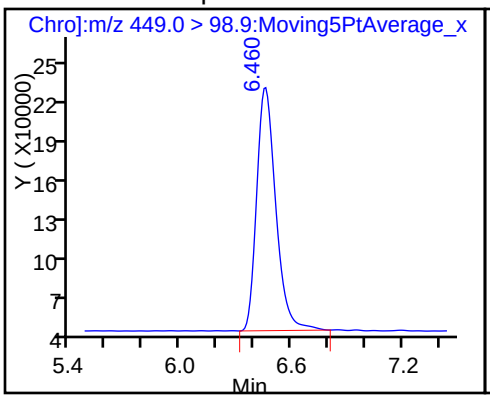


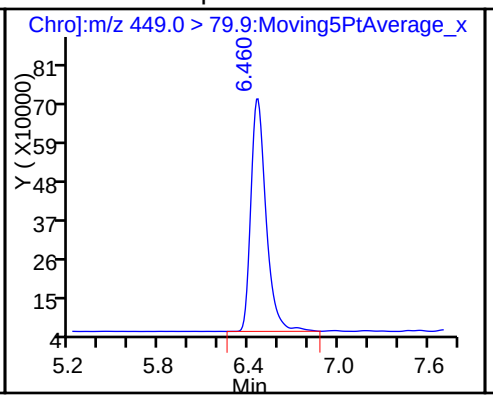
13 Perfluoroheptane Sulfonate



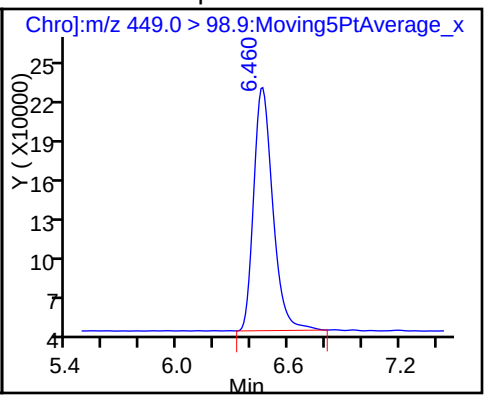
13 Perfluoroheptane Sulfonate



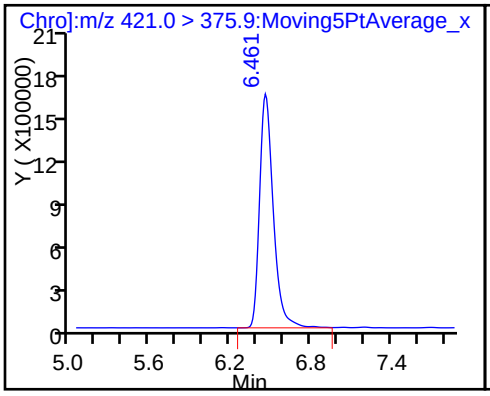
12 Perfluoroheptanesulfonic Acid



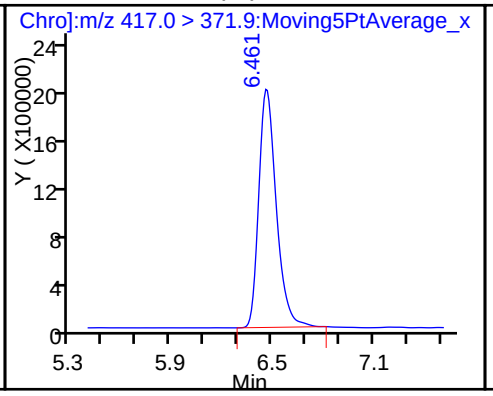
12 Perfluoroheptanesulfonic Acid



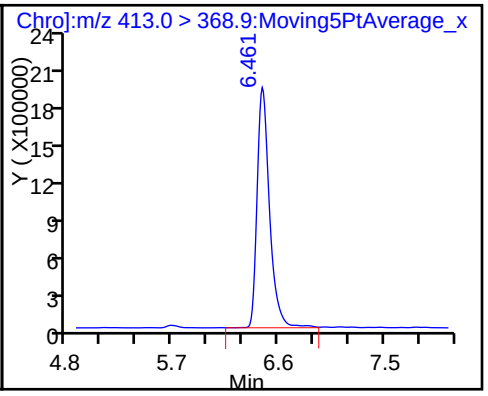
$ 14 13C8 PFOA



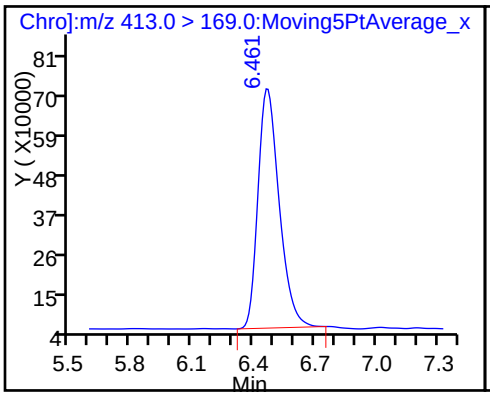
* 15 13C4 PFOA (IS)



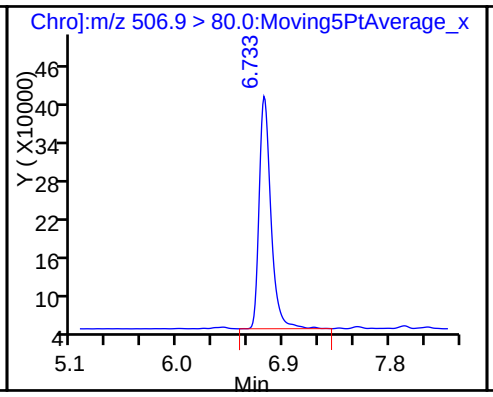
16 Perfluorooctanoic acid



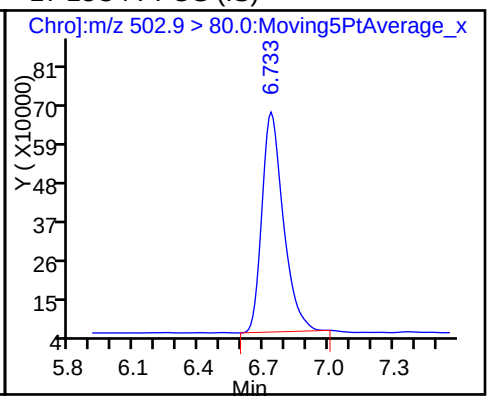
16 Perfluorooctanoic acid



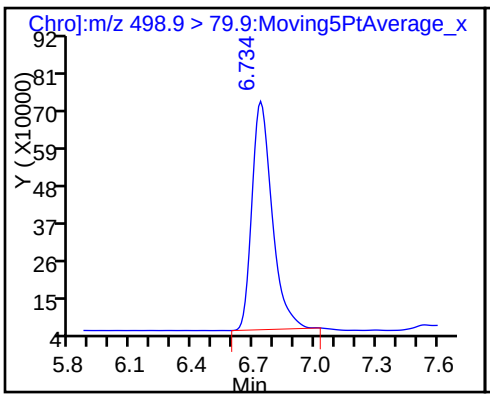
$ 18 13C8 PFOS



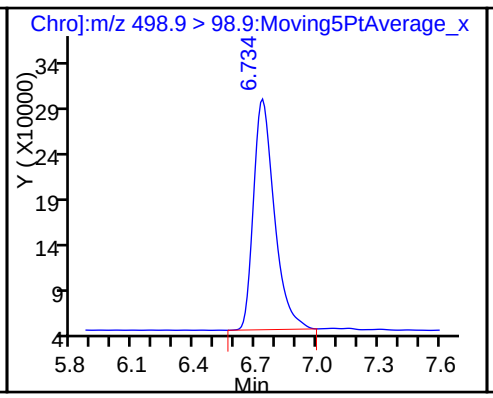
* 17 13C4 PFOS (IS)



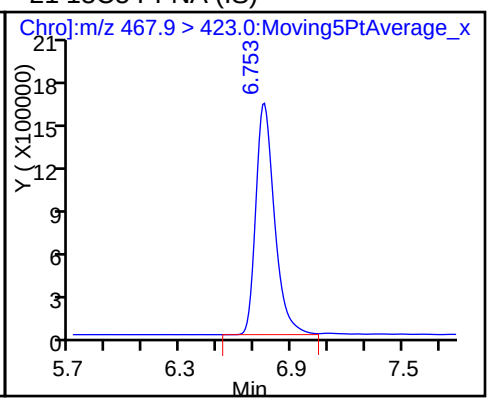
19 Perfluorooctane sulfonic acid



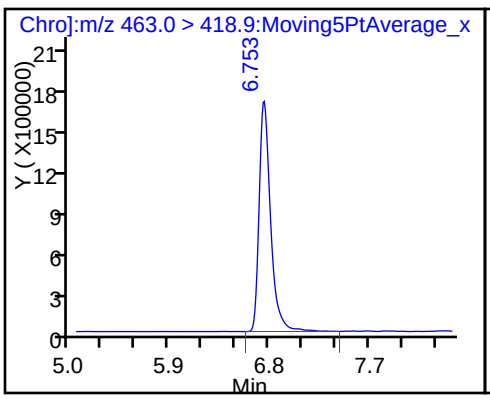
19 Perfluorooctane sulfonic acid



* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid



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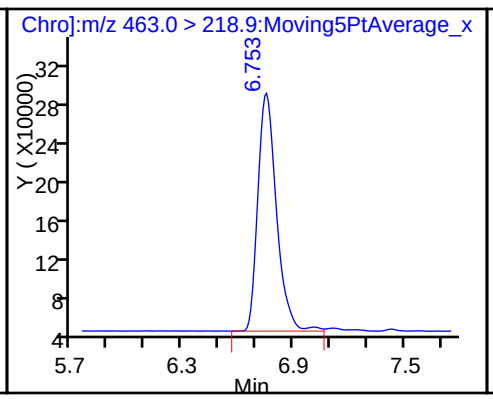
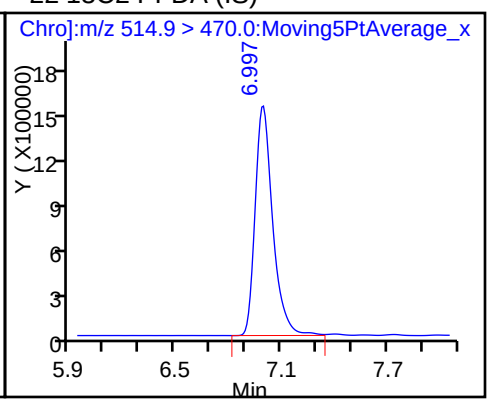
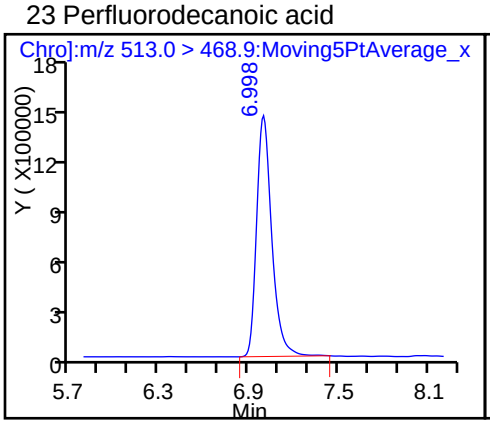


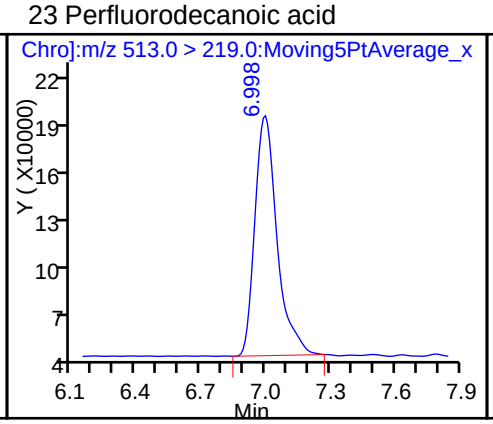
* 22 13C2 PFDA (IS)



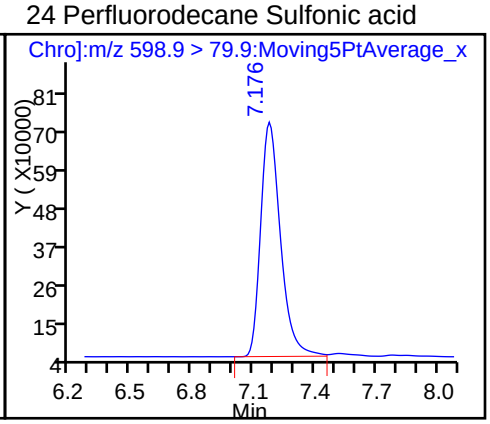
23 Perfluorodecanoic acid



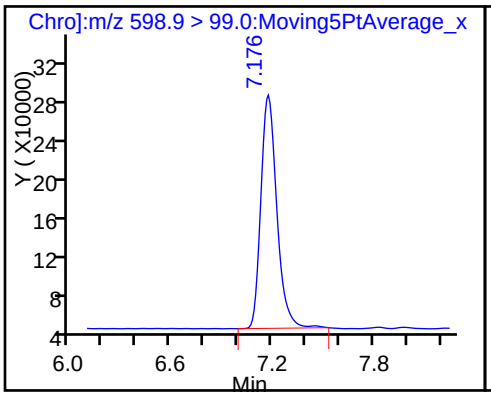
23 Perfluorodecanoic acid



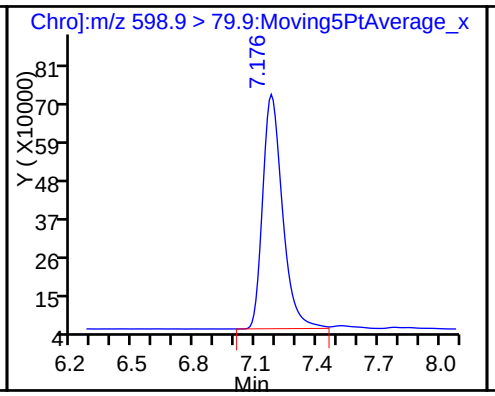
24 Perfluorodecane Sulfonic acid



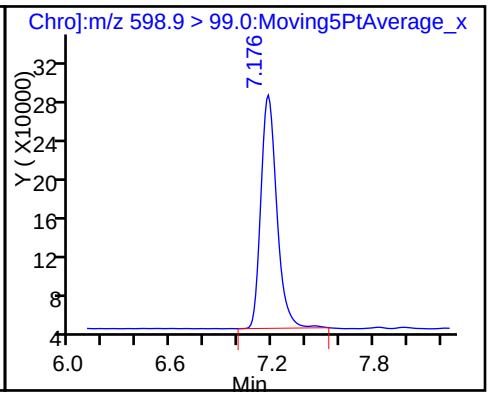
24 Perfluorodecane Sulfonic acid



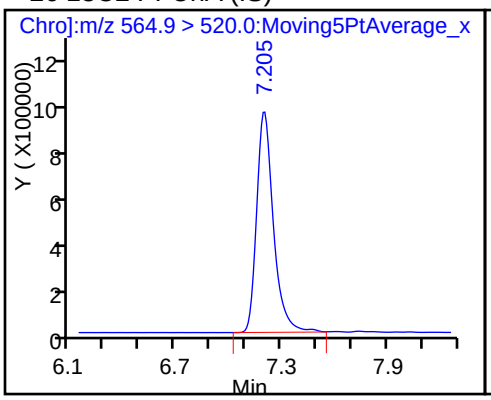
25 Perfluorodecane Sulfonate



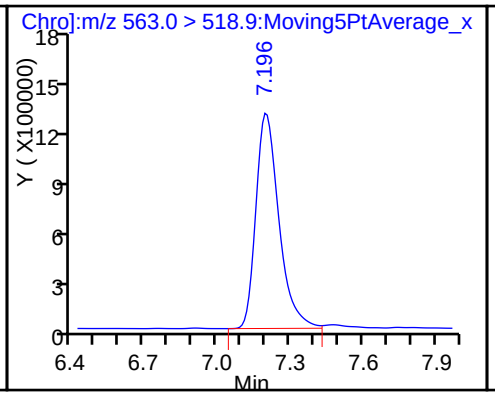
25 Perfluorodecane Sulfonate



* 26 13C2 PFUnA (IS)



27 Perfluoroundecanoic acid



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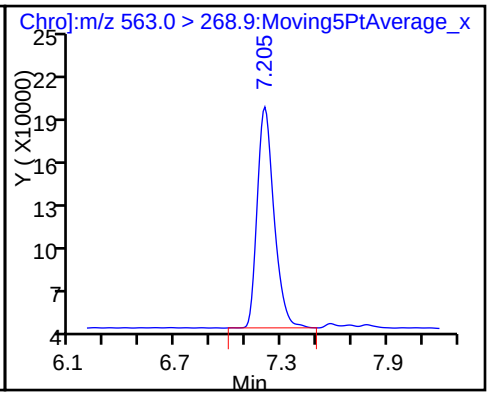

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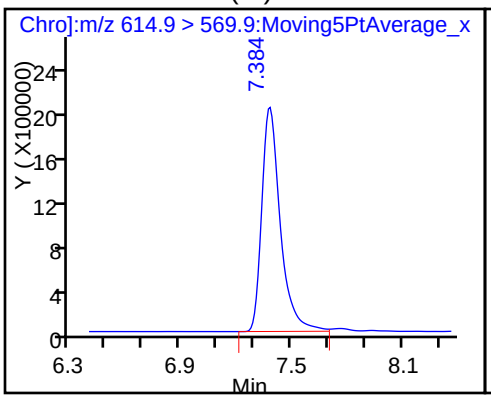
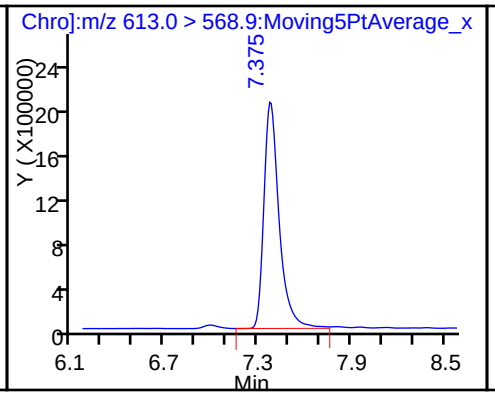
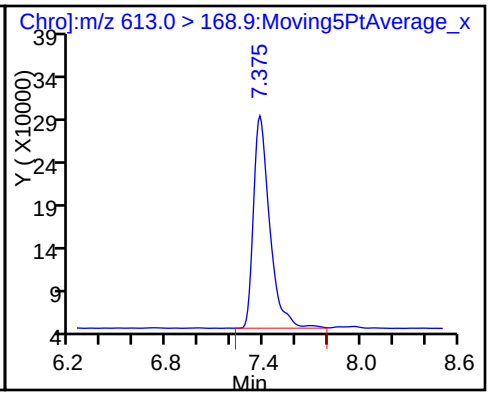


29 Perfluorododecanoic acid



29 Perfluorododecanoic acid



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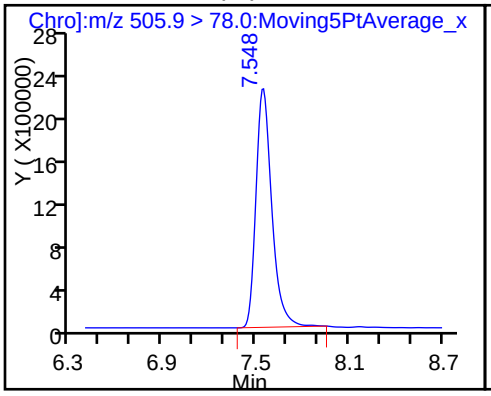
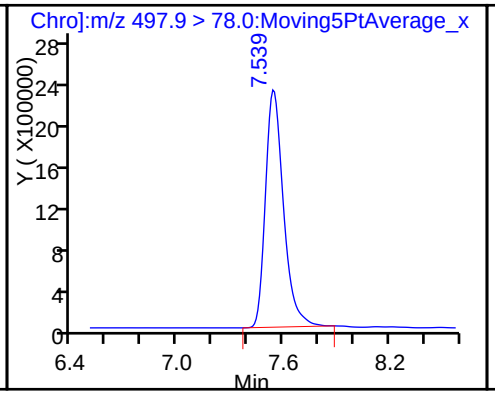
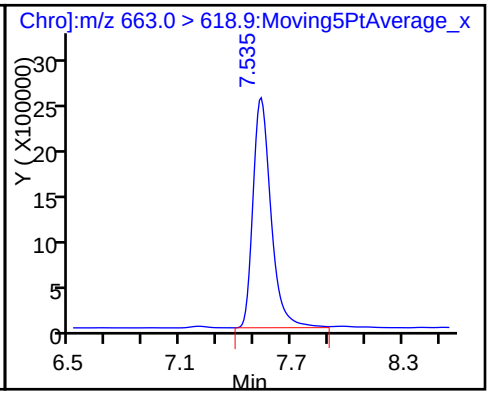


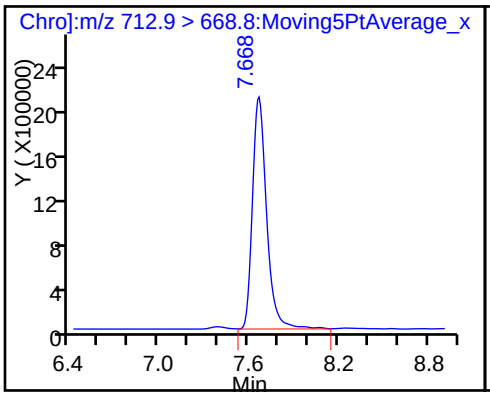
32 Perfluorooctane Sulfonamide



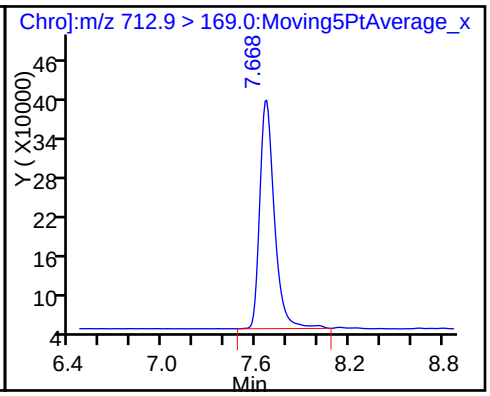
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



Manual Integration/User Assign Peak Report

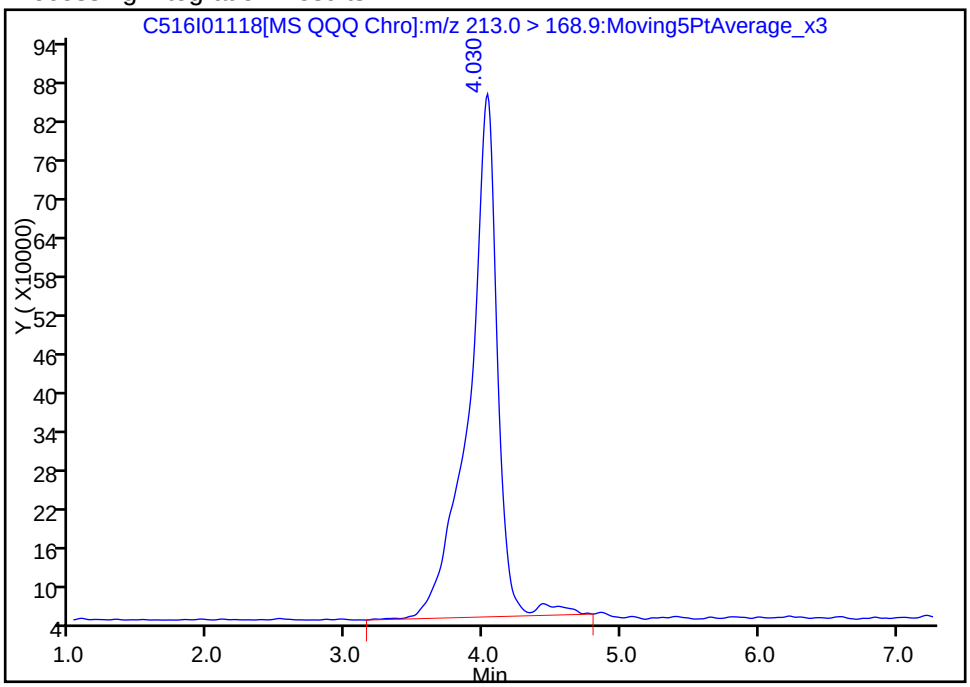
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01118.d
Injection Date: 02-Sep-2016 07:51:44 Instrument ID: LC_LCMS5
Lims ID: CCV PFC L6
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 105
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

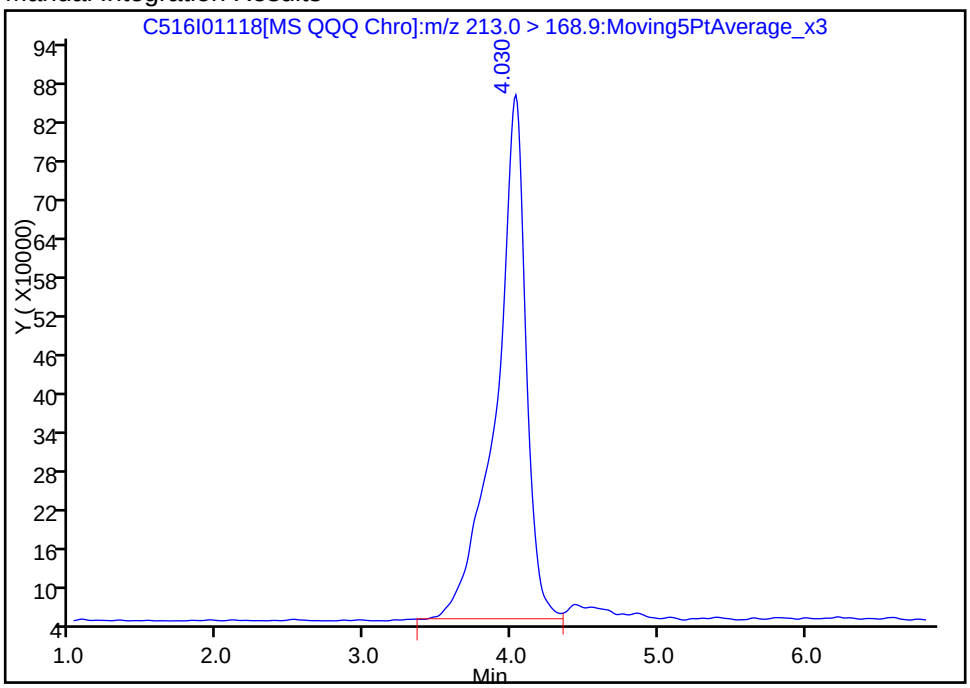
Processing Integration Results

RT: 4.03
Area: 11701906
Amount: 9.532607
Amount Units: ug/L



Manual Integration Results

RT: 4.03
Area: 11481321
Amount: 9.352947
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 11:48:58
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: CCV 280-340829/3 Calibration Date: 09/02/2016 13:09

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I02015.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.017		10.6	10.0	5.5	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.182		10.9	10.0	8.5	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.174		8.38	8.85	-5.3	30.0
Perfluorobutanesulfonic acid	Lin2		4.174		8.38	8.85	-5.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9325		10.5	10.0	5.0	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.963		9.37	9.45	-0.9	30.0
Perfluorohexanesulfonic acid	Lin2		3.963		9.37	9.45	-0.9	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8544		10.2	10.0	1.8	30.0
Perfluoroheptane Sulfonate	Lin2		1.062		9.22	9.52	-3.1	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.062		9.22	9.52	-3.1	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.041		10.6	10.0	6.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.124		10.5	9.55	10.2	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.039		9.82	10.0	-1.8	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9441		9.95	10.0	-0.5	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.084		10.5	9.65	9.3	30.0
Perfluorodecane Sulfonic acid	Lin2		1.084		10.5	9.65	9.3	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.446		11.1	10.0	11.4	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.035		10.7	10.0	6.5	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.190		9.40	10.0	-6.0	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.026		9.93	10.0	-0.7	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.8473		8.71	10.0	-12.9	30.0
13C8 PFOA	Lin1		0.8101		11.8	10.0	18.0	30.0
13C8 PFOS	Lin2		0.5464		9.08	9.56	-5.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02015.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 13:09:45 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:24 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:21:01

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.314	4.314	0.0		13920328	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.314	4.314	0.0	1.000	14158557	10.5			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.346	5.346	0.0	0.903	10446133	10.9			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.459	5.459	0.0	0.860	4708331	8.38			R
298.9 > 98.9	5.450	5.459	-0.009	0.859	1376078		3.42(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.459	5.459	0.0	0.860	4708331	8.38			
298.9 > 98.9	5.450	5.459	-0.009	0.859	1376078		3.42(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.923	5.923	0.0		8834920	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.923	5.923	0.0	1.000	8238685	10.5			
313.0 > 118.6	5.932	5.923	0.009	1.002	200843		41.02(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.348	6.348	0.0		1205707	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.348	6.348	0.0	1.000	4773028	9.36			
398.9 > 98.9	6.348	6.348	0.0	1.000	1415238		3.37(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.348	6.348	0.0	1.000	4773028	9.36			R
398.9 > 98.9	6.348	6.348	0.0	1.000	1415238		3.37(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.349	6.349	0.0	0.949	11669772	10.2			
363.0 > 168.9	6.349	6.349	0.0	0.949	3248461		3.59(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.678	6.678	0.0	0.959	4589124	9.22			
449.0 > 98.9	6.678	6.678	0.0	0.959	1324263		3.47(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.678	6.678	0.0	0.959	4589124	9.22			
449.0 > 98.9	6.678	6.678	0.0	0.959	1324263		3.47(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.688	6.688	0.0	1.000	11064666	11.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.688	6.688	0.0		13658780	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.688	6.688	0.0	1.000	14219990	10.6			
413.0 > 169.0	6.679	6.688	-0.009	0.999	4670471		3.04(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.960	6.960	0.0	1.000	2371160	9.08			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.961	6.961	0.0		4339570	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.951	6.951	0.0	0.999	4871247	10.5			R
498.9 > 98.9	6.961	6.951	0.010	1.000	1804787		2.70(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.971	6.971	0.0		10246704	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.971	6.971	0.0	1.000	10645318	9.82			
463.0 > 218.9	6.971	6.971	0.0	1.000	1383657		7.69(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.206	7.206	0.0		9705720	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.206	7.206	0.0	1.000	9162930	9.95			R
513.0 > 219.0	7.206	7.206	0.0	1.000	963396		9.51(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.385	7.385	0.0	1.061	4747924	10.5			
598.9 > 99.0	7.375	7.385	-0.010	1.060	1571257		3.02(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.385	7.385	0.0	1.061	4747924	10.5			
598.9 > 99.0	7.375	7.385	-0.010	1.060	1571257		3.02(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.404	7.404	0.0		5455225	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.404	7.404	0.0	1.000	7890440	11.1			R
563.0 > 268.9	7.404	7.404	0.0	1.000	1033505		7.63(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.573	7.573	0.0		12604409	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.574	7.574	0.0	1.000	13046626	10.6			
613.0 > 168.9	7.574	7.574	0.0	1.000	1619207		8.06(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.718	7.718	0.0		14898802	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.719	7.719	0.0	1.000	15290171	9.93			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.715	7.715	0.0	1.019	14999214	9.40			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.847	7.847	0.0	1.036	10679264	8.71			
712.9 > 169.0	7.847	7.847	0.0	1.036	1834614		5.82(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00084	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

Report Date: 06-Sep-2016 08:22:26 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02015.d

Injection Date: 02-Sep-2016 13:09:45 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

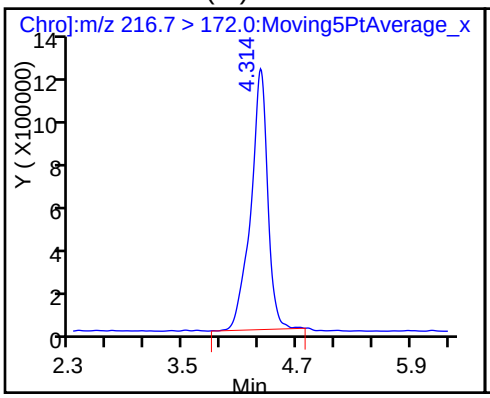
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

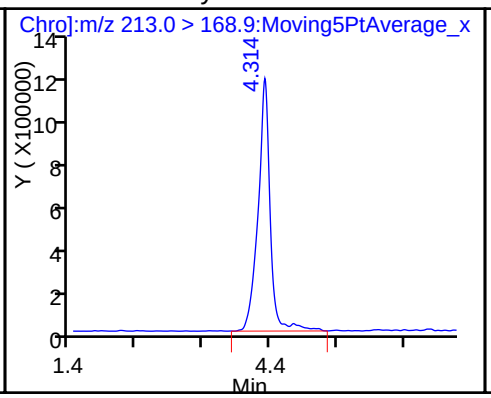
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

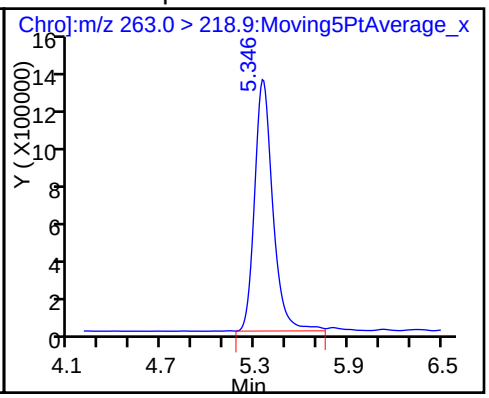
* 1 13C4 PFBA (IS)



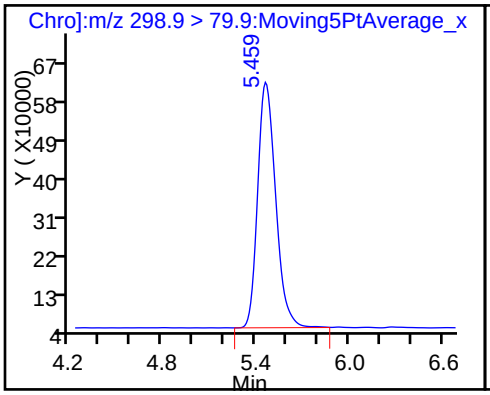
2 Perfluorobutyric acid



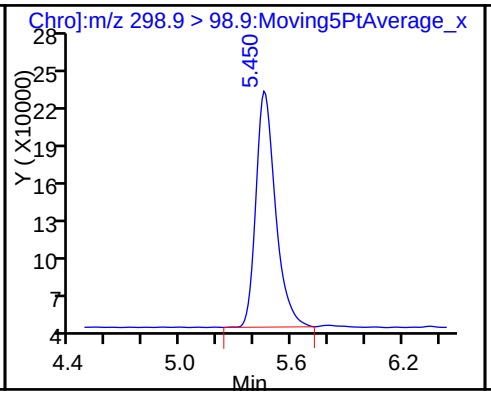
3 Perfluoropentanoic acid



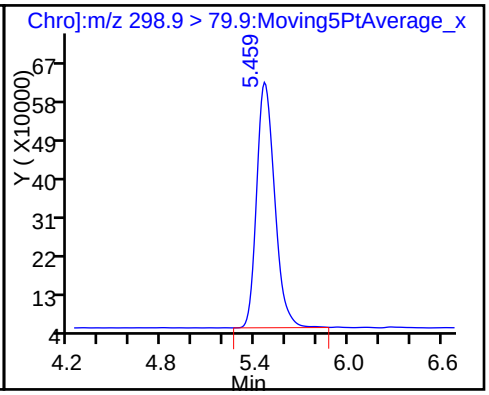
4 Perfluorobutane Sulfonate



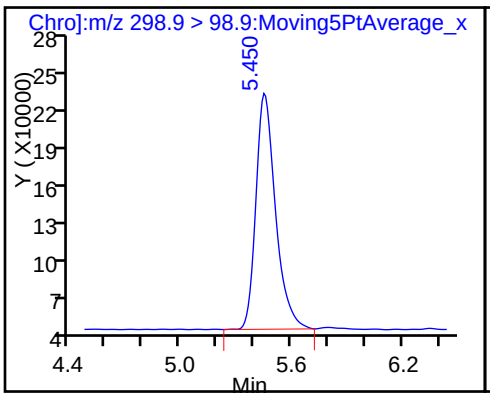
4 Perfluorobutane Sulfonate



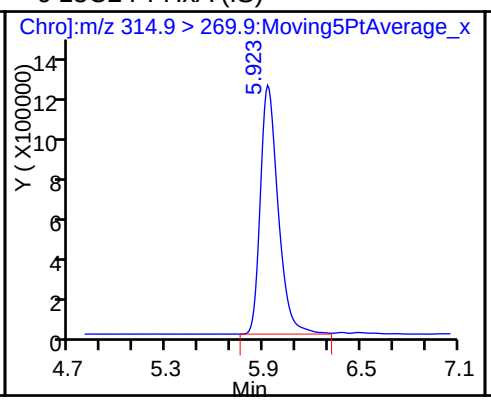
5 Perfluorobutanesulfonic acid



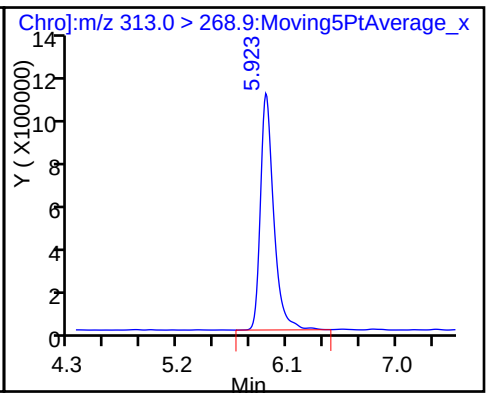
5 Perfluorobutanesulfonic acid



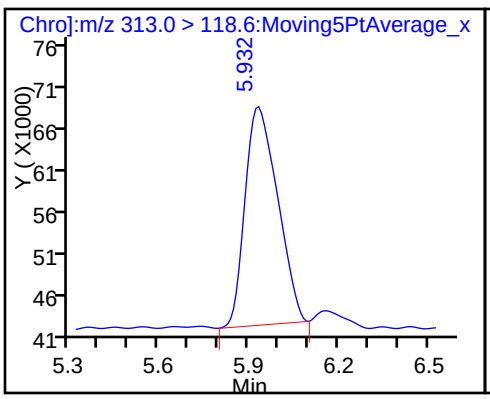
* 6 13C2 PFHxA (IS)



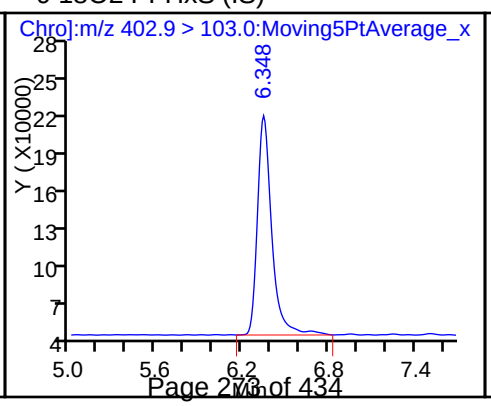
7 Perfluorohexanoic acid



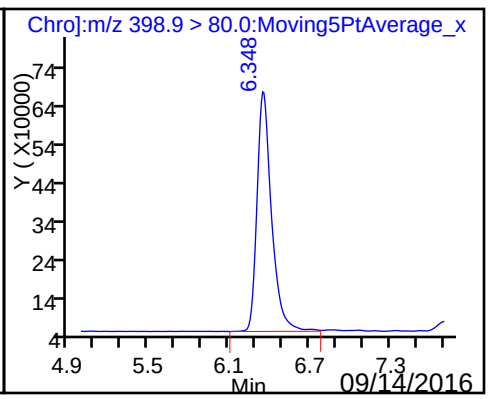
7 Perfluorohexanoic acid



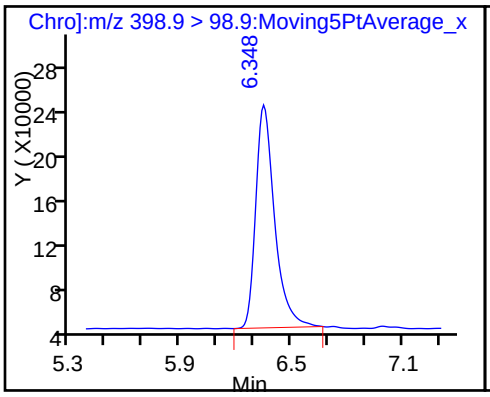
* 9 18O2 PFHxS (IS)



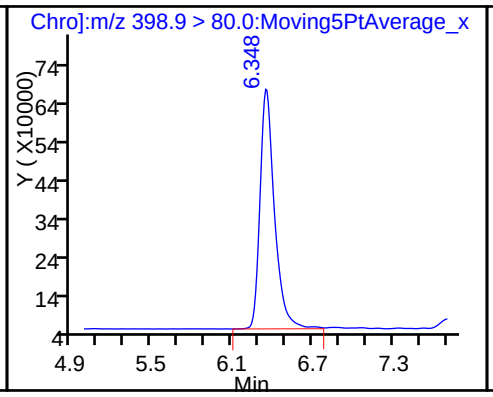
11 Perfluorohexanesulfonic acid



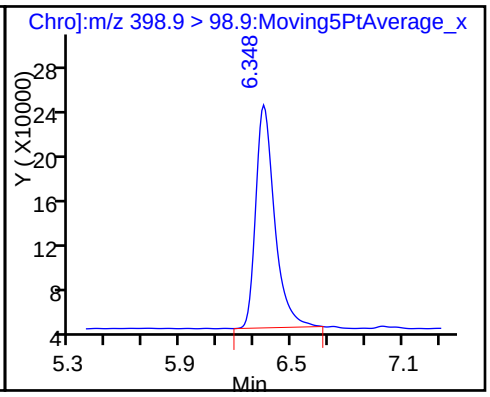
11 Perfluorohexanesulfonic acid



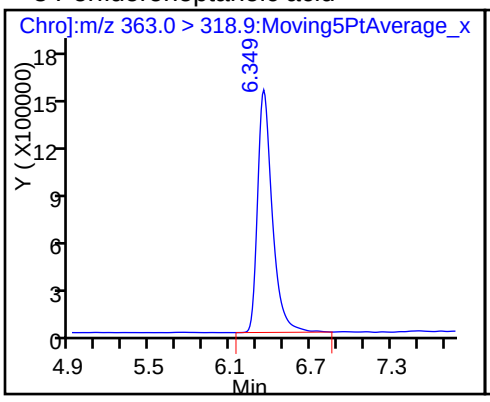
10 Perfluorohexane Sulfonate



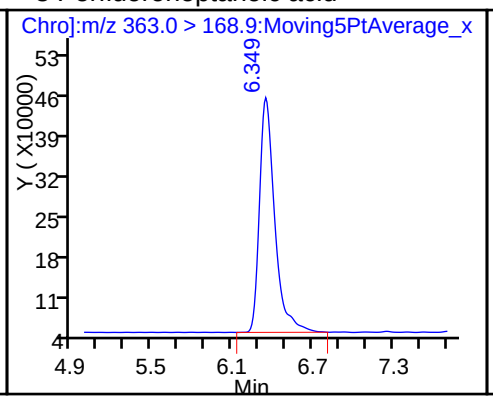
10 Perfluorohexane Sulfonate



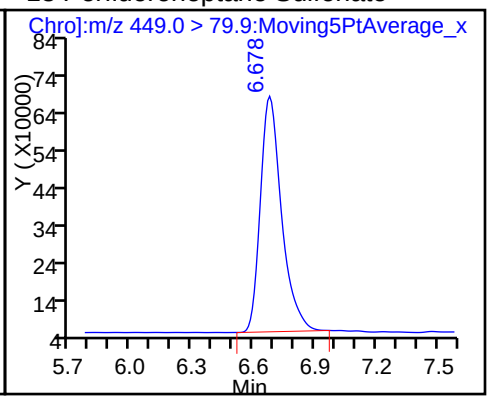
8 Perfluoroheptanoic acid



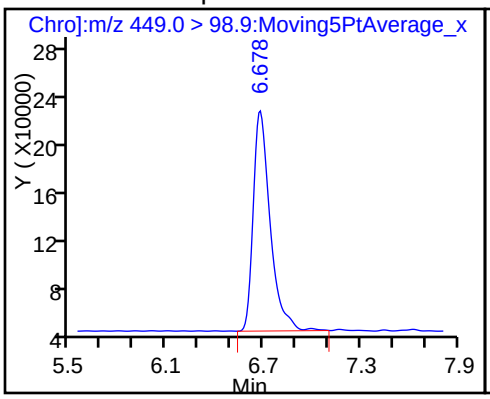
8 Perfluoroheptanoic acid



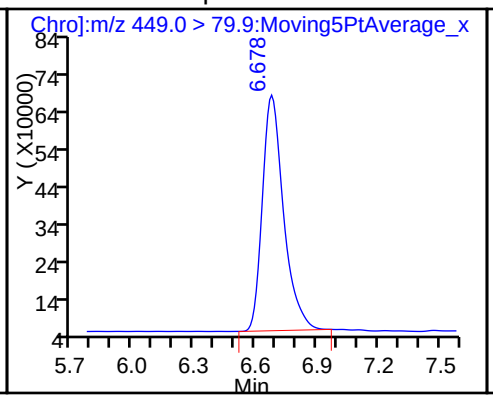
13 Perfluoroheptane Sulfonate



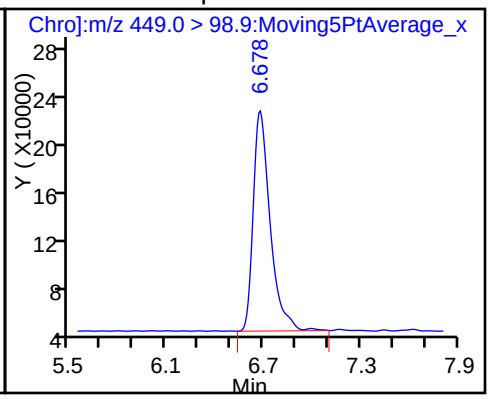
13 Perfluoroheptane Sulfonate



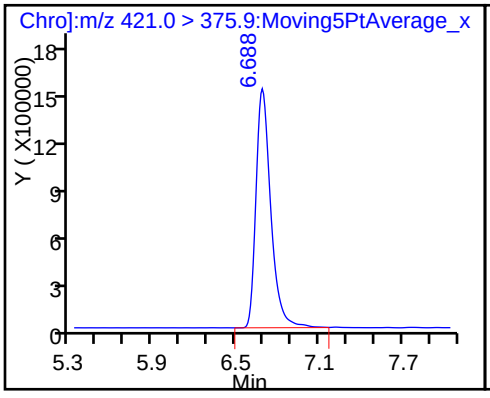
12 Perfluoroheptanesulfonic Acid



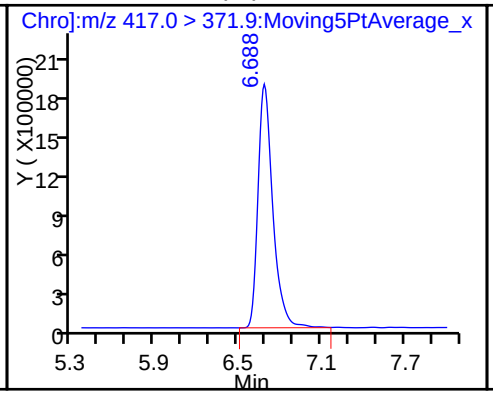
12 Perfluoroheptanesulfonic Acid



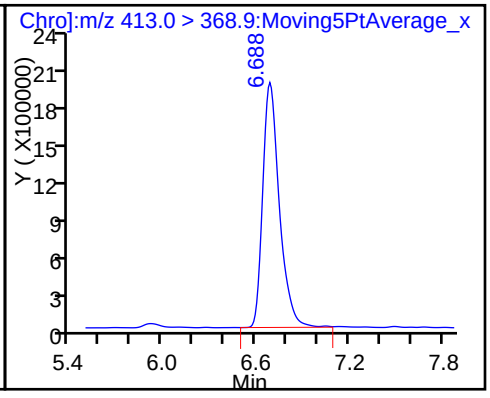
$ 14 13C8 PFOA



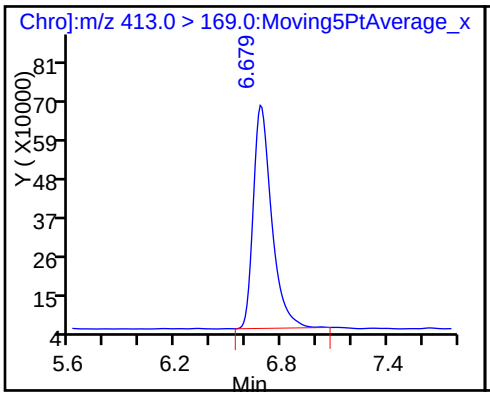
* 15 13C4 PFOA (IS)



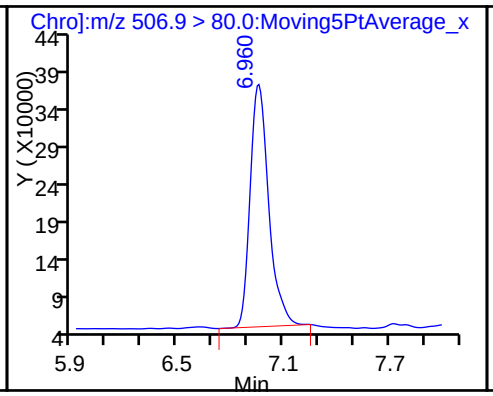
16 Perfluorooctanoic acid



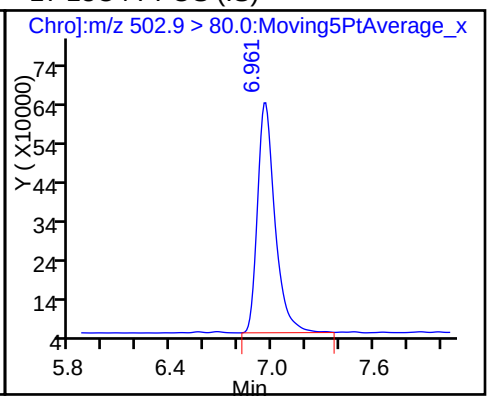
16 Perfluorooctanoic acid



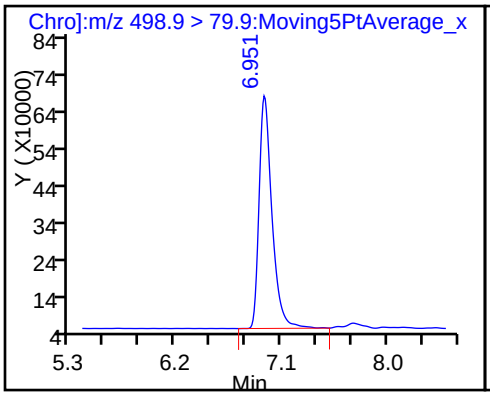
$ 18 13C8 PFOS



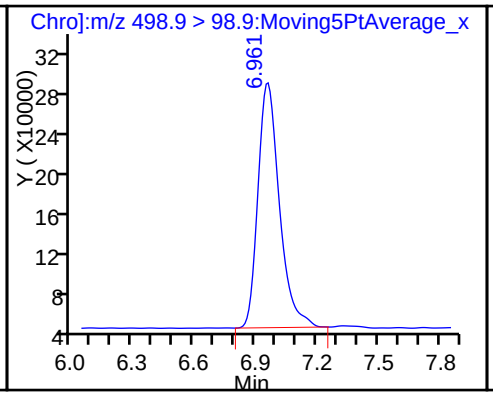
* 17 13C4 PFOS (IS)



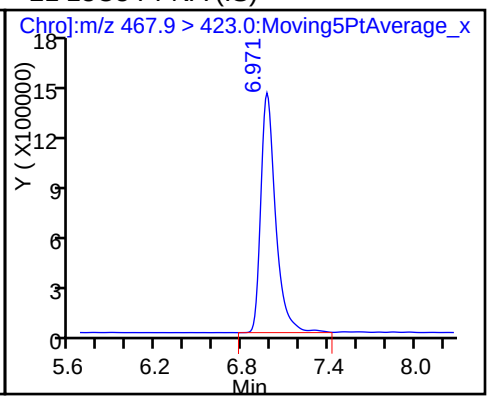
19 Perfluorooctane sulfonic acid



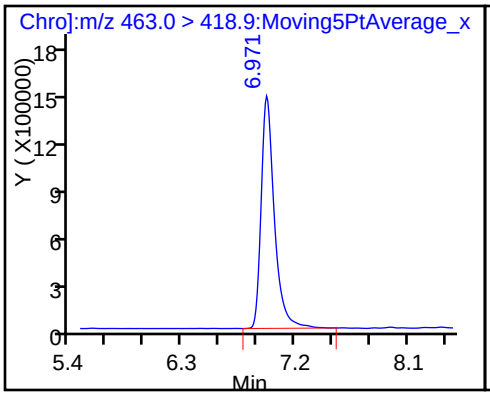
19 Perfluorooctane sulfonic acid



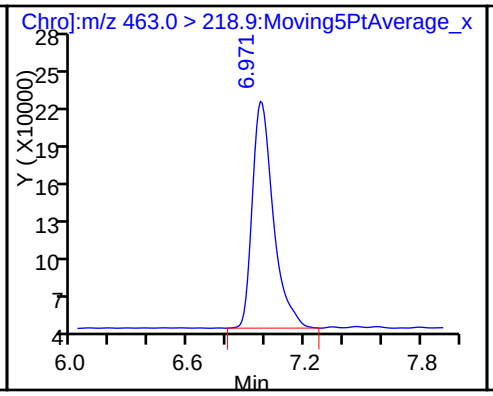
* 21 13C5 PFNA (IS)



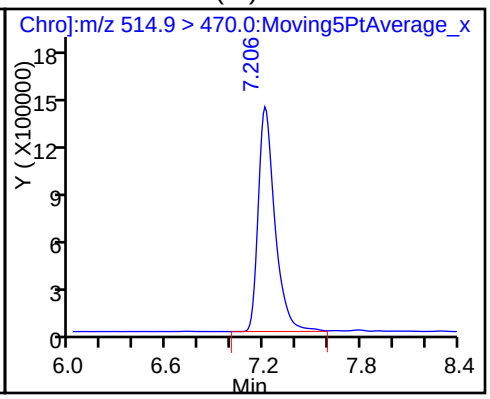
20 Perfluorononanoic acid



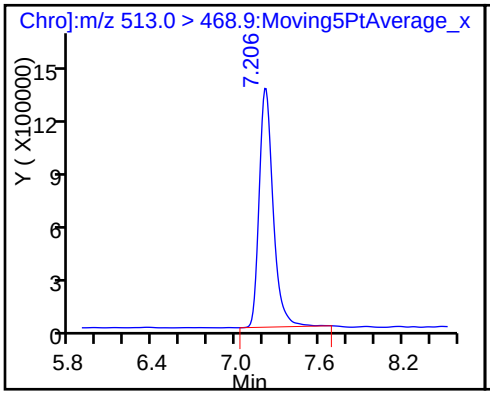
20 Perfluorononanoic acid



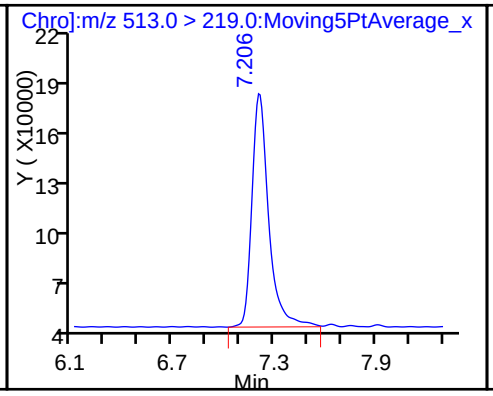
* 22 13C2 PFDA (IS)



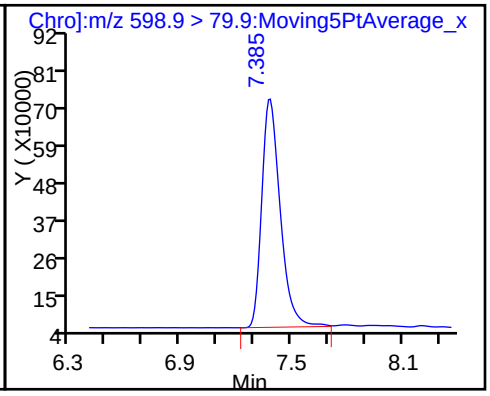
23 Perfluorodecanoic acid



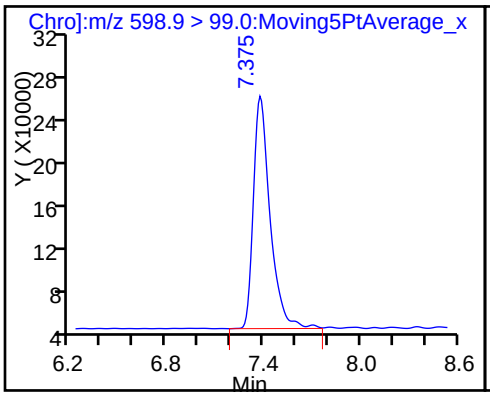
23 Perfluorodecanoic acid



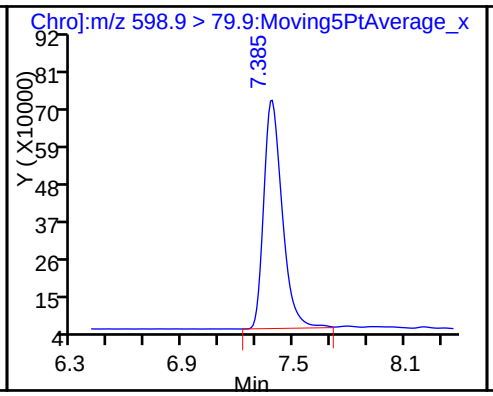
24 Perfluorodecane Sulfonic acid



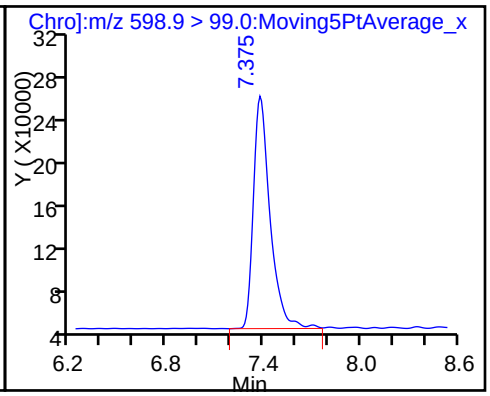
24 Perfluorodecane Sulfonic acid



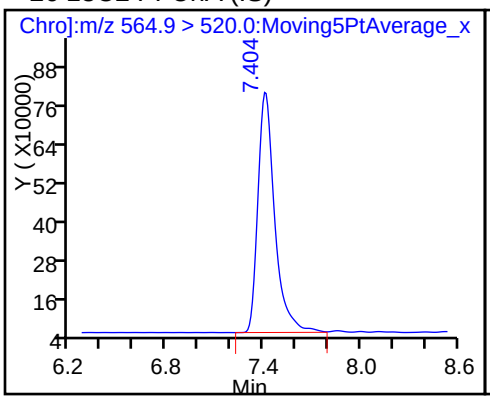
25 Perfluorodecane Sulfonate



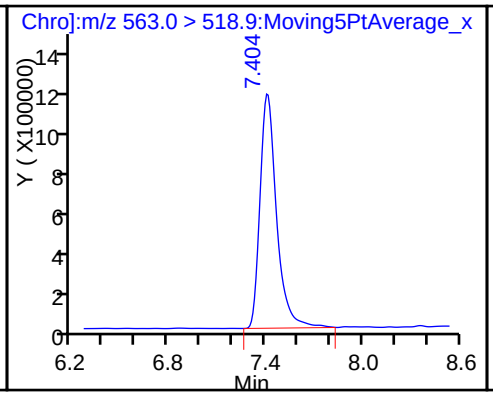
25 Perfluorodecane Sulfonate



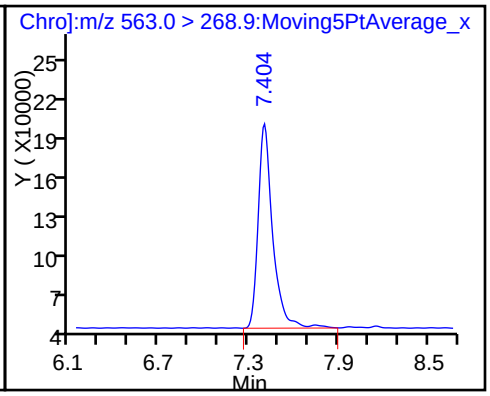
* 26 13C2 PFUnA (IS)



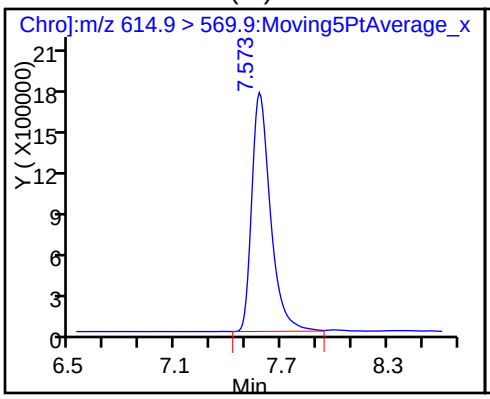
27 Perfluoroundecanoic acid



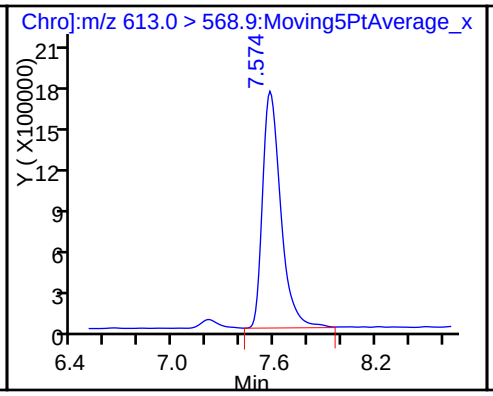
27 Perfluoroundecanoic acid



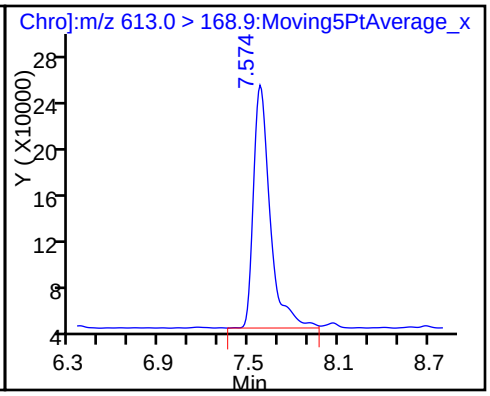
* 28 13C2 PFDoA (IS)



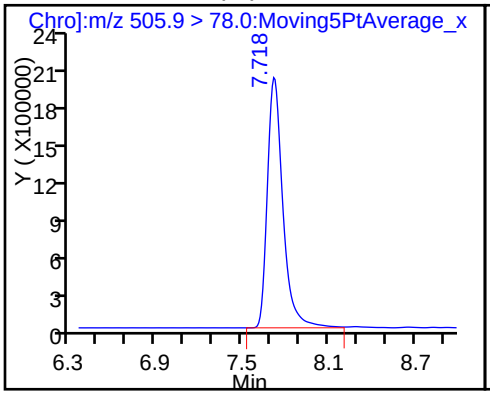
29 Perfluorododecanoic acid



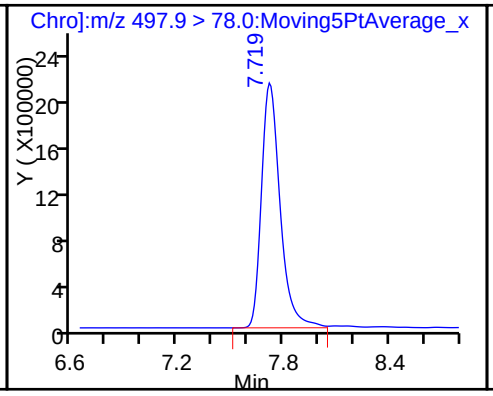
29 Perfluorododecanoic acid



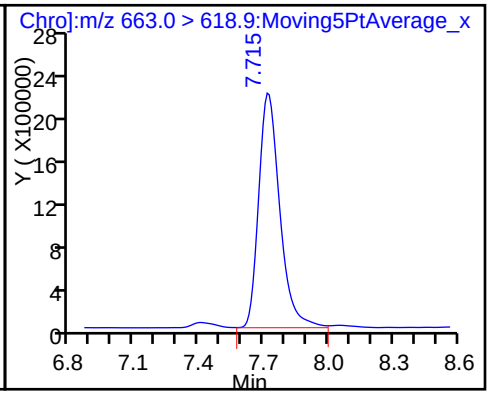
* 31 13C8 FOSA (IS)



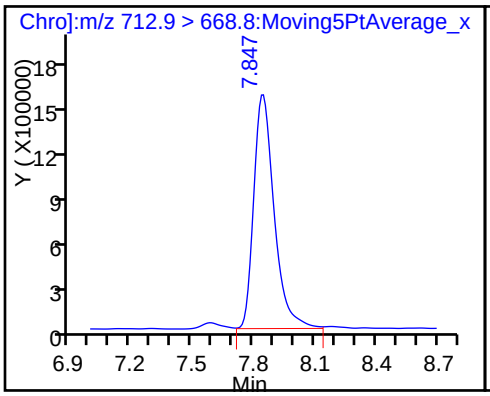
32 Perfluorooctane Sulfonamide



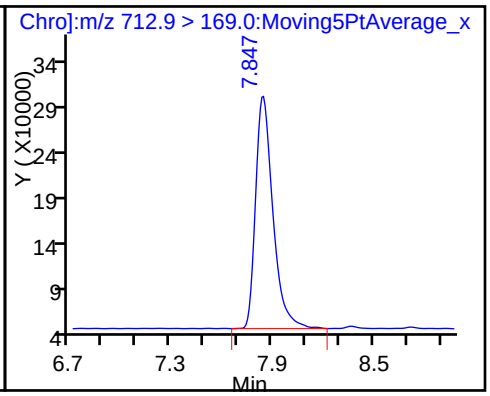
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Lab Sample ID: CCV 280-340829/10 Calibration Date: 09/02/2016 14:36

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I02022.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.8701		4.51	5.00	-9.7	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.153		5.25	5.00	5.0	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.232		4.25	4.43	-4.0	30.0
Perfluorobutanesulfonic acid	Lin2		4.232		4.25	4.43	-4.0	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8718		4.88	5.00	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.7716		4.59	5.00	-8.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.122		4.87	4.73	3.0	30.0
Perfluorohexanesulfonic acid	Lin2		4.122		4.87	4.73	3.0	30.0
Perfluoroheptane Sulfonate	Lin2		1.096		4.78	4.76	0.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.096		4.78	4.76	0.4	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.013		5.13	5.00	2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.095		5.16	4.78	8.1	30.0
Perfluorononanoic acid (PFNA)	Lin2		0.9368		4.44	5.00	-11.3	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.8943		4.70	5.00	-6.0	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.057		5.12	4.83	6.1	30.0
Perfluorodecane Sulfonic acid	Lin2		1.057		5.12	4.83	6.1	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.316		5.02	5.00	0.4	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9684		4.98	5.00	-0.4	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.152		4.52	5.00	-9.5	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		0.999		4.83	5.00	-3.5	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.8032		4.10	5.00	-17.9	30.0
13C8 PFOA	Lin1		0.8640		6.19	5.00	23.7	30.0
13C8 PFOS	Lin2		0.5869		4.83	4.78	1.1	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02022.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 14:36:05 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:46 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:32:15

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.029	4.029	0.0		15995542	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.030	4.030	0.0	1.000	6959164	4.51			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.128	5.128	0.0	0.897	5880064	5.25			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.260	5.260	0.0	0.854	2552608	4.25			
298.9 > 98.9	5.251	5.260	-0.009	0.853	784401		3.25(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.260	5.260	0.0	0.854	2552608	4.25			
298.9 > 98.9	5.251	5.260	-0.009	0.853	784401		3.25(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.714	0.0		10200810	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.724	5.724	0.0	1.002	4446314	4.88			
313.0 > 118.6	5.724	5.724	0.0	1.002	117742		37.76(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.158	0.0		1289472	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.159	6.159	0.0	1.000	2654905	4.87			
398.9 > 98.9	6.149	6.159	-0.010	0.998	827882		3.21(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.159	6.159	0.0	1.000	2654905	4.87			R
398.9 > 98.9	6.149	6.159	-0.010	0.998	827882		3.21(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.150	0.0	0.945	6281180	4.59			
363.0 > 168.9	6.150	6.150	0.0	0.945	1874469		3.35(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.498	6.498	0.0	0.958	2625565	4.78			
449.0 > 98.9	6.498	6.498	0.0	0.958	939679		2.79(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.498	6.498	0.0	0.958	2625565	4.78			
449.0 > 98.9	6.498	6.498	0.0	0.958	939679		2.79(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.508	0.0	1.000	7032671	6.18			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.508	0.0		16279989	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	1.000	8245468	5.13			
413.0 > 169.0	6.508	6.508	0.0	1.000	2609708		3.16(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.780	0.0	1.000	1411267	4.83			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.781	0.0		4809420	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.781	6.781	0.0	1.000	2629285	5.16			R
498.9 > 98.9	6.781	6.781	0.0	1.000	1009747		2.60(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.791	0.0		12267200	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.801	6.801	0.0	1.001	5746094	4.44			
463.0 > 218.9	6.791	6.801	-0.010	1.000	872709		6.58(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.045	7.045	0.0		11207137	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.036	7.036	0.0	0.999	5011435	4.70			R
513.0 > 219.0	7.036	7.036	0.0	0.999	492578		10.17(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.224	7.224	0.0	1.065	2565854	5.12			
598.9 > 99.0	7.224	7.224	0.0	1.065	797999		3.22(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.224	7.224	0.0	1.065	2565854	5.12			
598.9 > 99.0	7.224	7.224	0.0	1.065	797999		3.22(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.253	7.253	0.0		6554617	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.243	7.243	0.0	0.999	4312613	5.02			R
563.0 > 268.9	7.253	7.243	0.010	1.000	515295		8.37(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.431	7.431	0.0		14657036	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.432	7.432	0.0	1.000	7097043	4.98			
613.0 > 168.9	7.422	7.432	-0.010	0.999	767623		9.25(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.595	7.595	0.0		16308479	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.587	7.587	0.0	0.999	8147612	4.83			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.573	7.573	0.0	1.019	8438853	4.52			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.705	7.705	0.0	1.037	5886354	4.10			
712.9 > 169.0	7.715	7.705	0.010	1.038	906215		6.50(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00084	Amount Added:	10.00	Units: uL

Report Date: 06-Sep-2016 08:22:46 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02022.d

Injection Date: 02-Sep-2016 14:36:05 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

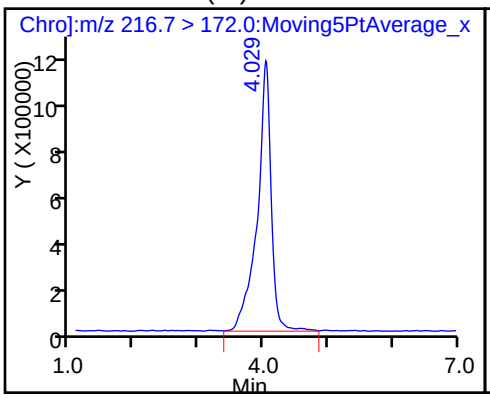
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 10

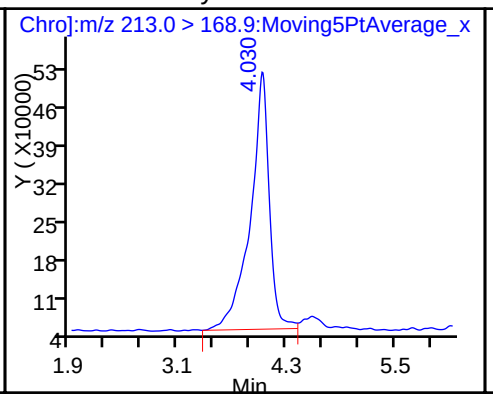
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

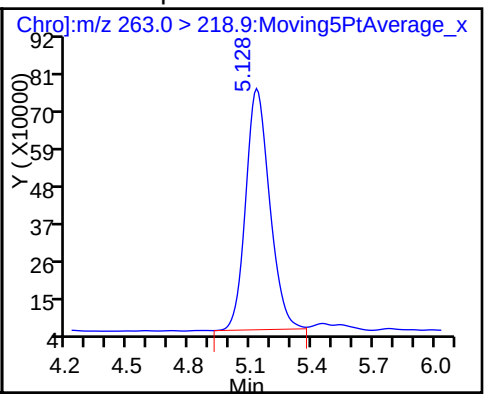
* 1 13C4 PFBA (IS)



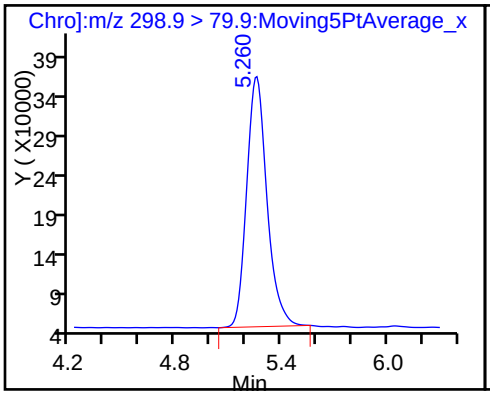
2 Perfluorobutyric acid



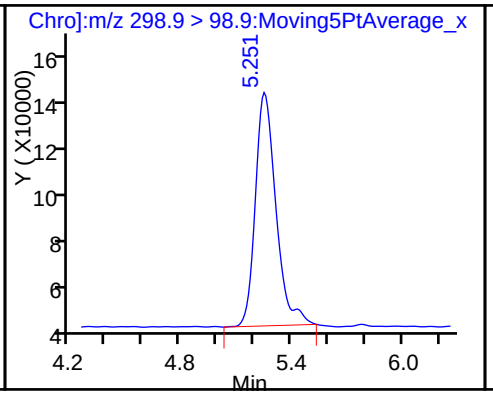
3 Perfluoropentanoic acid



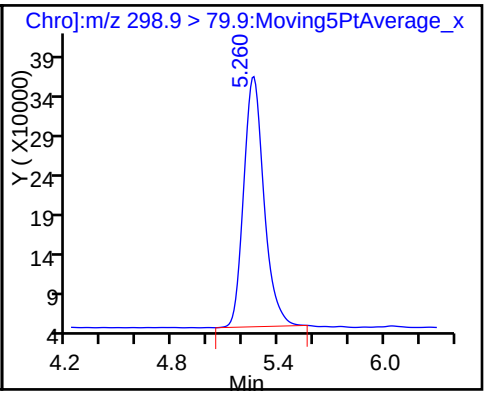
4 Perfluorobutane Sulfonate



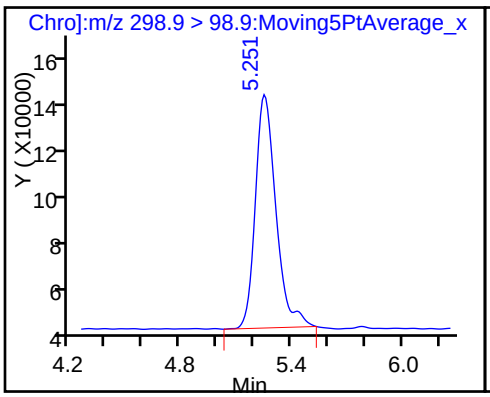
4 Perfluorobutane Sulfonate



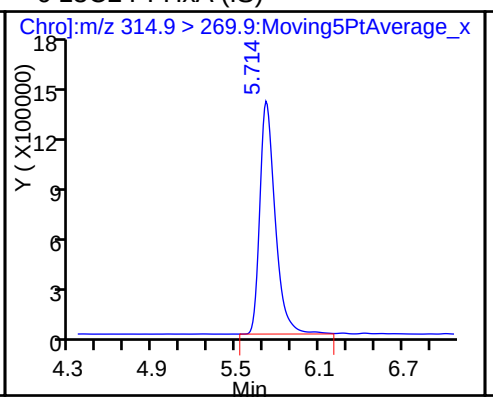
5 Perfluorobutanesulfonic acid



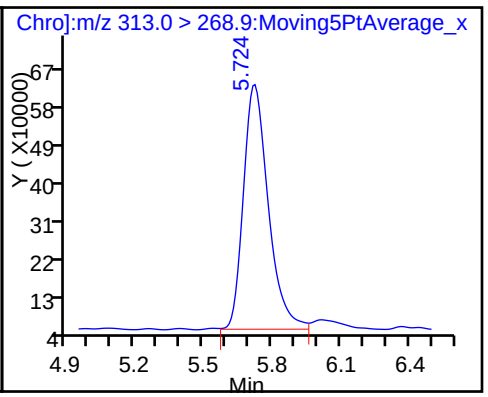
5 Perfluorobutanesulfonic acid



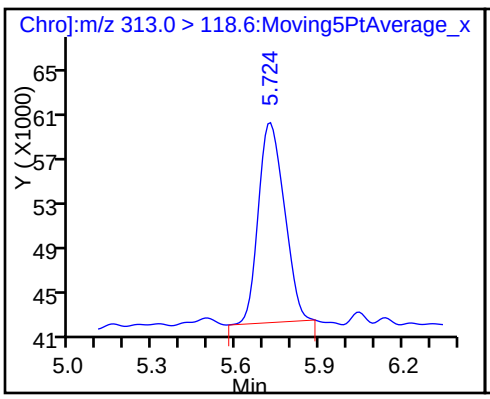
* 6 13C2 PFHxA (IS)



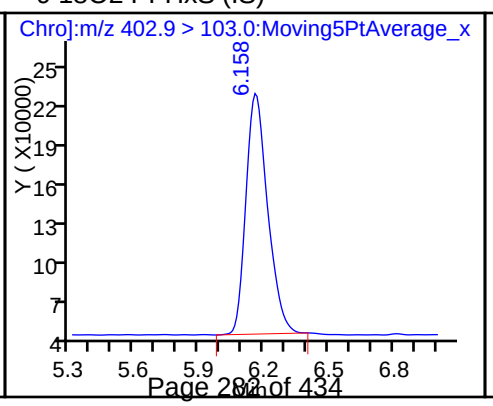
7 Perfluorohexanoic acid



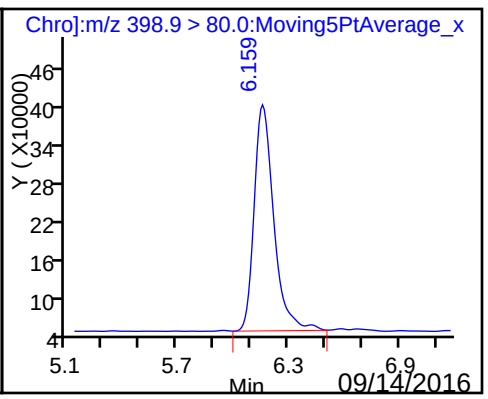
7 Perfluorohexanoic acid



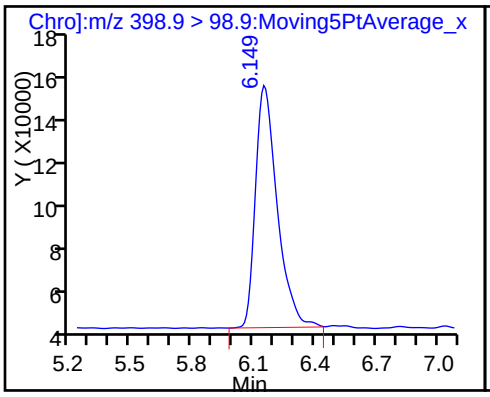
* 9 18O2 PFHxS (IS)



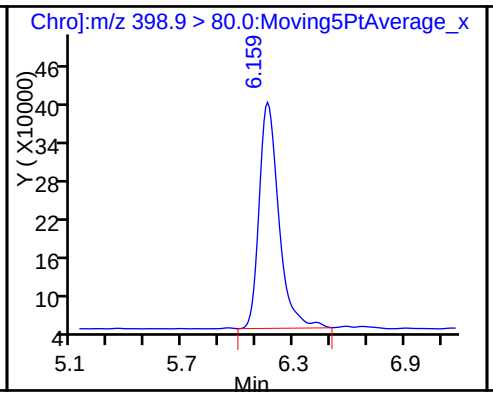
11 Perfluorohexanesulfonic acid



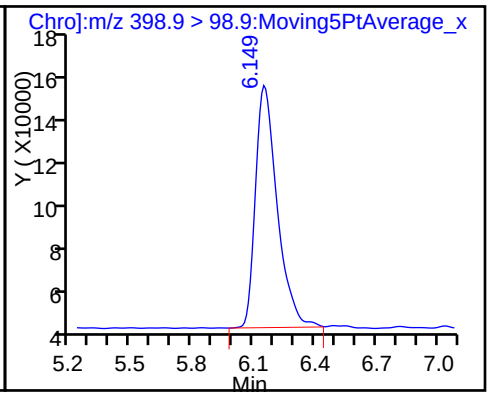
11 Perfluorohexanesulfonic acid



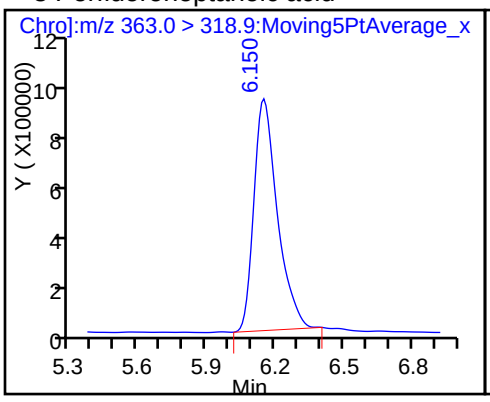
10 Perfluorohexane Sulfonate



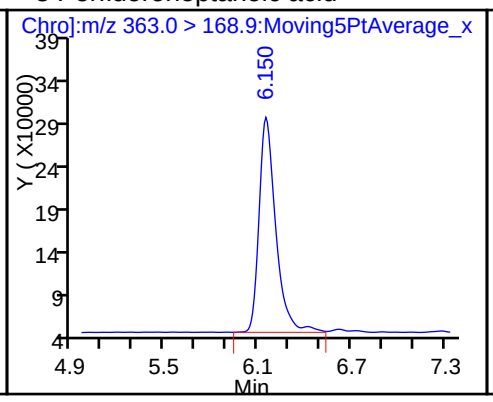
10 Perfluorohexane Sulfonate



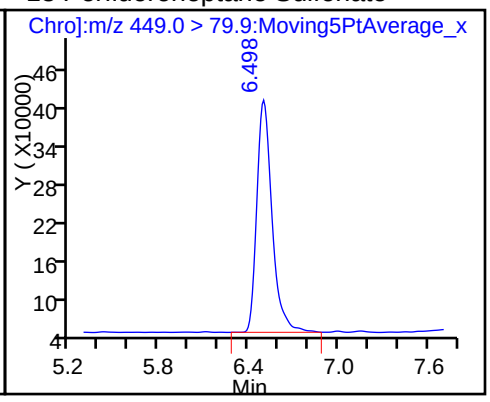
8 Perfluoroheptanoic acid



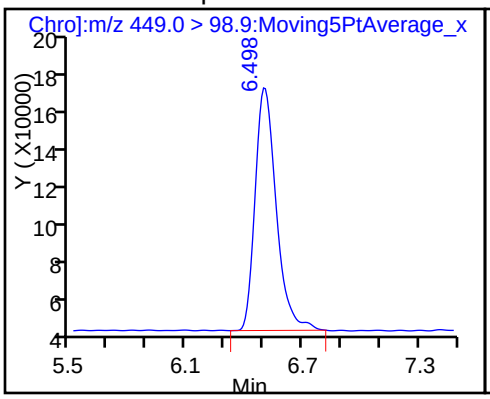
8 Perfluoroheptanoic acid



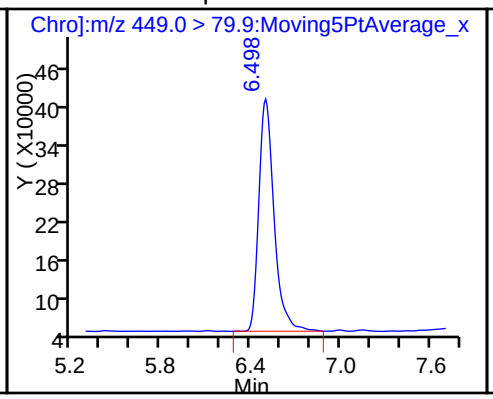
13 Perfluoroheptane Sulfonate



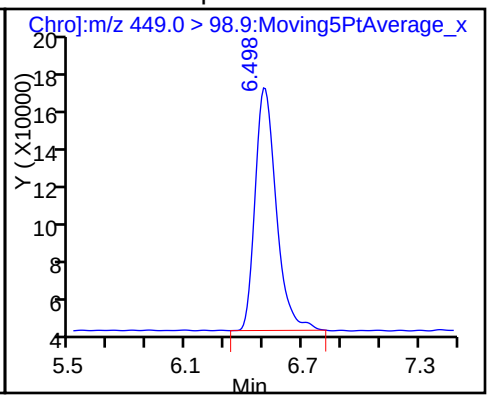
13 Perfluoroheptane Sulfonate



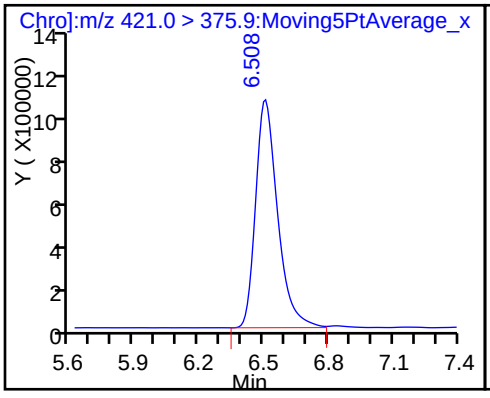
12 Perfluoroheptanesulfonic Acid



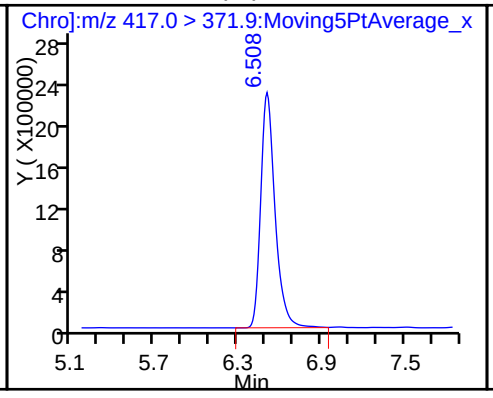
12 Perfluoroheptanesulfonic Acid



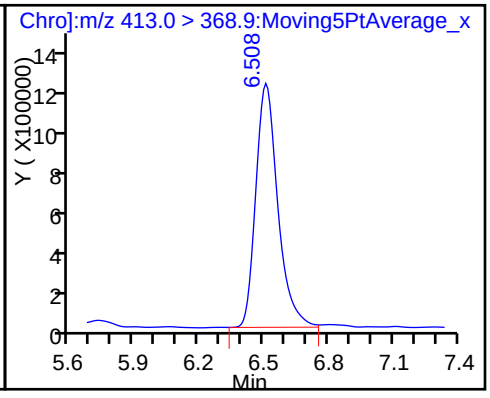
$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



16 Perfluorooctanoic acid



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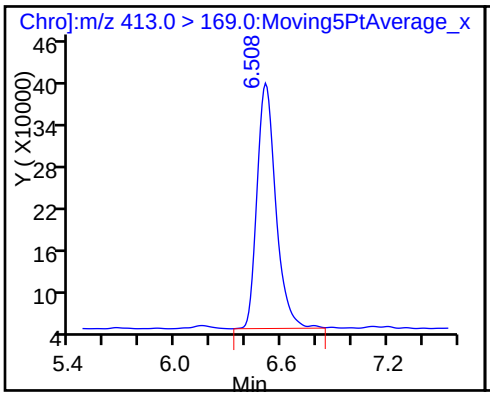
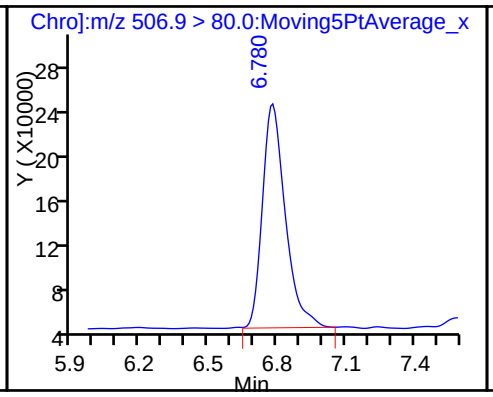


$ 18 13C8 PFOS



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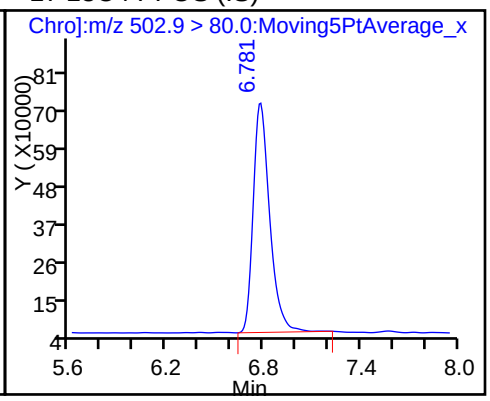
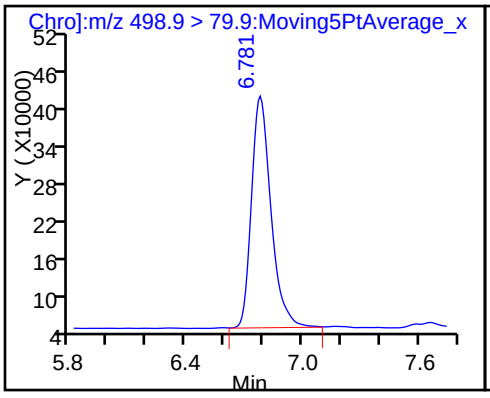
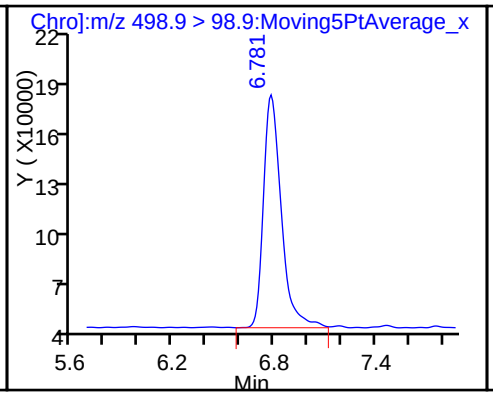


19 Perfluorooctane sulfonic acid



19 Perfluorooctane sulfonic acid



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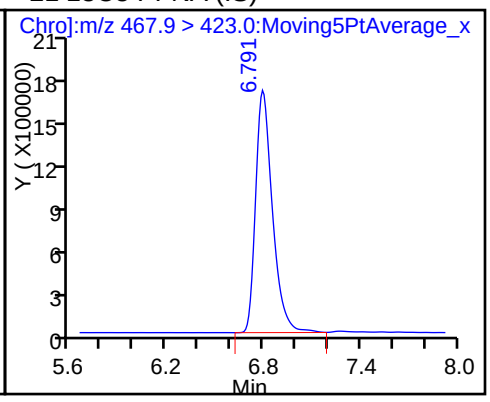
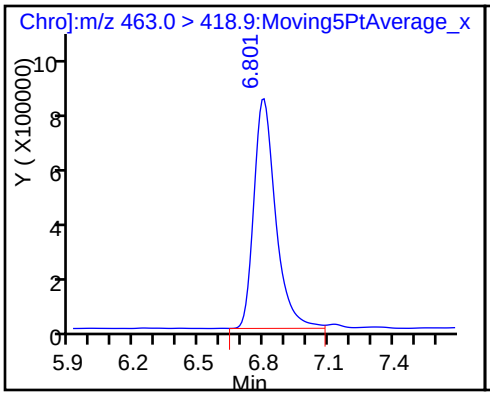


20 Perfluorononanoic acid



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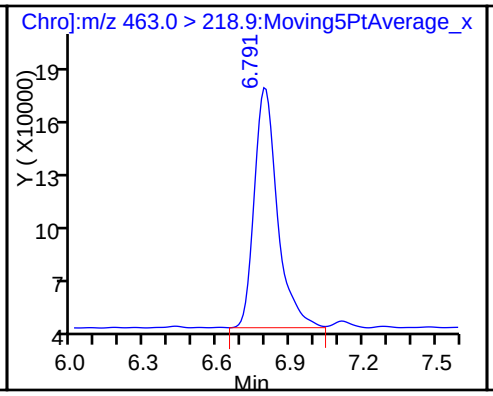

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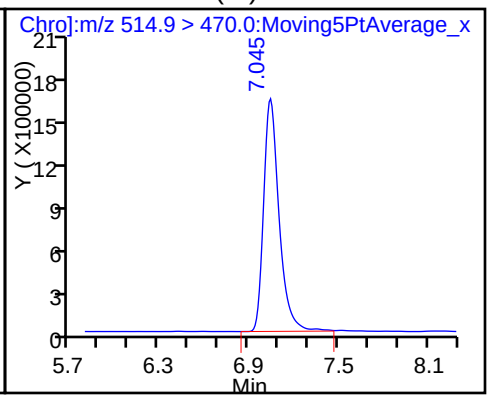

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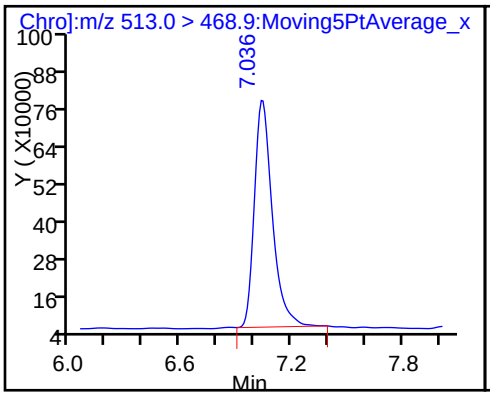
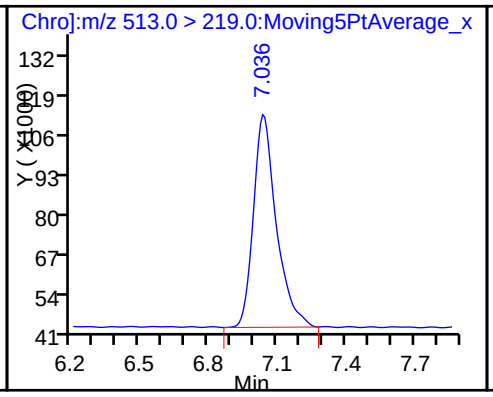
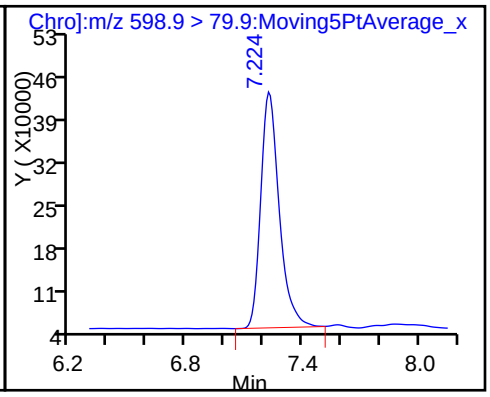


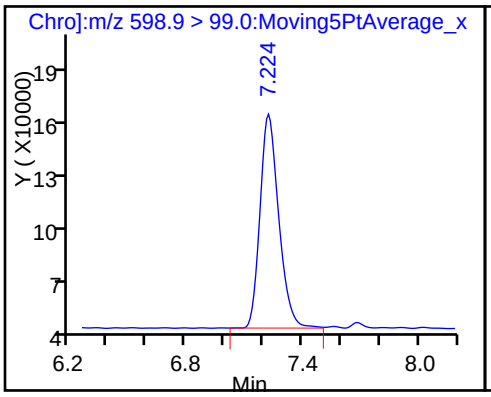
23 Perfluorodecanoic acid



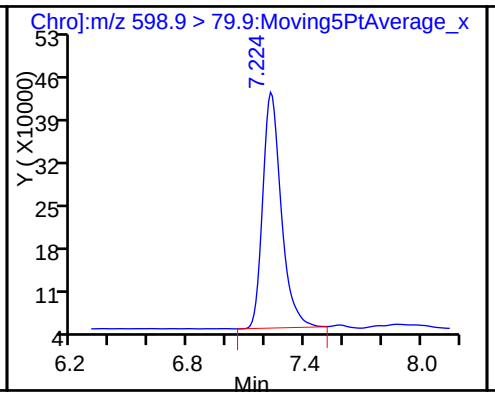
24 Perfluorodecane Sulfonic acid



24 Perfluorodecane Sulfonic acid



25 Perfluorodecane Sulfonate



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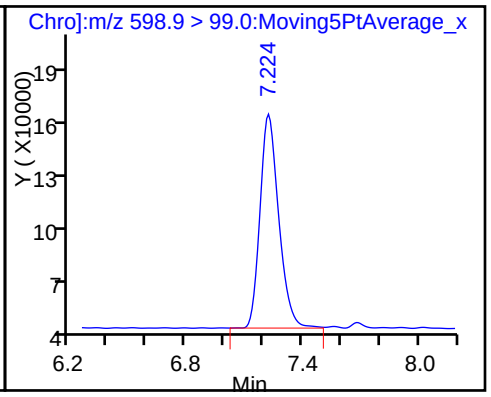
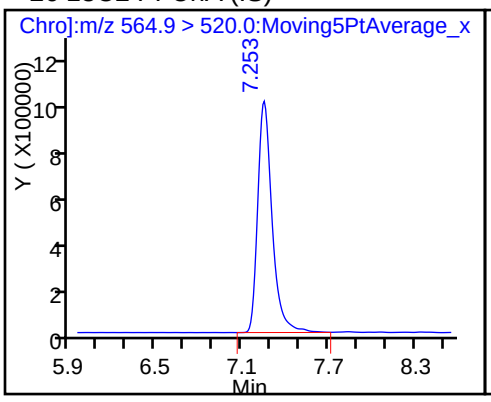


* 26 13C2 PFUnA (IS)



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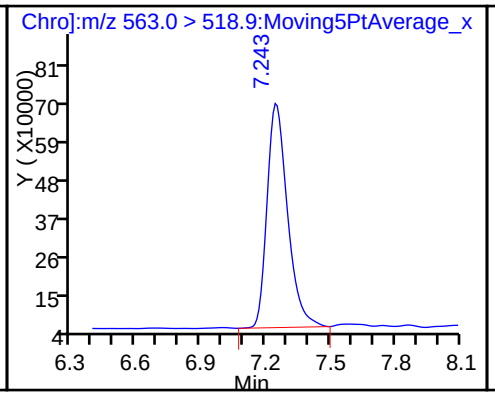
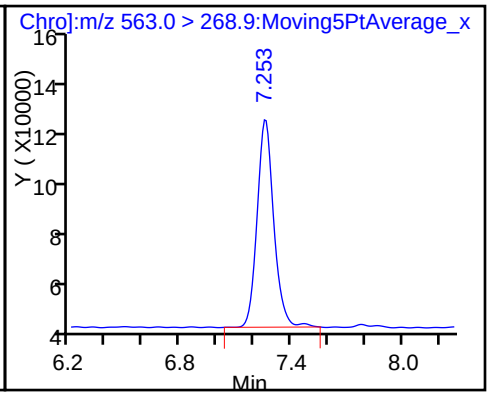
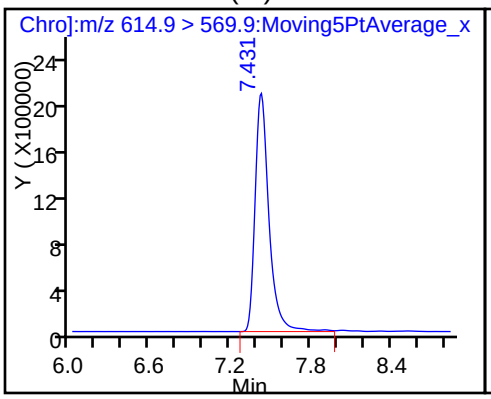


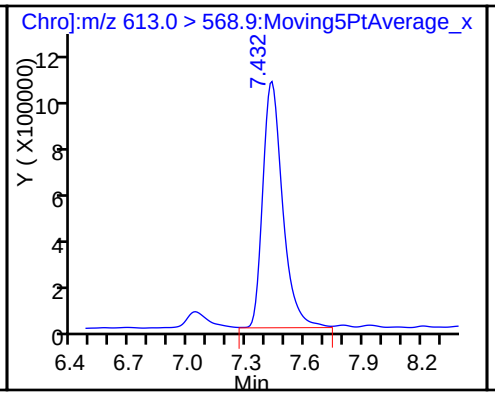
27 Perfluoroundecanoic acid



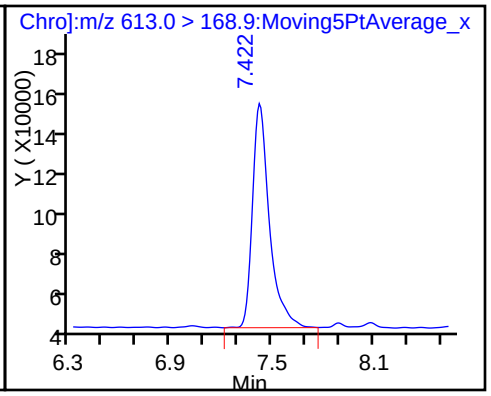
* 28 13C2 PFDoA (IS)



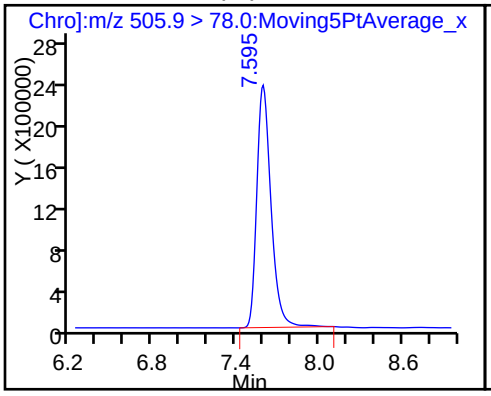
29 Perfluorododecanoic acid



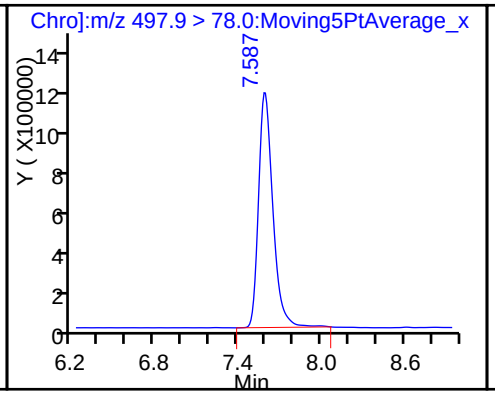
29 Perfluorododecanoic acid



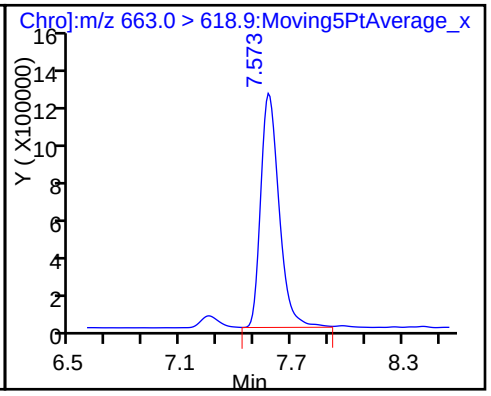
* 31 13C8 FOSA (IS)



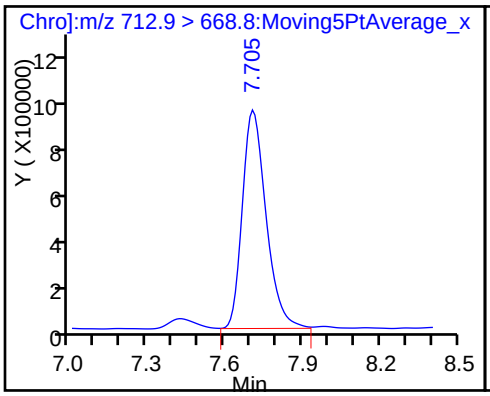
32 Perfluorooctane Sulfonamide



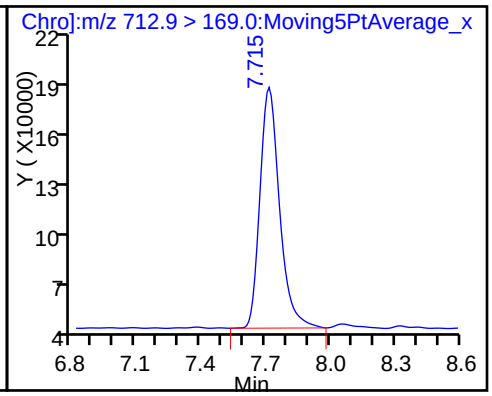
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-339617/1-A

Matrix: Water | Lab File ID: PC516I01028.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 08/25/2016 20:40

Sample wt/vol: 250(mL) | Date Analyzed: 09/01/2016 13:23

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340408 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	120		60-155
STL01054	13C8 PFOS	111		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01028.d
Lims ID: MB 280-339617/1-A
Client ID:
Sample Type: MB
Inject. Date: 01-Sep-2016 13:23:04 ALS Bottle#: 0 Worklist Smp#: 15
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-339617/1-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:36 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:49:45

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.963	4.058	-0.095		14478015	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		4.068				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.100				ND			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.222				ND			
298.9 > 98.9		5.222							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.232				ND			
298.9 > 98.9		5.232							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.657	5.686	-0.029		10335088	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.686				ND			
313.0 > 118.6		5.686							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.112				ND			
363.0 > 168.9		6.112							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.092	6.120	-0.028		1202623	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.111				ND			
398.9 > 98.9		6.111							
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.121				ND			
398.9 > 98.9		6.121							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.451				ND			
449.0 > 98.9		6.451							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.451				ND			
449.0 > 98.9		6.451							
$ 14 13C8 PFOA									
421.0 > 375.9	6.423	6.461	-0.038	1.000	12093886	11.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.423	6.461	-0.038		14962559	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.461				ND			
413.0 > 169.0		6.461							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.695	6.733	-0.038		4649653	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	7.586	6.724	0.862	1.133	5288	0.0831			
498.9 > 98.9	7.548	6.724	0.824	1.127	3327		1.59(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.695	6.733	-0.038	1.000	2865202	10.3			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.715	6.753	-0.038		11841621	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.753				ND			
463.0 > 218.9		6.753							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.960	6.997	-0.037		11169377	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		6.998				ND			
513.0 > 219.0		6.998							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.167				ND			
598.9 > 99.0		7.167							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.176				ND			
598.9 > 99.0		7.176							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.177	7.205	-0.028		5721879	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.205				ND			
563.0 > 268.9		7.205							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.356	7.384	-0.028		10948559	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.384				ND			
613.0 > 168.9		7.384							
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.530				ND			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.545				ND			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.519	7.529	-0.010		569674	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.677				ND			
712.9 > 169.0		7.677							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

Report Date: 02-Sep-2016 11:52:44 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01028.d

Injection Date: 01-Sep-2016 13:23:04 Instrument ID: LC_LCMS5

Lims ID: MB 280-339617/1-A

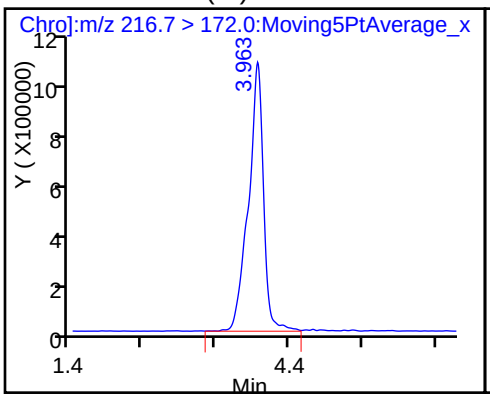
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 15

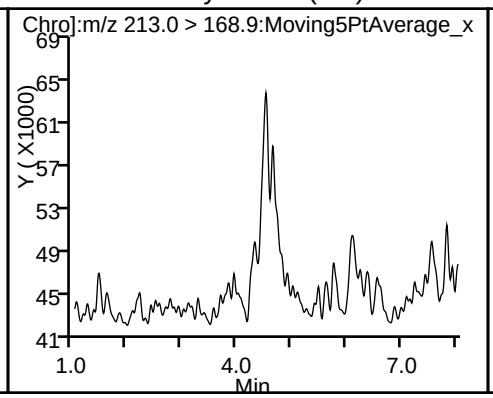
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

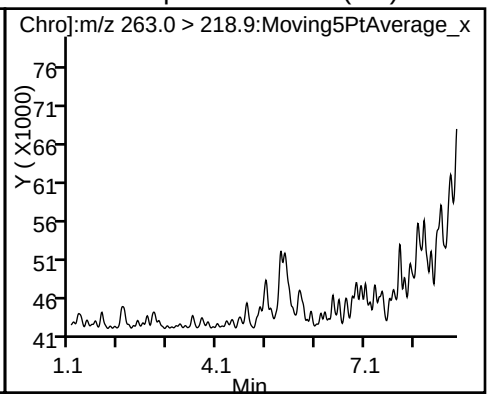
* 1 13C4 PFBA (IS)



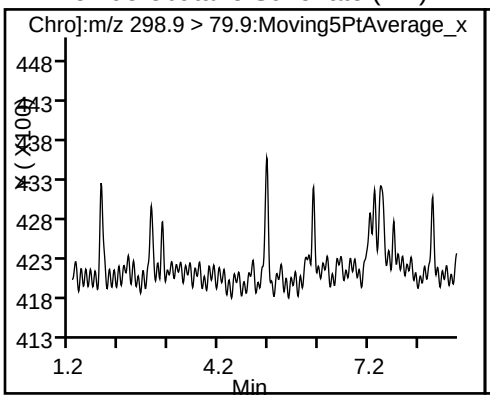
2 Perfluorobutyric acid (ND)



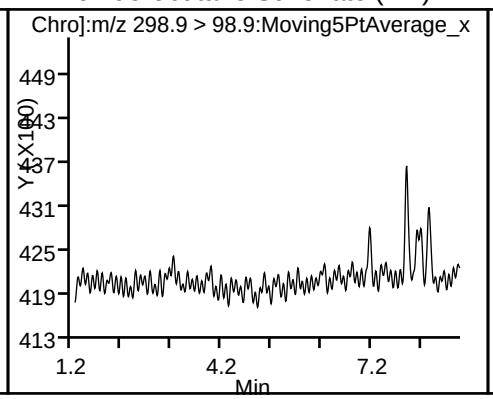
3 Perfluoropentanoic acid (ND)



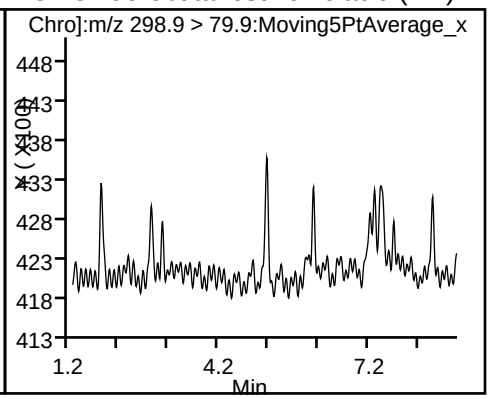
4 Perfluorobutane Sulfonate (ND)



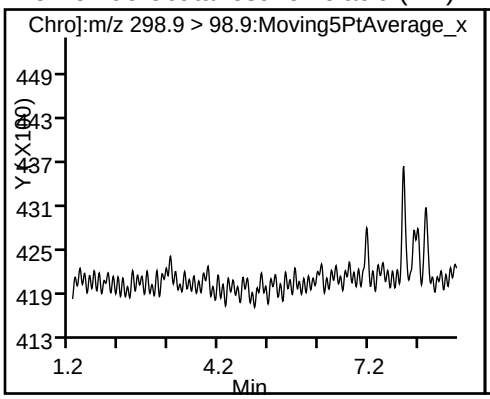
4 Perfluorobutane Sulfonate (ND)



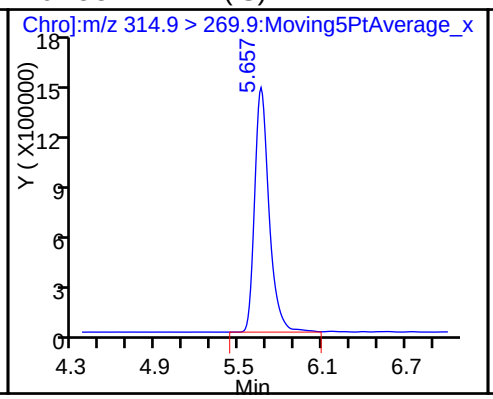
5 Perfluorobutanesulfonic acid (ND)



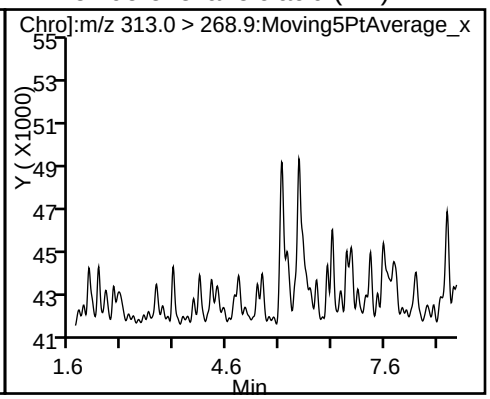
5 Perfluorobutanesulfonic acid (ND)



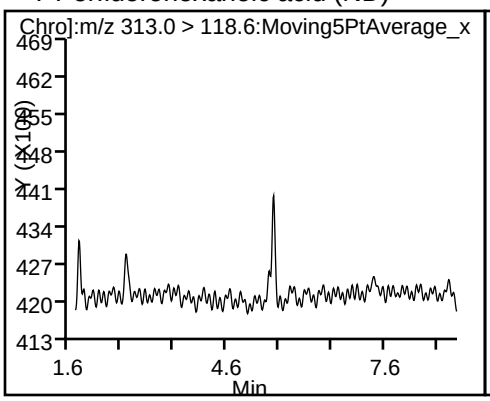
* 6 13C2 PFHxA (IS)



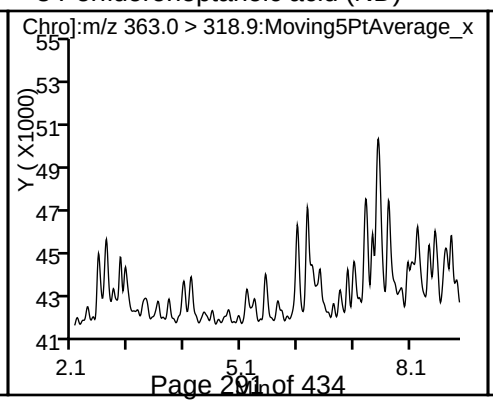
7 Perfluorohexanoic acid (ND)



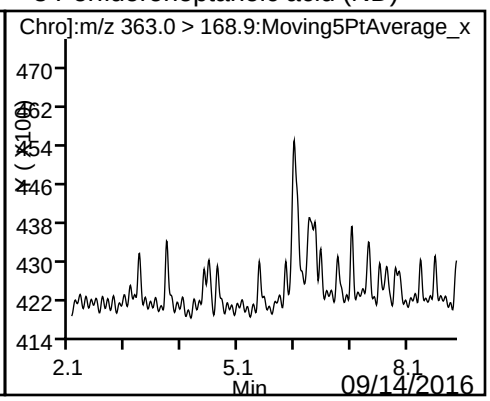
7 Perfluorohexanoic acid (ND)



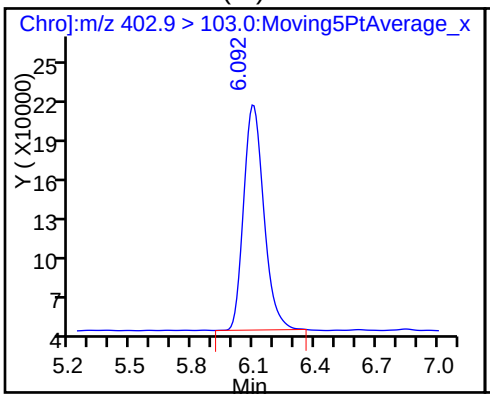
8 Perfluoroheptanoic acid (ND)



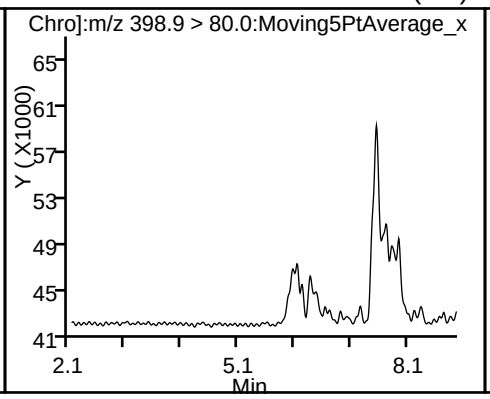
8 Perfluoroheptanoic acid (ND)



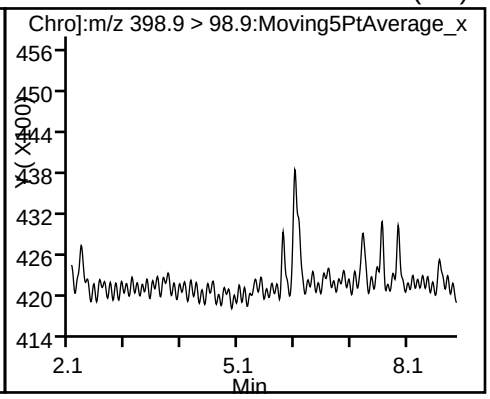
* 9 18O2 PFHxS (IS)



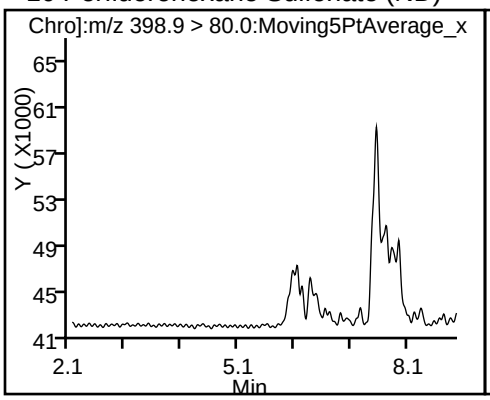
11 Perfluorohexanesulfonic acid (ND)



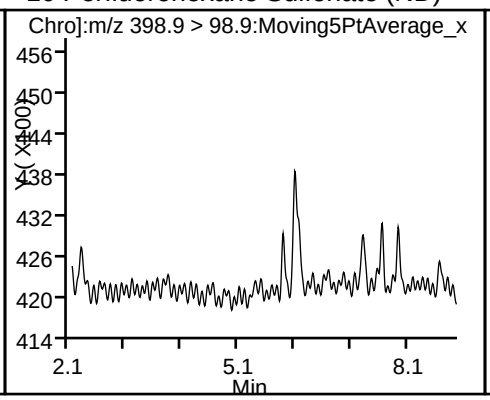
11 Perfluorohexanesulfonic acid (ND)



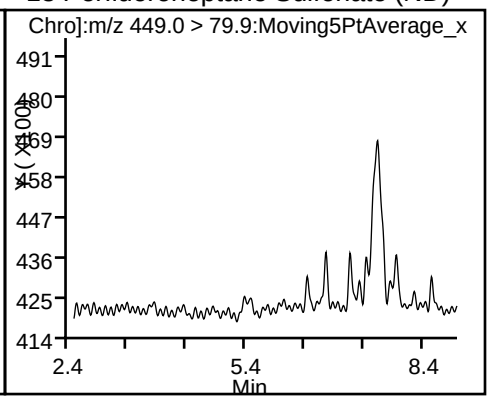
10 Perfluorohexane Sulfonate (ND)



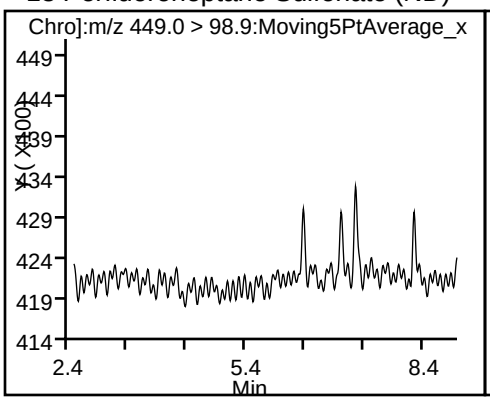
10 Perfluorohexane Sulfonate (ND)



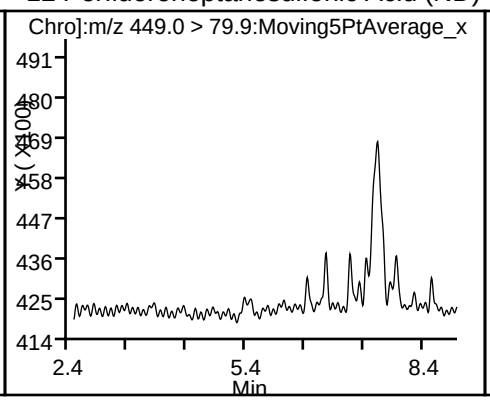
13 Perfluoroheptane Sulfonate (ND)



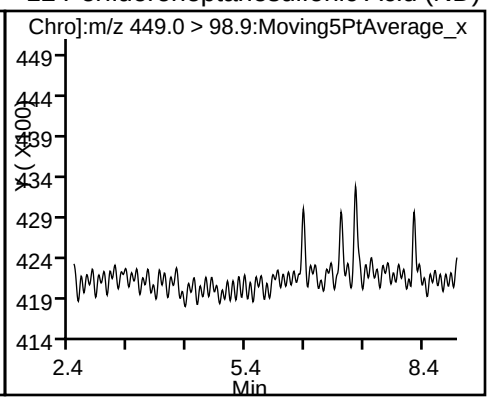
13 Perfluoroheptane Sulfonate (ND)



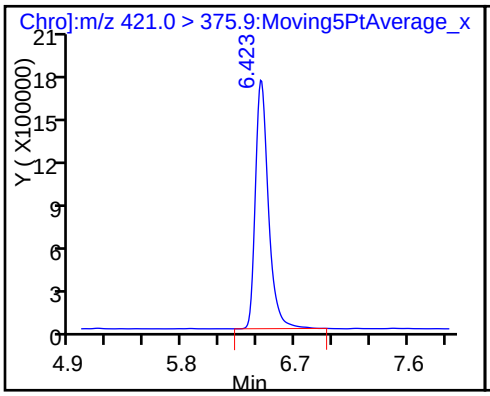
12 Perfluoroheptanesulfonic Acid (ND)



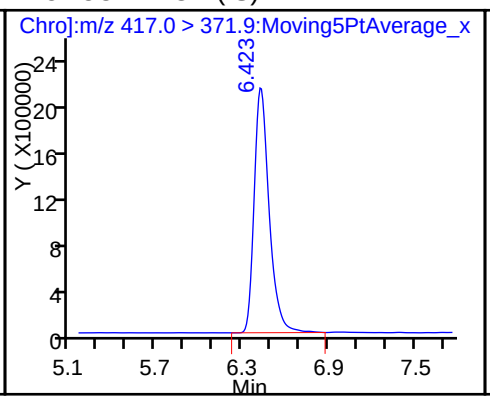
12 Perfluoroheptanesulfonic Acid (ND)



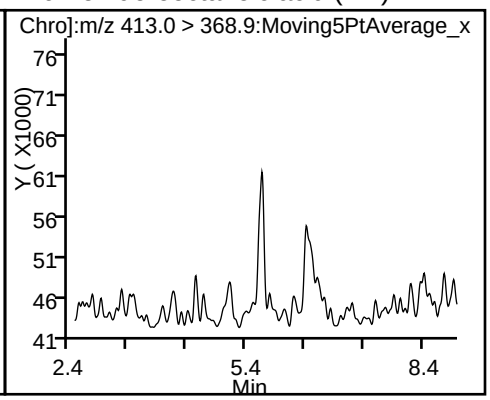
$ 14 13C8 PFOA



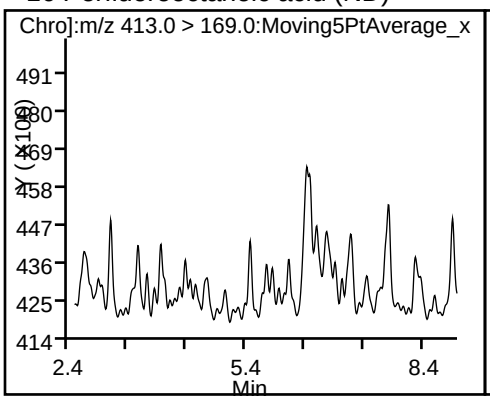
* 15 13C4 PFOA (IS)



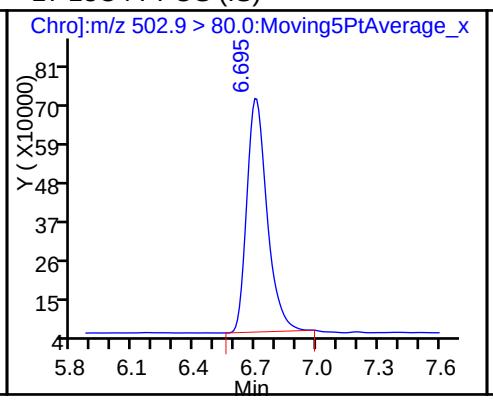
16 Perfluorooctanoic acid (ND)



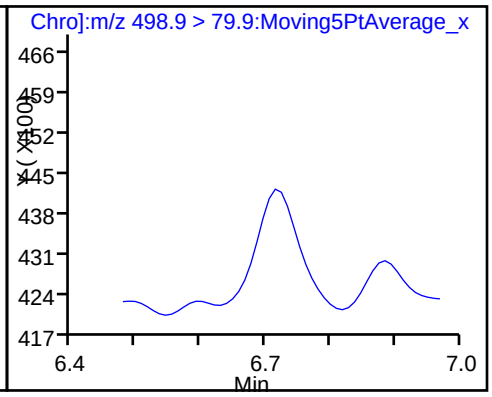
16 Perfluorooctanoic acid (ND)



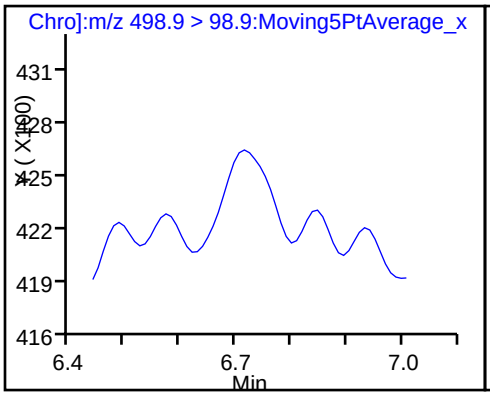
* 17 13C4 PFOS (IS)



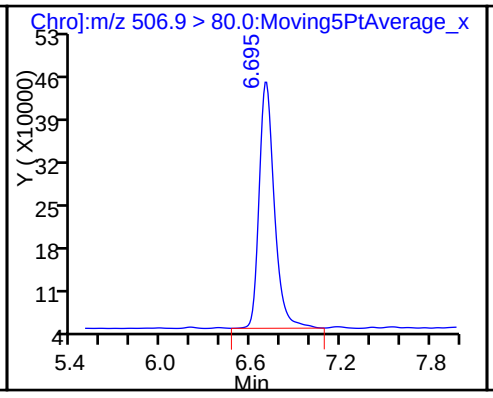
19 Perfluorooctane sulfonic acid



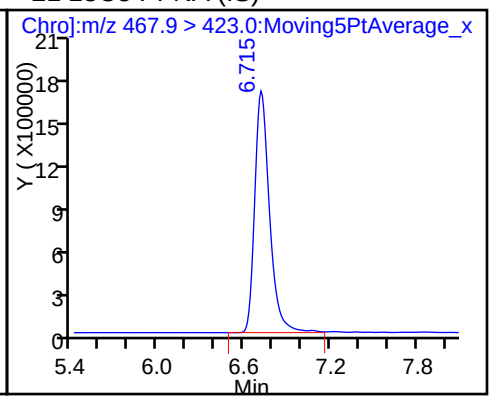
19 Perfluorooctane sulfonic acid



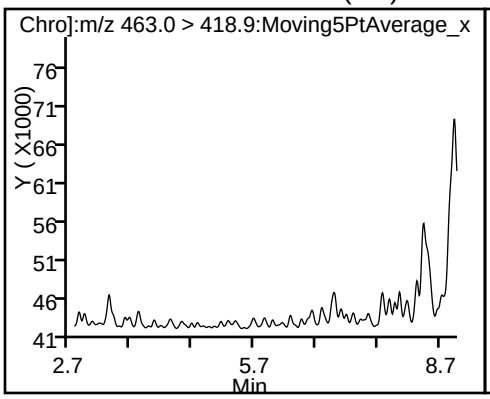
$ 18 13C8 PFOS



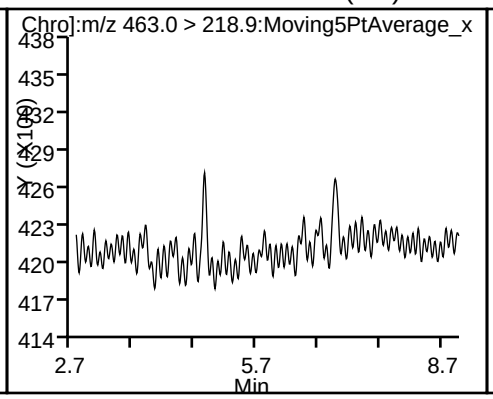
* 21 13C5 PFNA (IS)



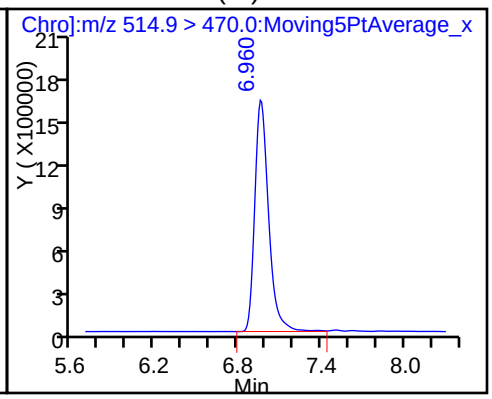
20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND)



* 22 13C2 PFDA (IS)



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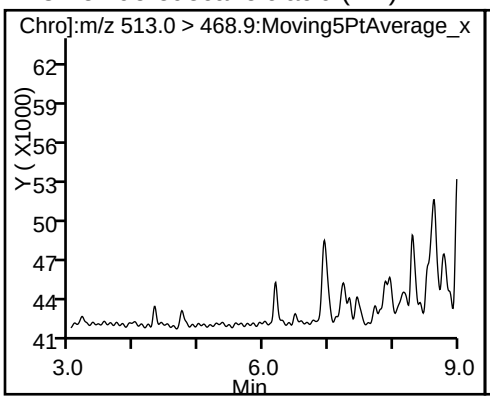
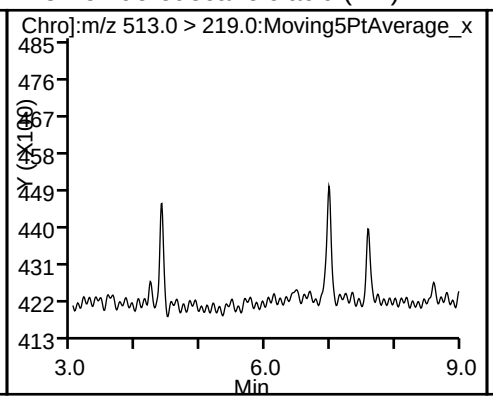
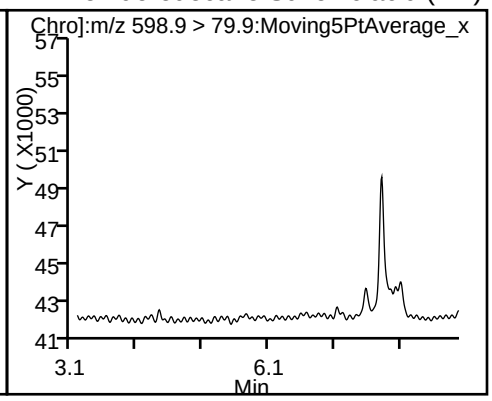


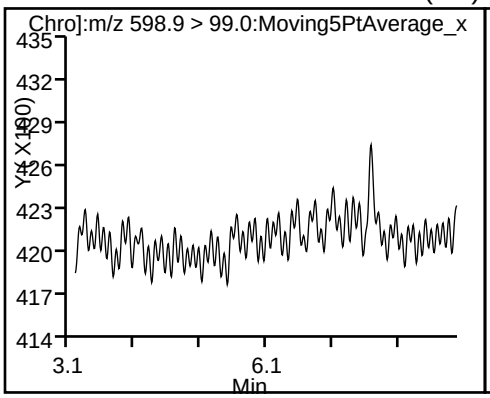
23 Perfluorodecanoic acid (ND)



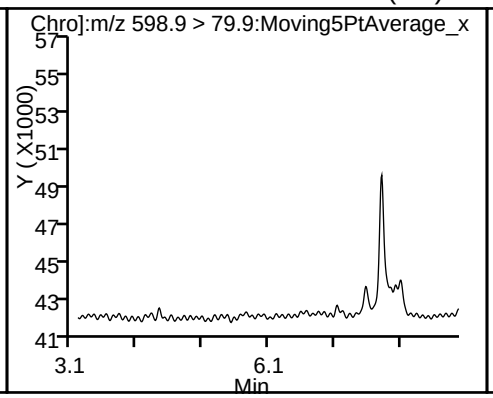
24 Perfluorodecane Sulfonic acid (ND)



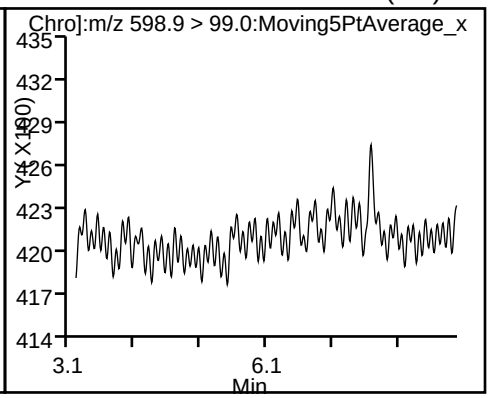
24 Perfluorodecane Sulfonic acid (ND)



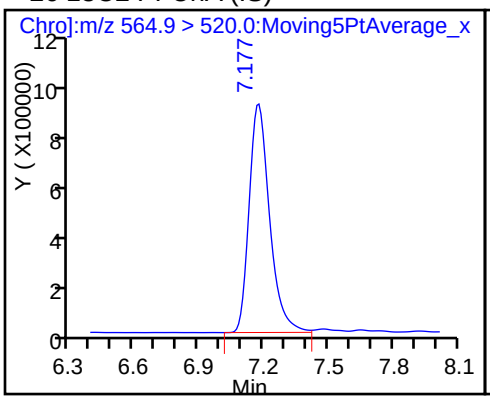
25 Perfluorodecane Sulfonate (ND)



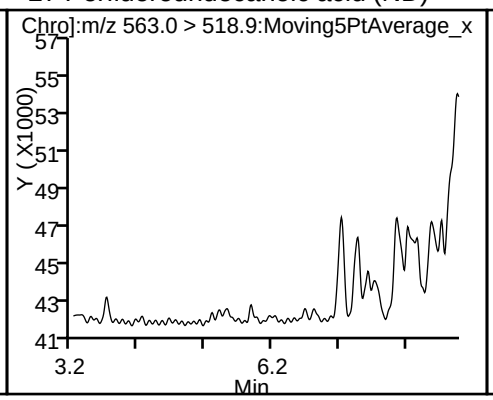
25 Perfluorodecane Sulfonate (ND)



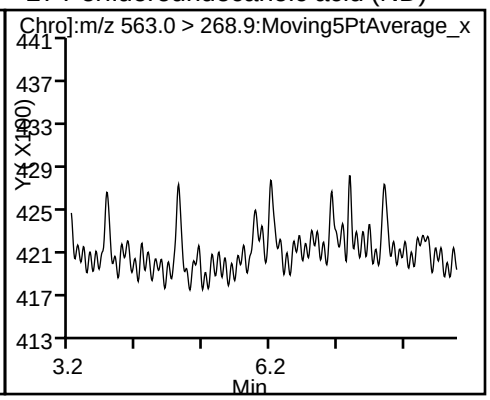
* 26 13C2 PFUnA (IS)



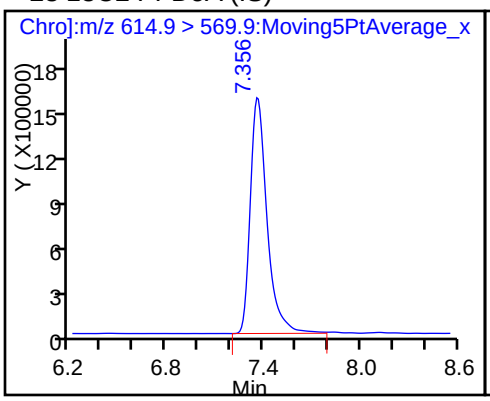
27 Perfluoroundecanoic acid (ND)



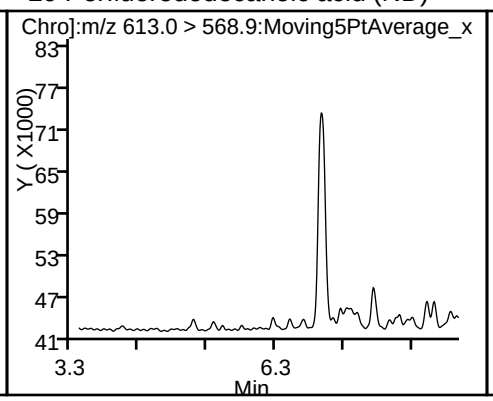
27 Perfluoroundecanoic acid (ND)



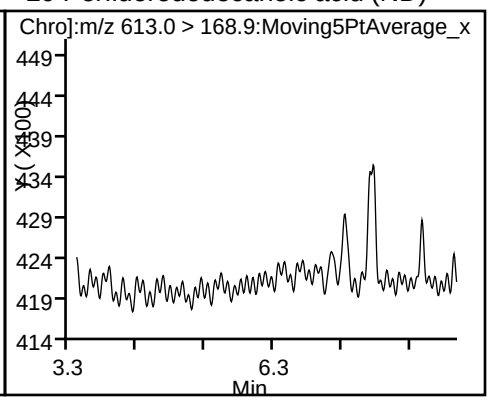
* 28 13C2 PFDoA (IS)



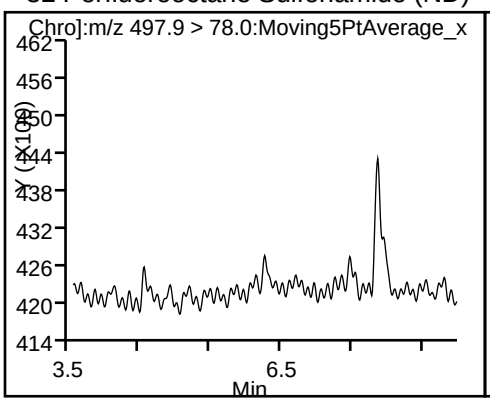
29 Perfluorododecanoic acid (ND)



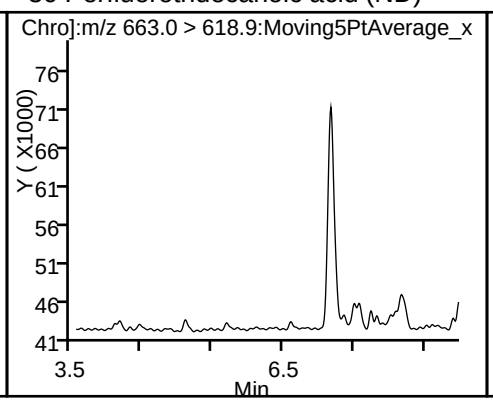
29 Perfluorododecanoic acid (ND)



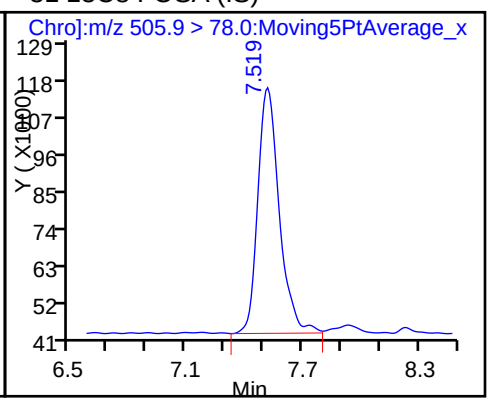
32 Perfluorooctane Sulfonamide (ND)



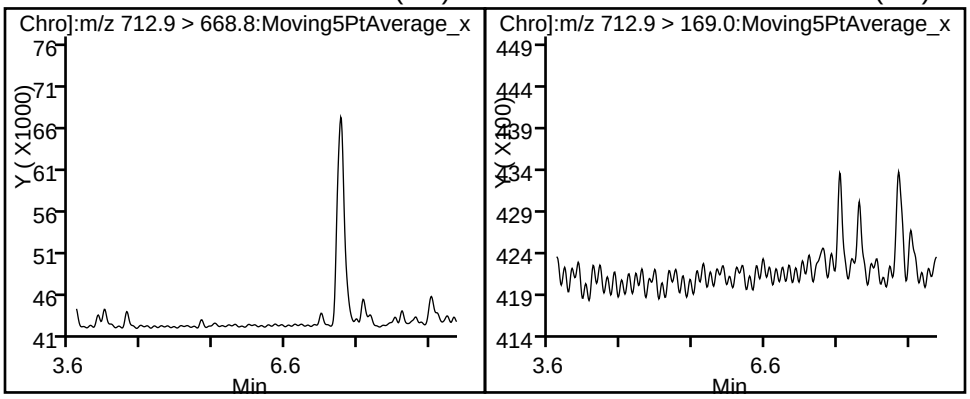
30 Perfluorotridecanoic acid (ND)



* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-339633/1-A

Matrix: Solid | Lab File ID: PC516I01073.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.00(g) | Date Analyzed: 09/01/2016 22:37

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.14	U	0.80	0.14
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.12	U	0.80	0.12
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.28	U	0.80	0.28
375-95-1	Perfluorononanoic acid (PFNA)	0.22	U	0.80	0.22
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.14	U	0.80	0.14
335-67-1	Perfluorooctanoic acid (PFOA)	0.23	U	0.80	0.23

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	124		57-153
STL01054	13C8 PFOS	104		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01073.d
Lims ID: MB 280-339633/1-A
Client ID:
Sample Type: MB
Inject. Date: 01-Sep-2016 22:37:11 ALS Bottle#: 0 Worklist Smp#: 60
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-339633/1-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:17:11

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.200	4.276	-0.076		13141749	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		4.266				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.308				ND			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.431				ND			
298.9 > 98.9		5.431							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.431				ND			
298.9 > 98.9		5.431							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.847	5.904	-0.057		9494244	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.894				ND			
313.0 > 118.6		5.894							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.330				ND			
363.0 > 168.9		6.330							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.272	6.338	-0.066		1466948	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.329				ND			
398.9 > 98.9		6.329							
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.329				ND			
398.9 > 98.9		6.329							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.659				ND			
449.0 > 98.9		6.659							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.659				ND			
449.0 > 98.9		6.659							
$ 14 13C8 PFOA									
421.0 > 375.9	6.622	6.669	-0.047	1.000	11681902	12.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.622	6.669	-0.047		14000220	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.669				ND			
413.0 > 169.0		6.669							
$ 18 13C8 PFOS									
506.9 > 80.0	6.884	6.941	-0.057	1.000	2913709	9.68			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.885	6.942	-0.057		5006172	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.942				ND			
498.9 > 98.9		6.942							
20 Perfluorononanoic acid									
463.0 > 418.9		6.952				ND			
463.0 > 218.9		6.952							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.914	6.962	-0.048		11646318	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.149	7.206	-0.057		11491269	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.206				ND			
513.0 > 219.0		7.206							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.375				ND			
598.9 > 99.0		7.375							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.375				ND			
598.9 > 99.0		7.375							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.357	7.414	-0.057		6580815	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.414				ND			
563.0 > 268.9		7.414							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.536	7.583	-0.047		15939289	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.583				ND			
613.0 > 168.9		7.583							
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.734				ND			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.672				ND			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.614	7.671	-0.057		17078420	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.857				ND			
712.9 > 169.0		7.857							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Report Date: 02-Sep-2016 11:55:09 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01073.d

Injection Date: 01-Sep-2016 22:37:11 Instrument ID: LC_LCMS5

Lims ID: MB 280-339633/1-A

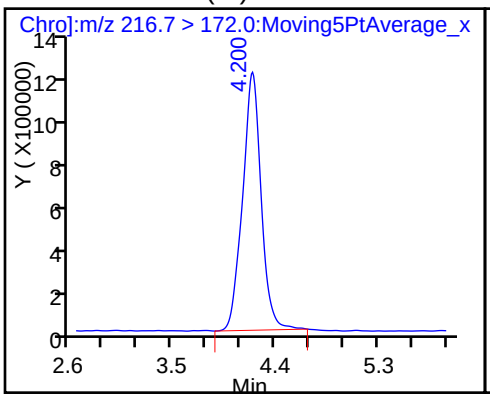
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 60

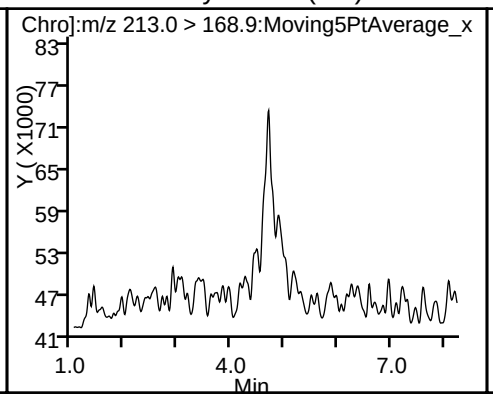
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

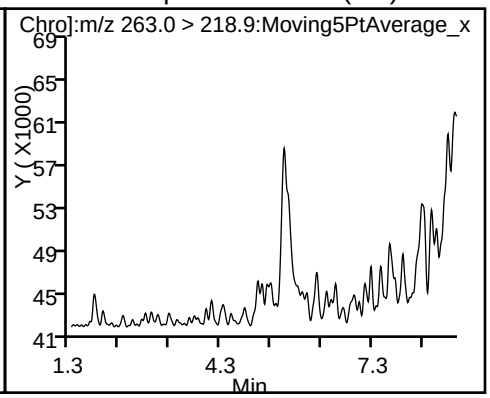
* 1 13C4 PFBA (IS)



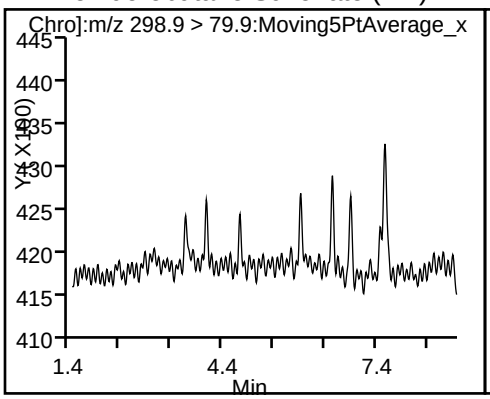
2 Perfluorobutyric acid (ND)



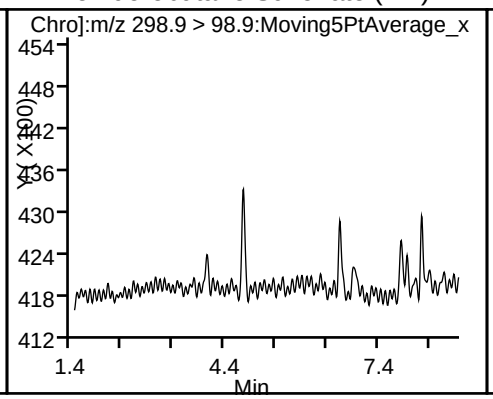
3 Perfluoropentanoic acid (ND)



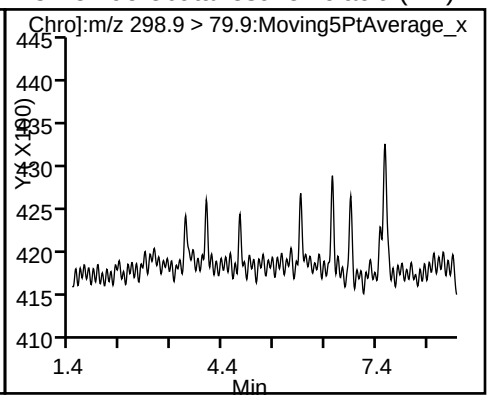
4 Perfluorobutane Sulfonate (ND)



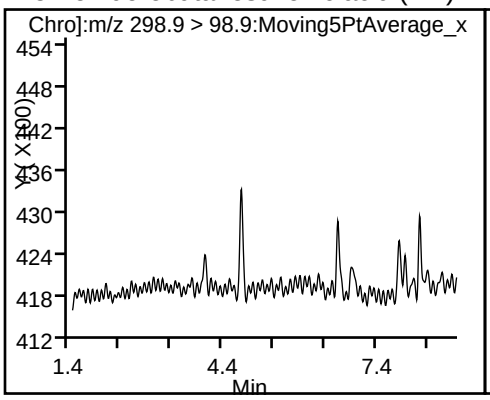
4 Perfluorobutane Sulfonate (ND)



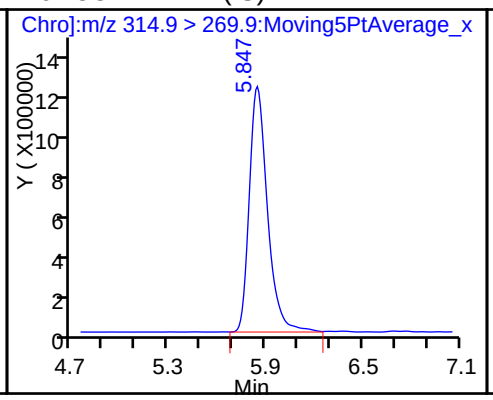
5 Perfluorobutanesulfonic acid (ND)



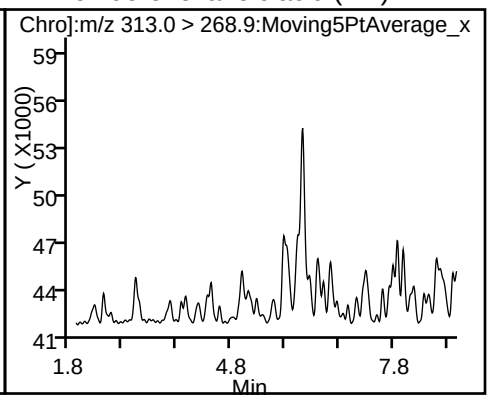
5 Perfluorobutanesulfonic acid (ND)



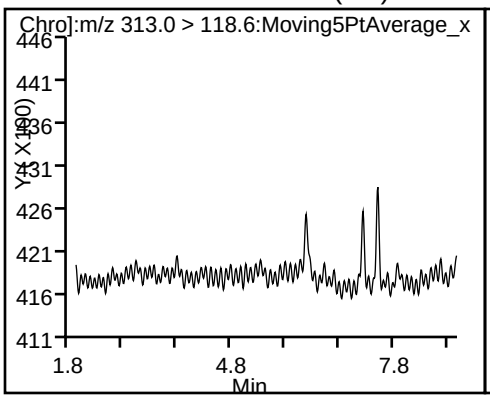
* 6 13C2 PFHxA (IS)



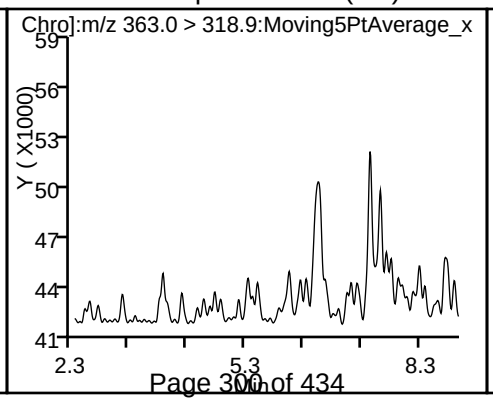
7 Perfluorohexanoic acid (ND)



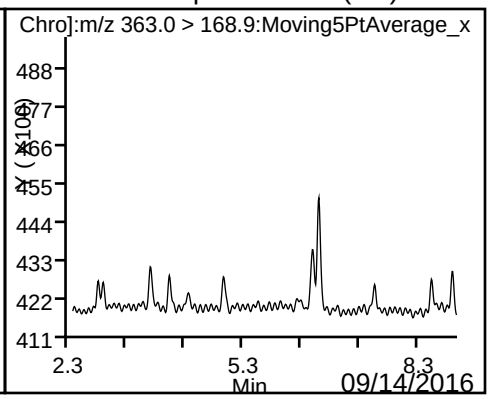
7 Perfluorohexanoic acid (ND)



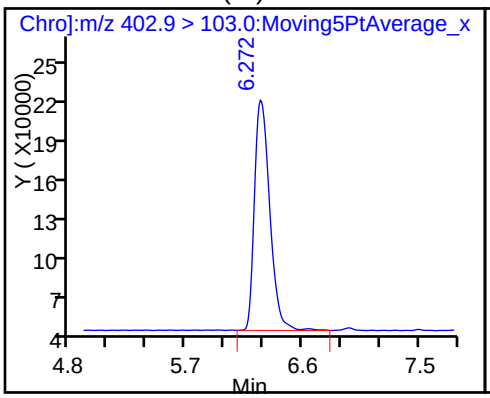
8 Perfluoroheptanoic acid (ND)



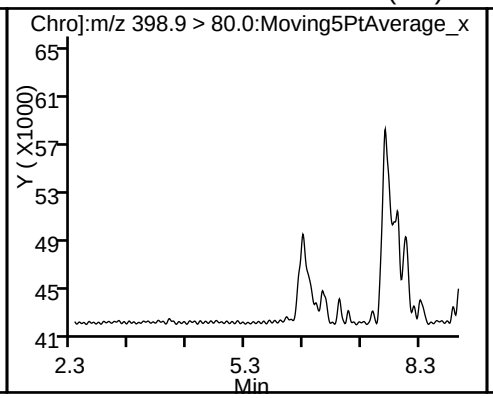
8 Perfluoroheptanoic acid (ND)



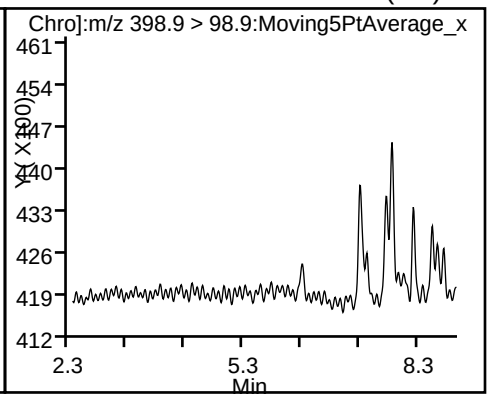
* 9 18O2 PFHxS (IS)



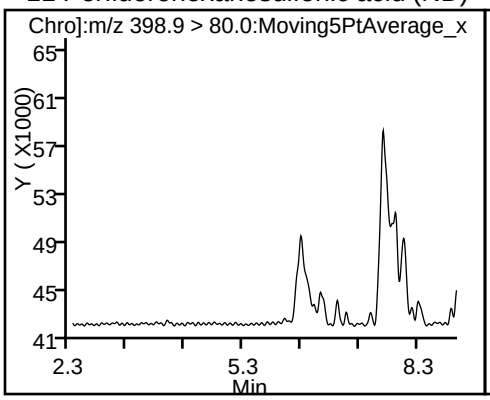
10 Perfluorohexane Sulfonate (ND)



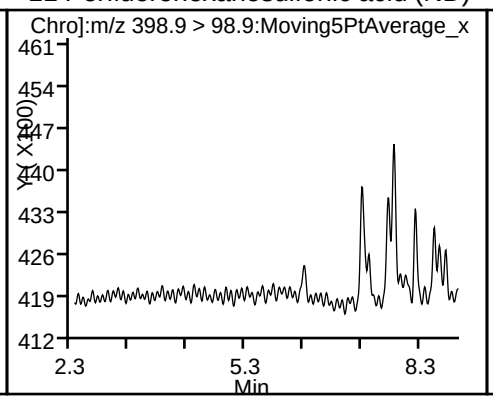
10 Perfluorohexane Sulfonate (ND)



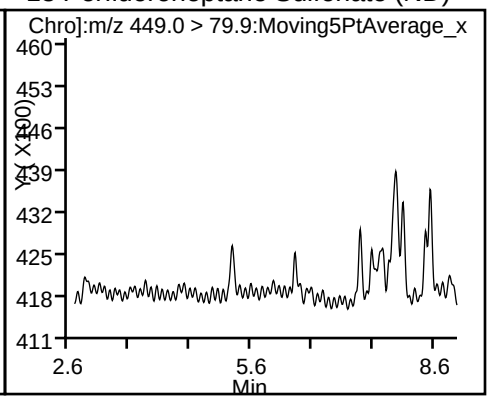
11 Perfluorohexanesulfonic acid (ND)



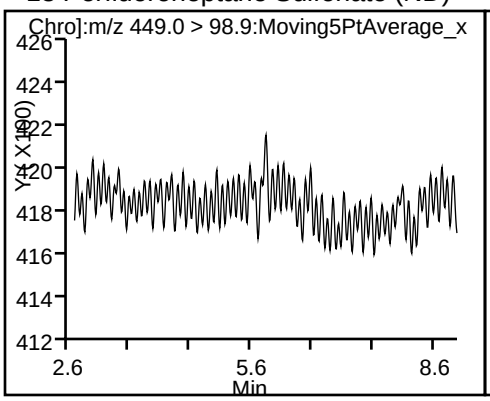
11 Perfluorohexanesulfonic acid (ND)



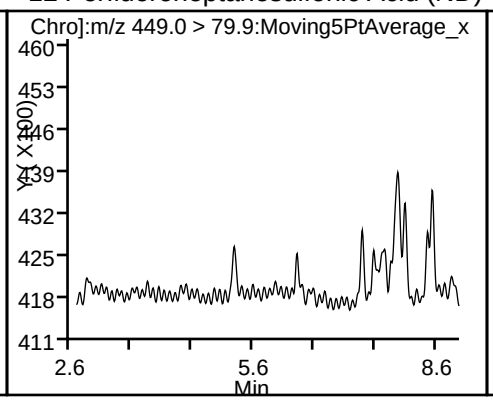
13 Perfluoroheptane Sulfonate (ND)



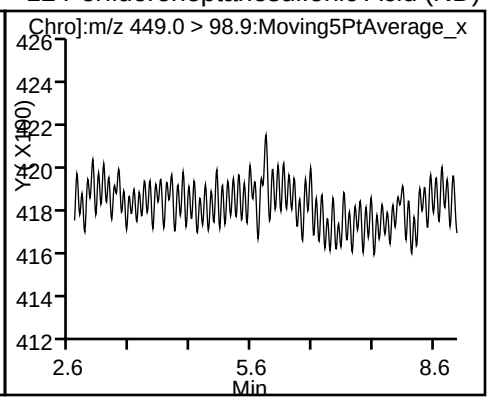
13 Perfluoroheptane Sulfonate (ND)



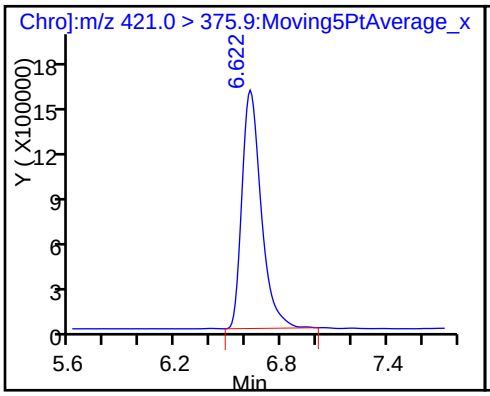
12 Perfluoroheptanesulfonic Acid (ND)



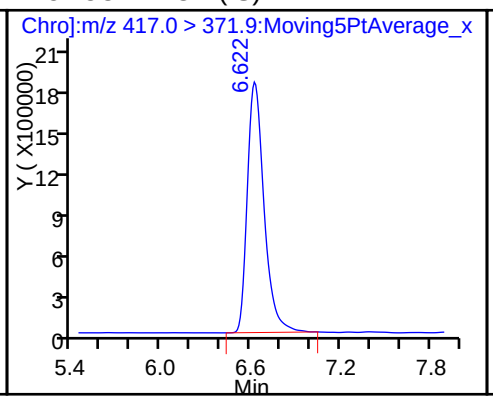
12 Perfluoroheptanesulfonic Acid (ND)



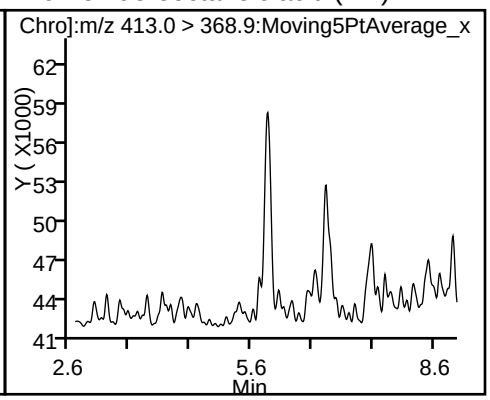
$ 14 13C8 PFOA



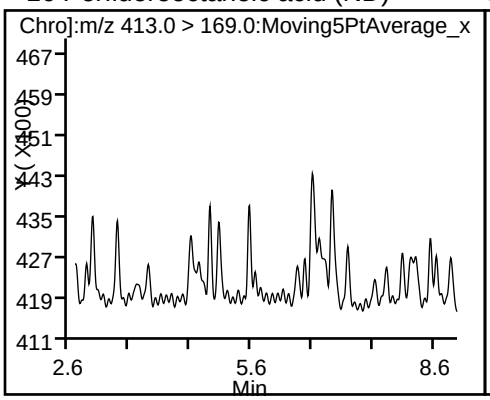
* 15 13C4 PFOA (IS)



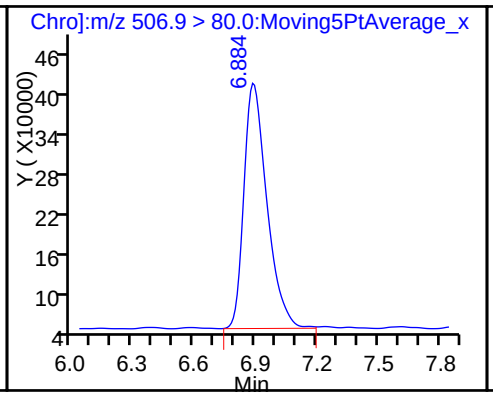
16 Perfluorooctanoic acid (ND)



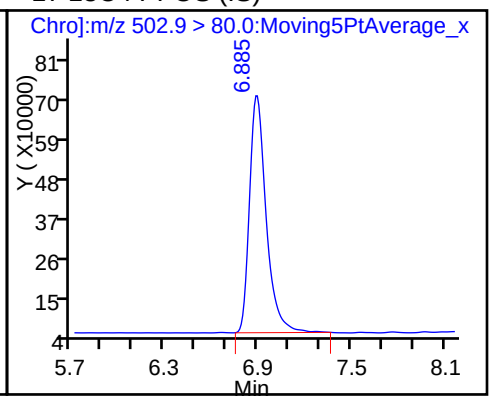
16 Perfluorooctanoic acid (ND)



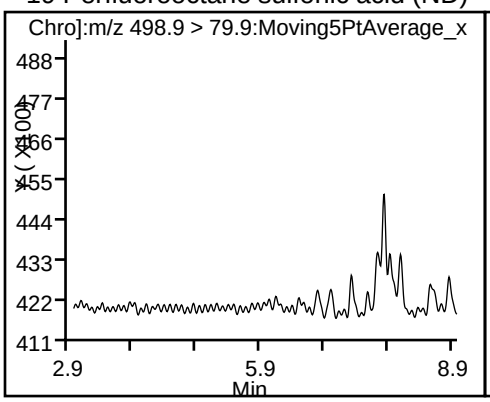
$ 18 13C8 PFOS



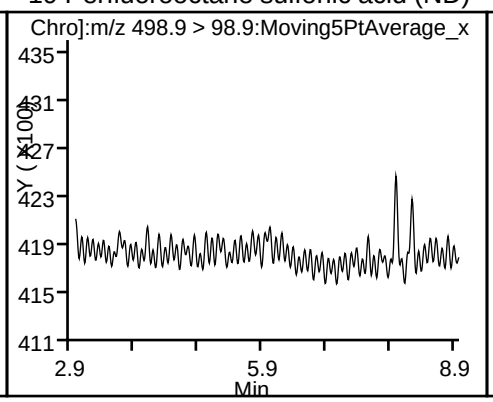
* 17 13C4 PFOS (IS)



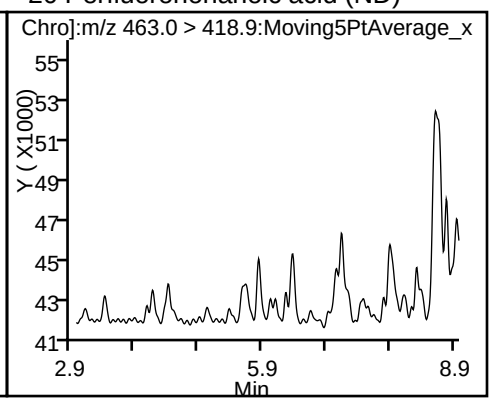
19 Perfluorooctane sulfonic acid (ND)



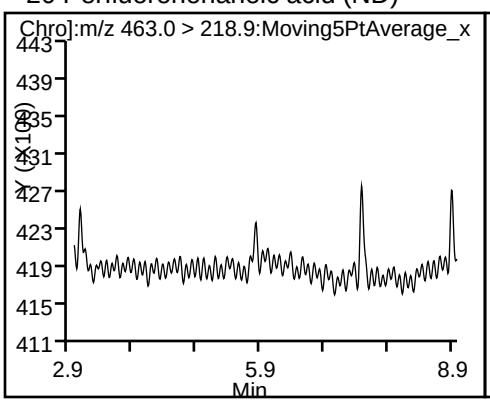
19 Perfluorooctane sulfonic acid (ND)



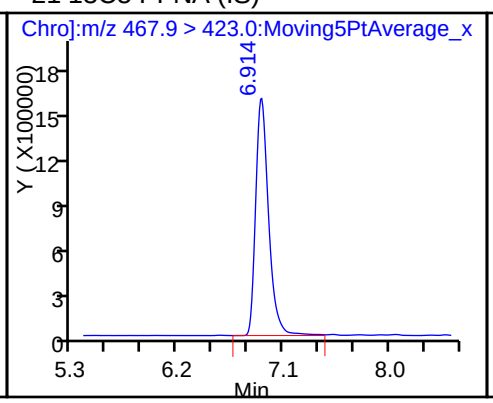
20 Perfluorononanoic acid (ND)



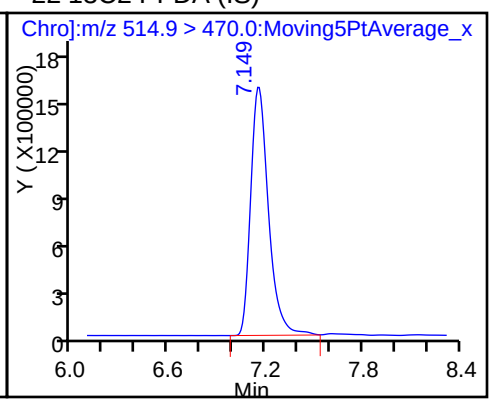
20 Perfluorononanoic acid (ND)



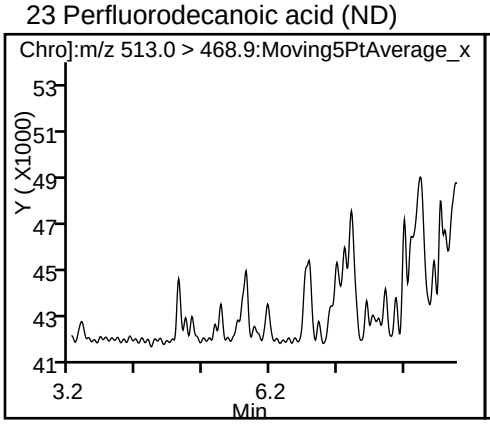
* 21 13C5 PFNA (IS)



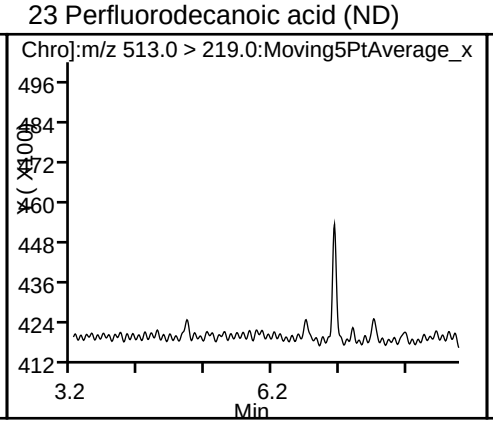
* 22 13C2 PFDA (IS)



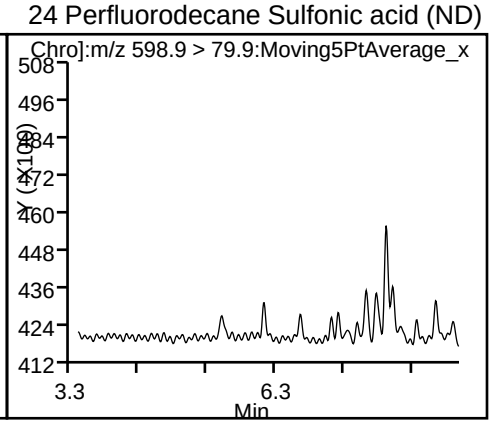
23 Perfluorodecanoic acid (ND)



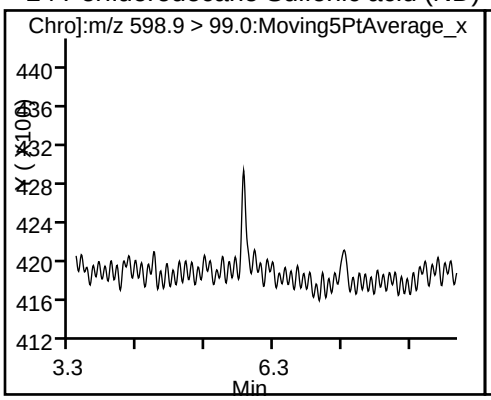
23 Perfluorodecanoic acid (ND)



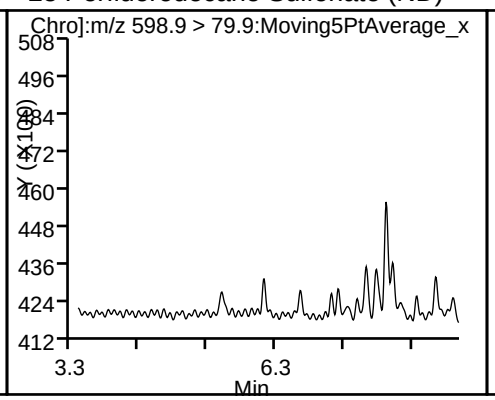
24 Perfluorodecane Sulfonic acid (ND)



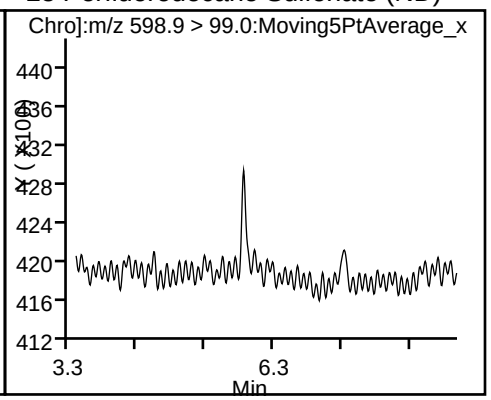
24 Perfluorodecane Sulfonic acid (ND)



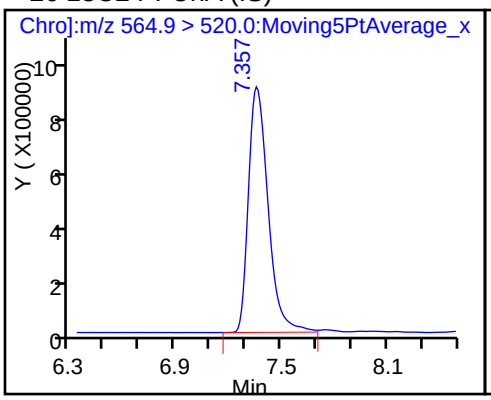
25 Perfluorodecane Sulfonate (ND)



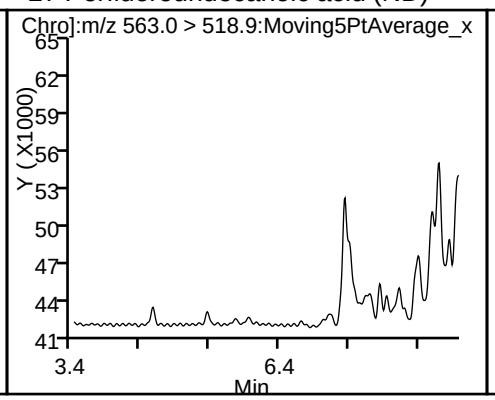
25 Perfluorodecane Sulfonate (ND)



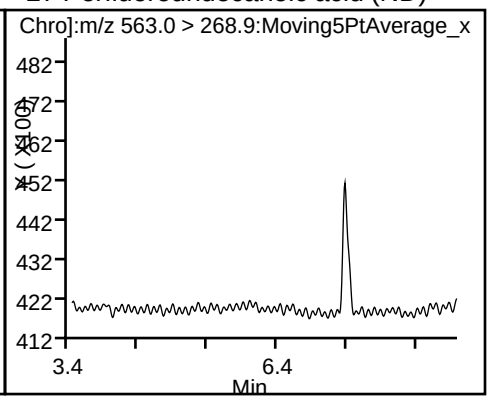
* 26 13C2 PFUnA (IS)



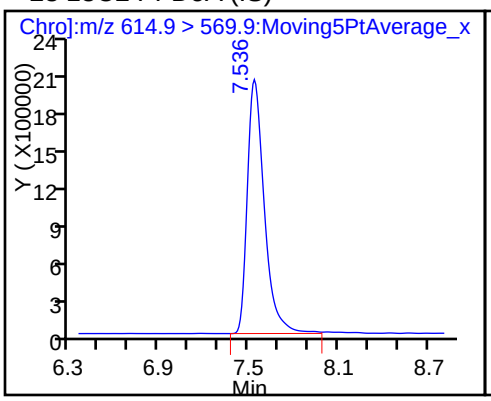
27 Perfluoroundecanoic acid (ND)



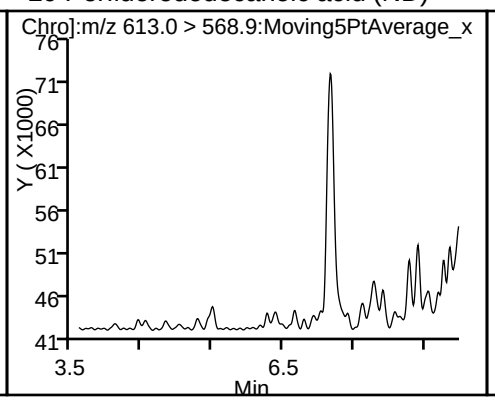
27 Perfluoroundecanoic acid (ND)



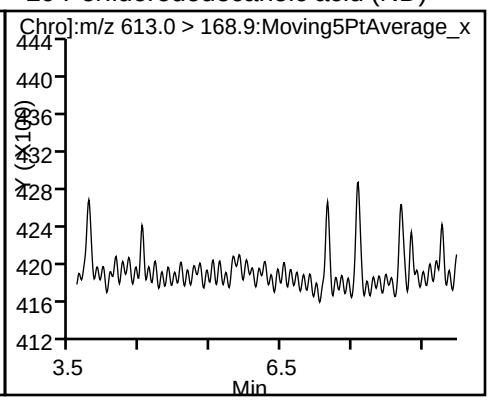
* 28 13C2 PFDoA (IS)



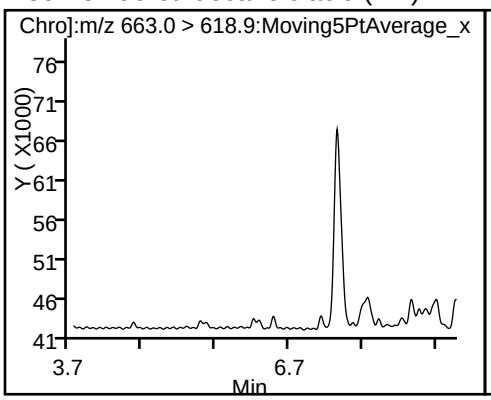
29 Perfluorododecanoic acid (ND)



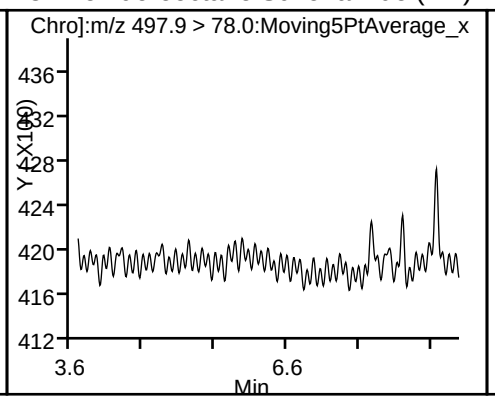
29 Perfluorododecanoic acid (ND)



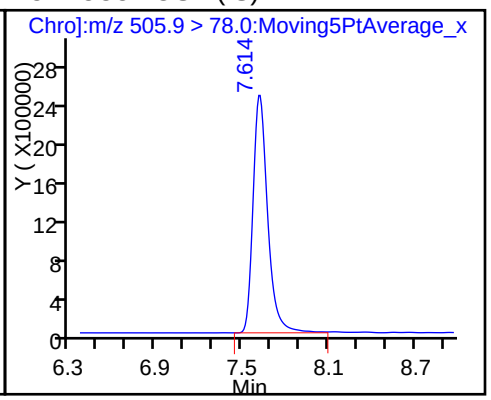
30 Perfluorotridecanoic acid (ND)



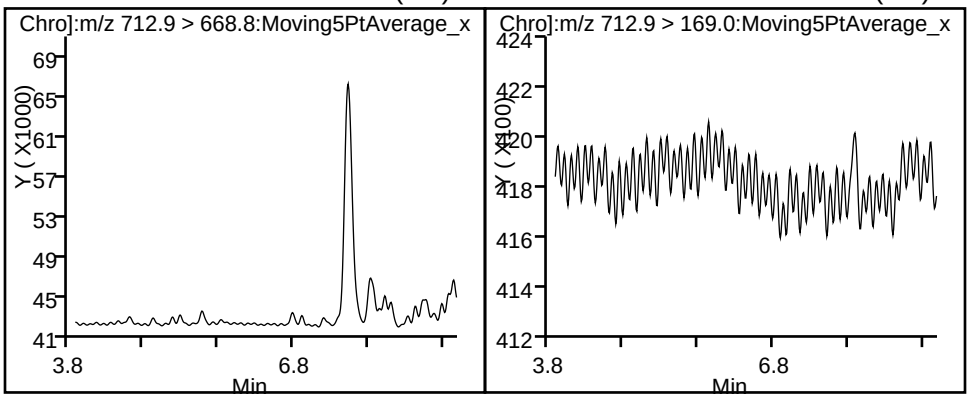
32 Perfluorooctane Sulfonamide (ND)



* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-340007/1-A

Matrix: Water | Lab File ID: PC516I01106.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 08/29/2016 19:57

Sample wt/vol: 250(mL) | Date Analyzed: 09/02/2016 05:23

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340694 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	119		60-155
STL01054	13C8 PFOS	103		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01106.d
Lims ID: MB 280-340007/1-A
Client ID:
Sample Type: MB
Inject. Date: 02-Sep-2016 05:23:58 ALS Bottle#: 0 Worklist Smp#: 93
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-340007/1-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:51 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:41:07

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.963	4.020	-0.057		15210921	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		4.020				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.119				ND			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.241				ND			
298.9 > 98.9		5.241							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.241				ND			
298.9 > 98.9		5.241							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.724	0.0		10581089	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.724				ND			
313.0 > 118.6		5.724							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.159				ND			
363.0 > 168.9		6.159							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.168	6.168	0.0		1546850	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.168				ND			
398.9 > 98.9		6.168							
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.168				ND			
398.9 > 98.9		6.168							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.498				ND			
449.0 > 98.9		6.498							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.498				ND			
449.0 > 98.9		6.498							
$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.508	0.0	1.000	13277424	11.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.508	0.0		16594673	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.508				ND			
413.0 > 169.0		6.508							
$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.790	-0.010	1.000	3083635	9.57			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.790	-0.009		5360161	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.790				ND			
498.9 > 98.9		6.790							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.801	6.810	-0.010		12696415	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.810				ND			
463.0 > 218.9		6.810							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.045	7.054	-0.009		13023988	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.054				ND			
513.0 > 219.0		7.054							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.243				ND			
598.9 > 99.0		7.243							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.243				ND			
598.9 > 99.0		7.243							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.253	7.262	-0.010		7105138	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.262				ND			
563.0 > 268.9		7.262							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.431	7.441	-0.010		12266120	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.441				ND			
613.0 > 168.9		7.441							
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.557	7.529	0.028		498922	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.530				ND			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.602				ND			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.734				ND			
712.9 > 169.0		7.734							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

Report Date: 02-Sep-2016 11:55:55 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01106.d

Injection Date: 02-Sep-2016 05:23:58 Instrument ID: LC_LCMS5

Lims ID: MB 280-340007/1-A

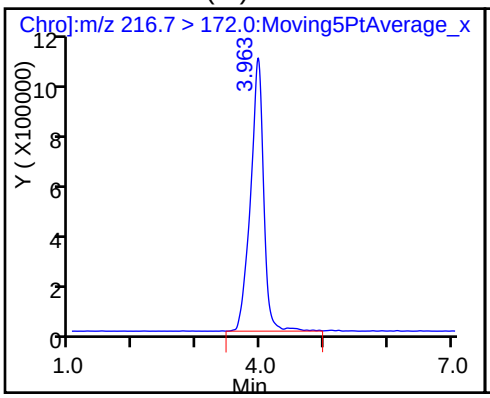
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 93

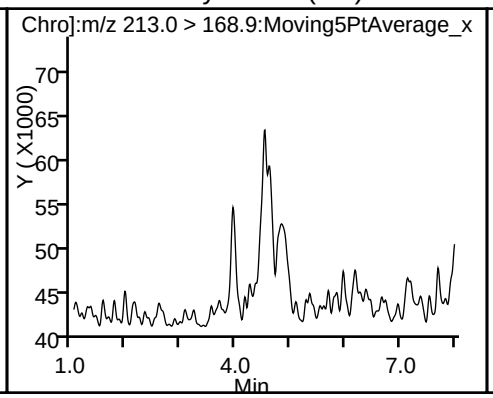
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

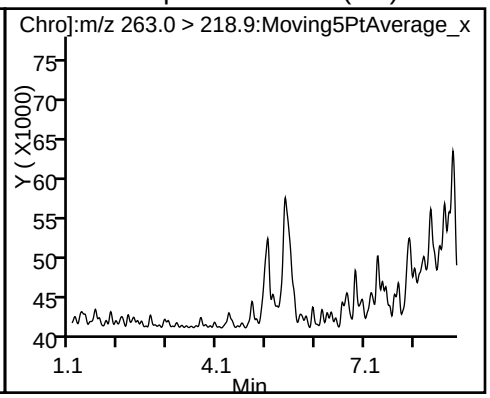
* 1 13C4 PFBA (IS)



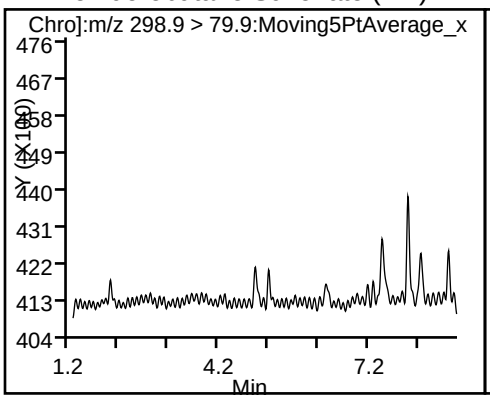
2 Perfluorobutyric acid (ND)



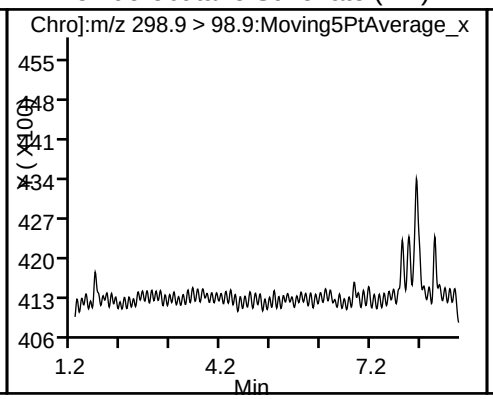
3 Perfluoropentanoic acid (ND)



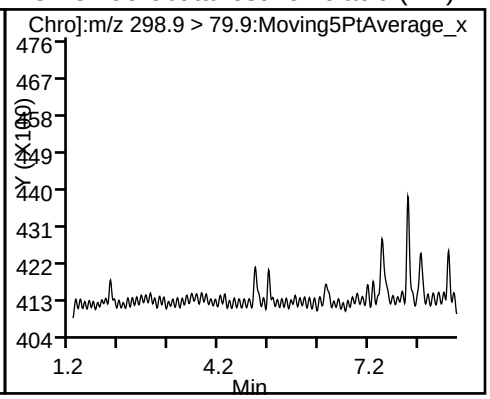
4 Perfluorobutane Sulfonate (ND)



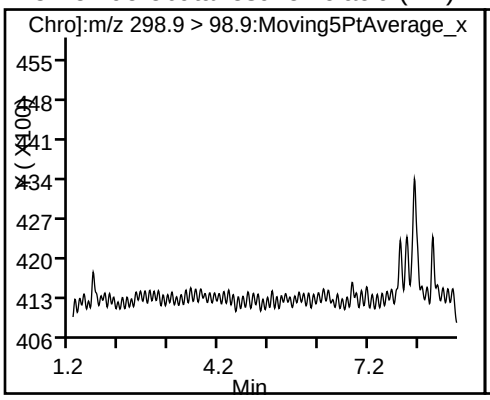
4 Perfluorobutane Sulfonate (ND)



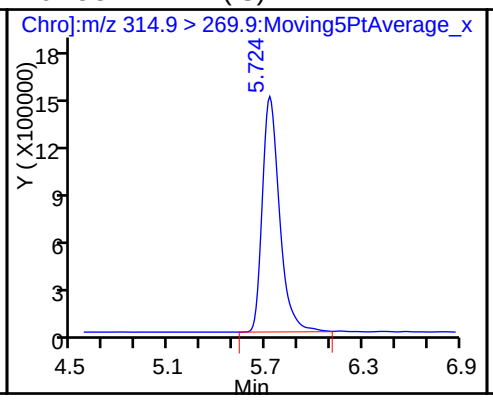
5 Perfluorobutanesulfonic acid (ND)



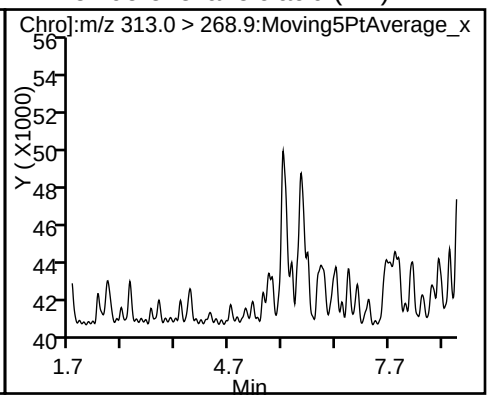
5 Perfluorobutanesulfonic acid (ND)



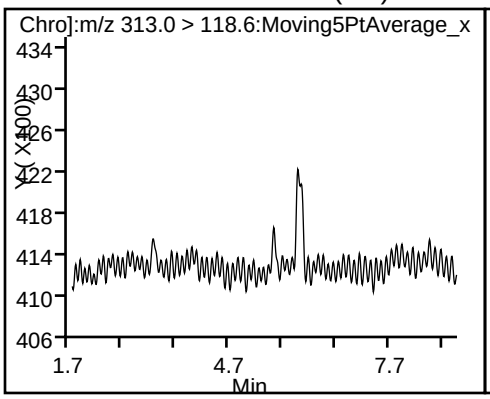
* 6 13C2 PFHxA (IS)



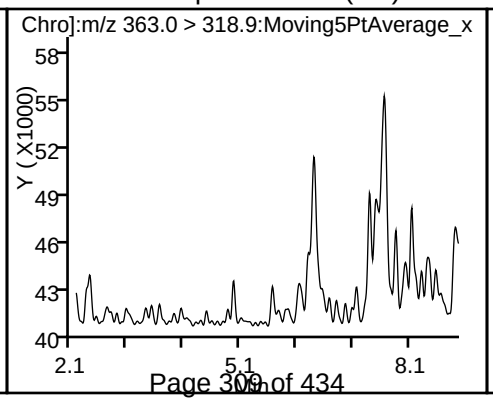
7 Perfluorohexanoic acid (ND)



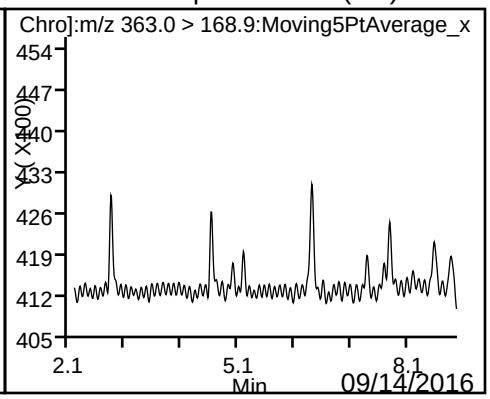
7 Perfluorohexanoic acid (ND)



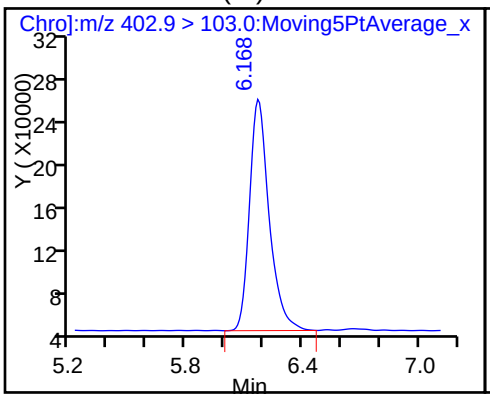
8 Perfluoroheptanoic acid (ND)



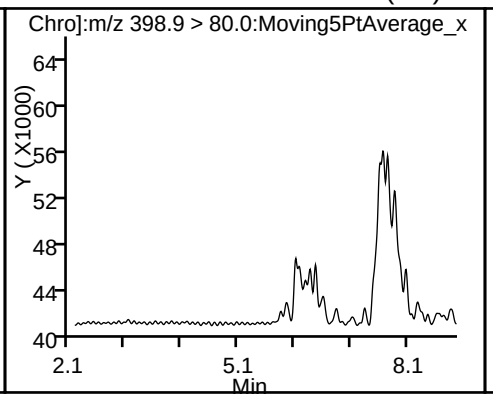
8 Perfluoroheptanoic acid (ND)



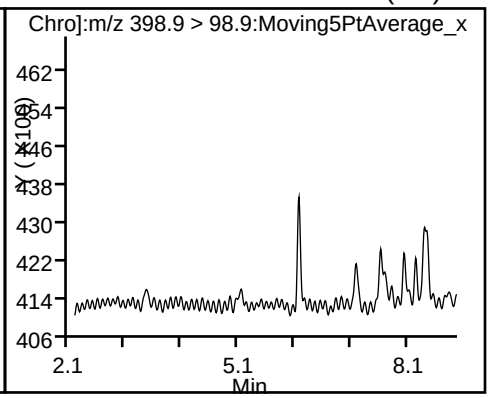
* 9 18O2 PFHxS (IS)



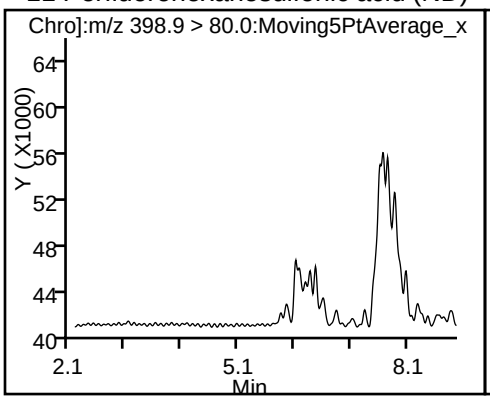
10 Perfluorohexane Sulfonate (ND)



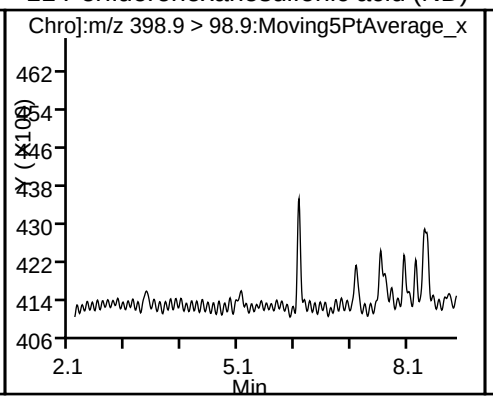
10 Perfluorohexane Sulfonate (ND)



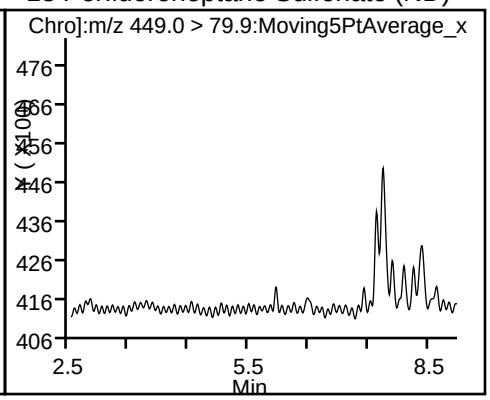
11 Perfluorohexanesulfonic acid (ND)



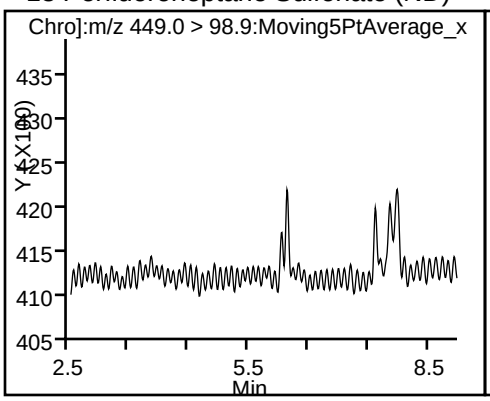
11 Perfluorohexanesulfonic acid (ND)



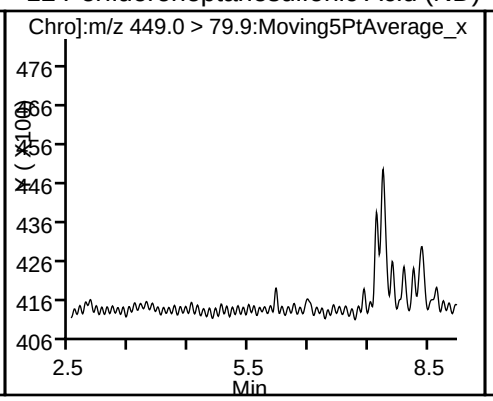
13 Perfluoroheptane Sulfonate (ND)



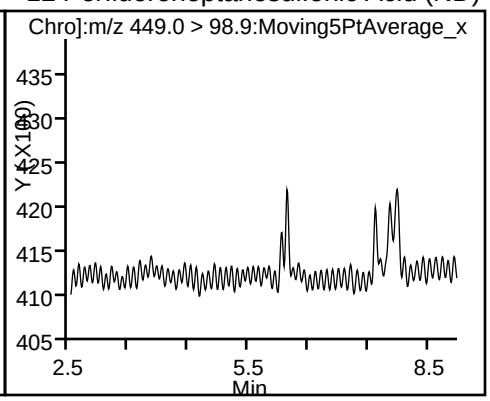
13 Perfluoroheptane Sulfonate (ND)



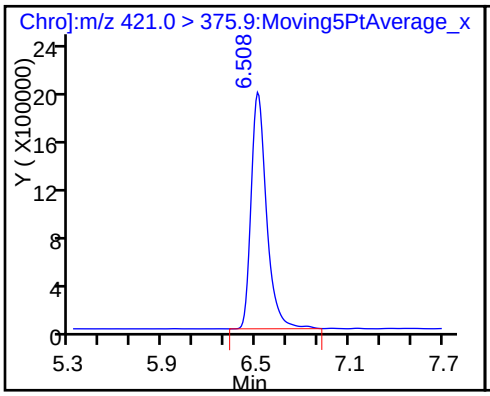
12 Perfluoroheptanesulfonic Acid (ND)



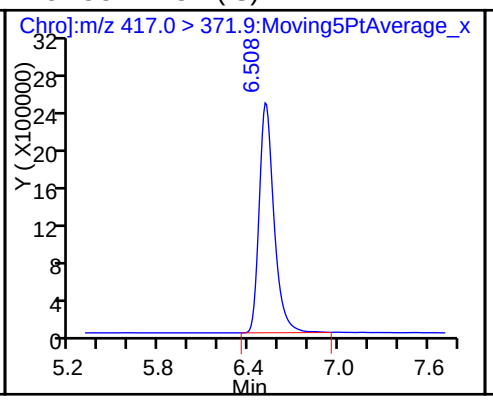
12 Perfluoroheptanesulfonic Acid (ND)



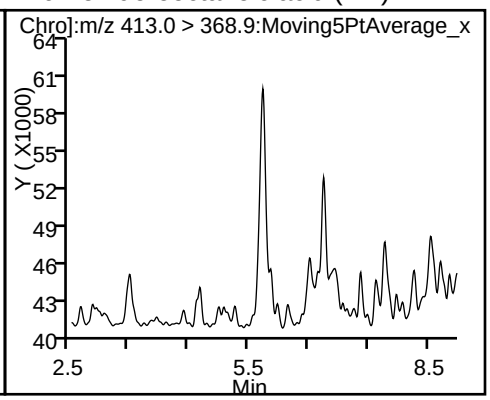
$ 14 13C8 PFOA



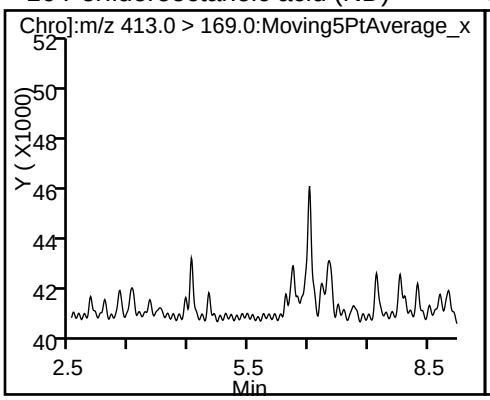
* 15 13C4 PFOA (IS)



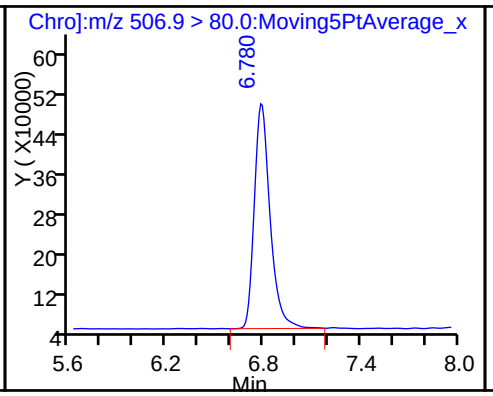
16 Perfluorooctanoic acid (ND)



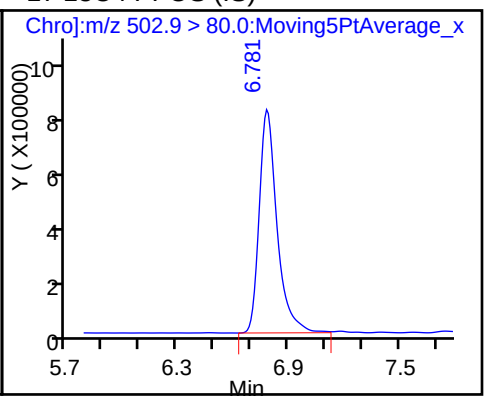
16 Perfluorooctanoic acid (ND)



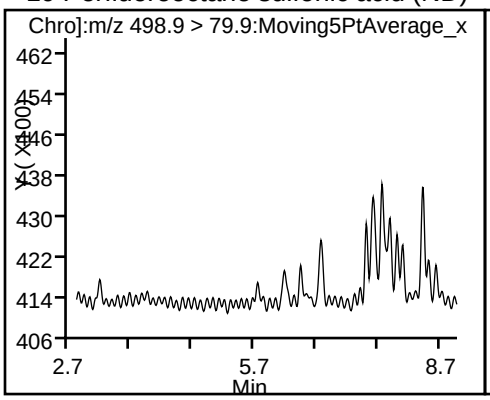
$ 18 13C8 PFOS



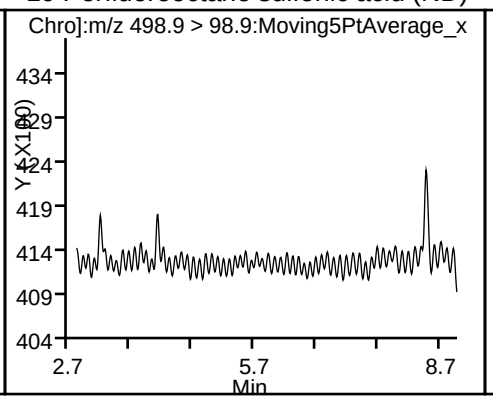
* 17 13C4 PFOS (IS)



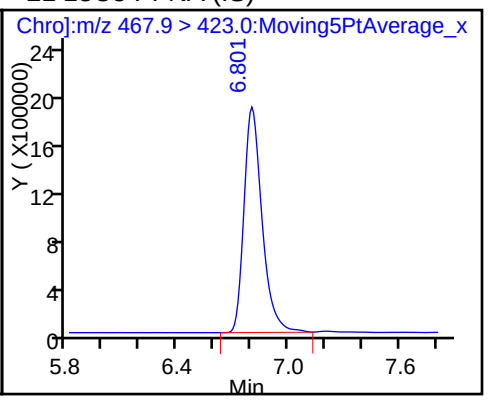
19 Perfluorooctane sulfonic acid (ND)



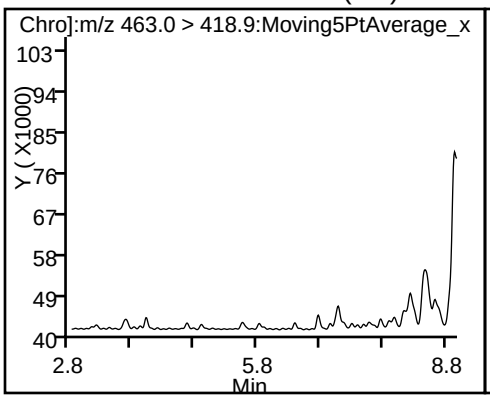
19 Perfluorooctane sulfonic acid (ND)



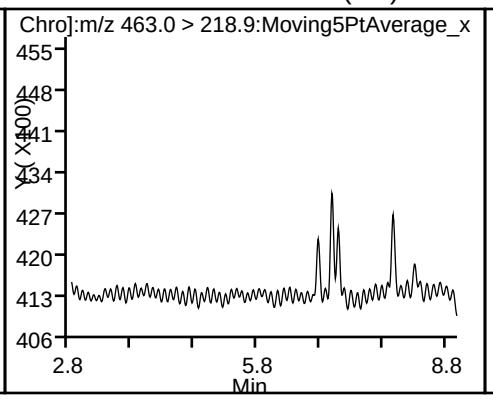
* 21 13C5 PFNA (IS)



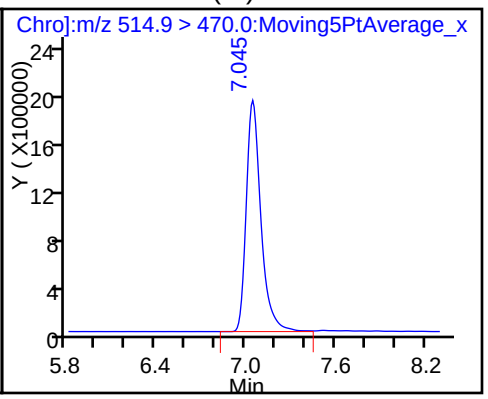
20 Perfluorononanoic acid (ND)



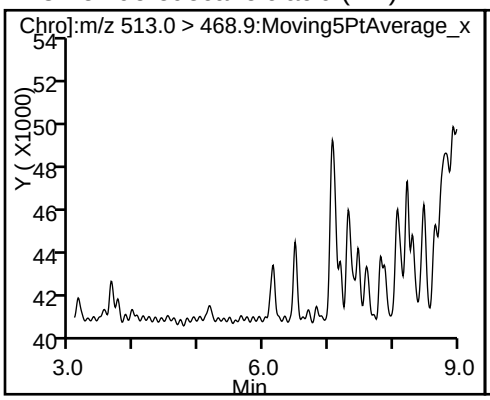
20 Perfluorononanoic acid (ND)



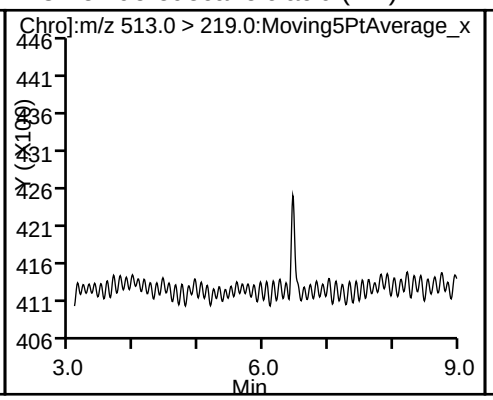
* 22 13C2 PFDA (IS)



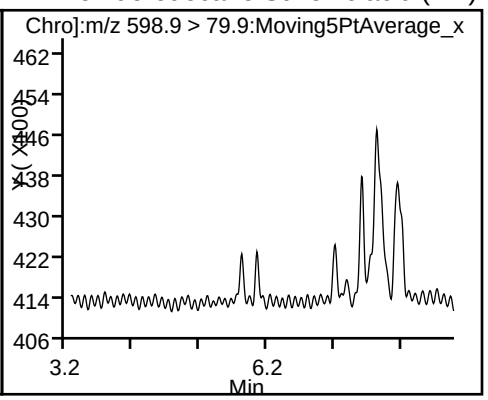
23 Perfluorodecanoic acid (ND)



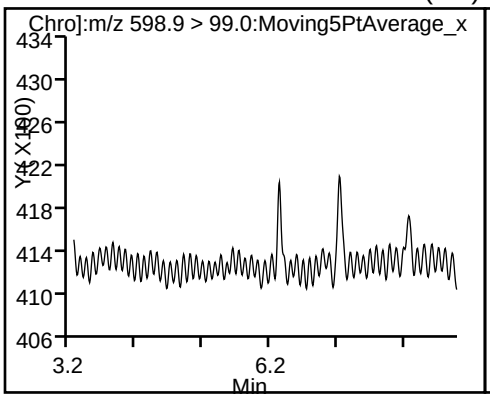
23 Perfluorodecanoic acid (ND)



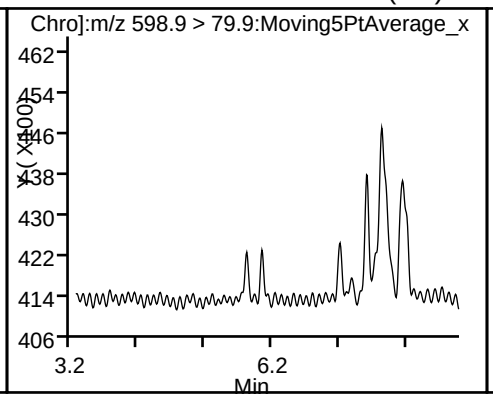
24 Perfluorodecane Sulfonic acid (ND)



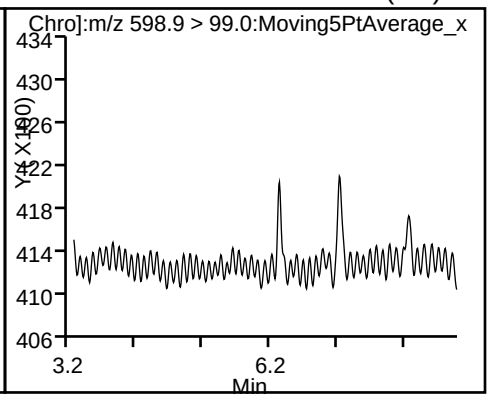
24 Perfluorodecane Sulfonic acid (ND)



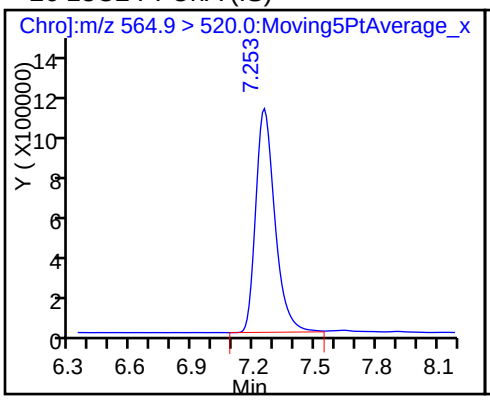
25 Perfluorodecane Sulfonate (ND)



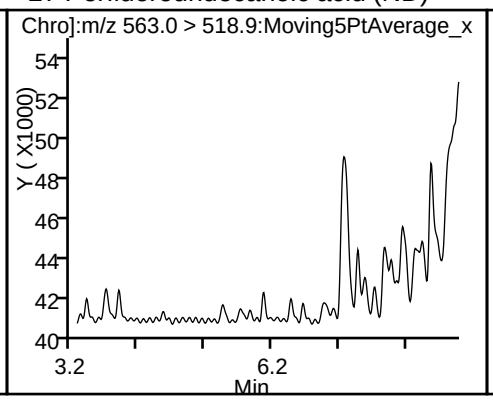
25 Perfluorodecane Sulfonate (ND)



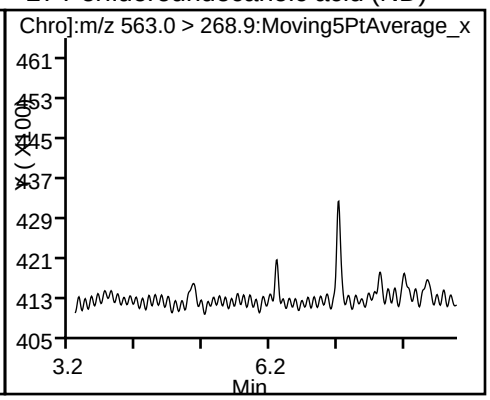
* 26 13C2 PFUnA (IS)



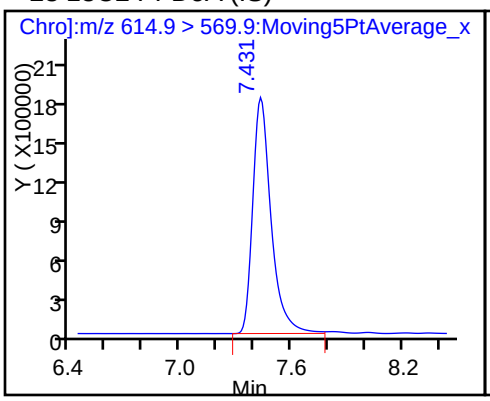
27 Perfluoroundecanoic acid (ND)



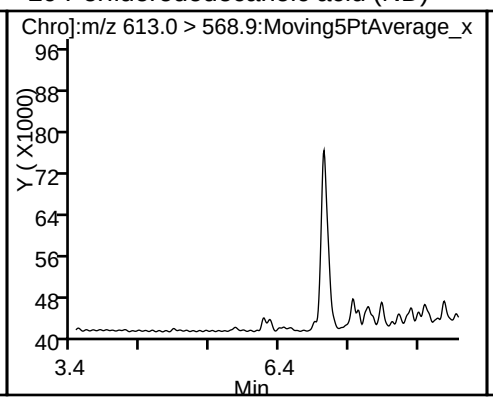
27 Perfluoroundecanoic acid (ND)



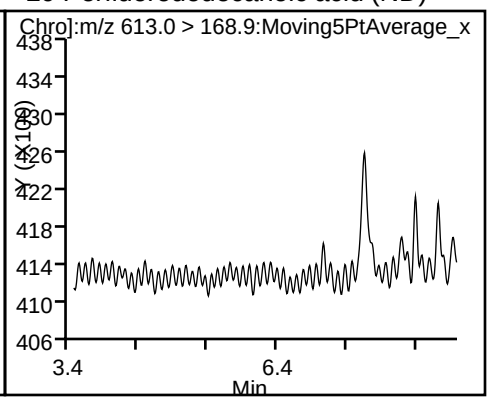
* 28 13C2 PFDoA (IS)



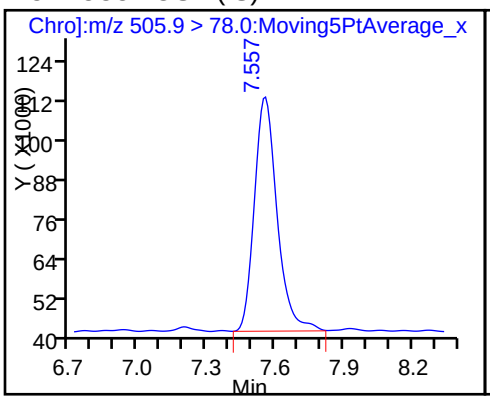
29 Perfluorododecanoic acid (ND)



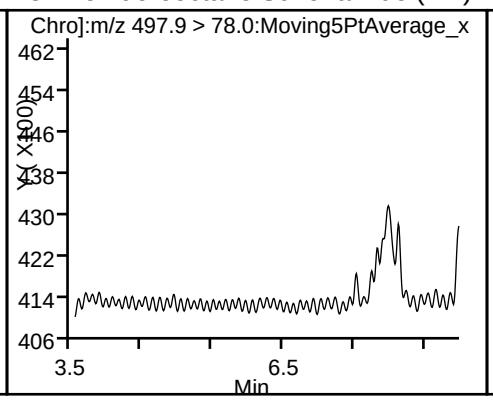
29 Perfluorododecanoic acid (ND)



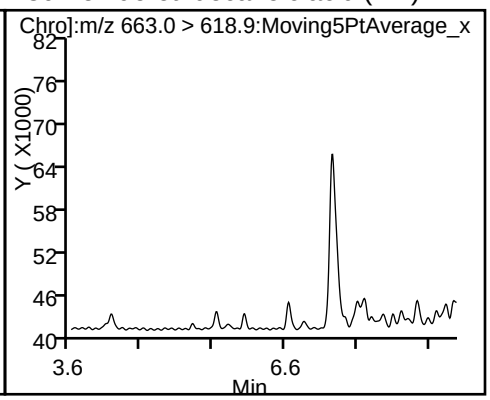
* 31 13C8 FOSA (IS)



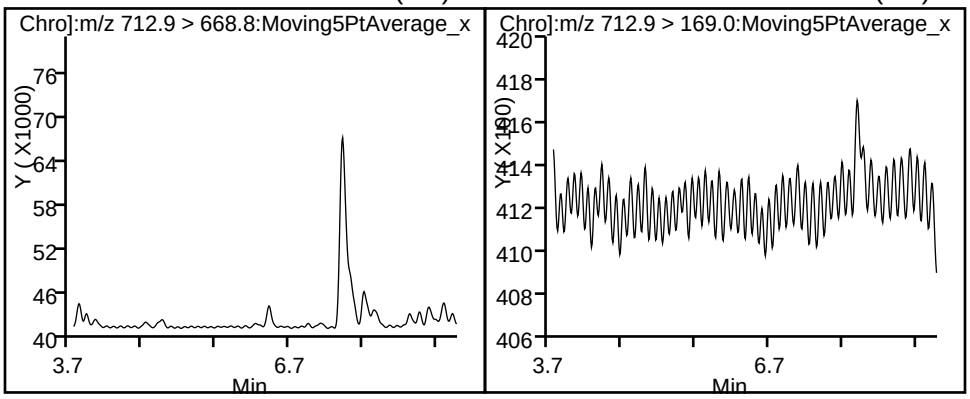
32 Perfluorooctane Sulfonamide (ND)



30 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-340544/1-A

Matrix: Water | Lab File ID: PC516I02016.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/01/2016 19:29

Sample wt/vol: 250(mL) | Date Analyzed: 09/02/2016 13:22

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340829 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	103		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02016.d
Lims ID: MB 280-340544/1-A
Client ID:
Sample Type: MB
Inject. Date: 02-Sep-2016 13:22:03 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-340544/1-A, Sample
Misc. Info.: pfc
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:24 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:25:02

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.276	4.314	-0.038		21165070	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		4.314				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.346				ND			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.459				ND			
298.9 > 98.9		5.459							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.459				ND			
298.9 > 98.9		5.459							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.894	5.923	-0.029		12358775	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.923				ND			
313.0 > 118.6		5.923							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.310	6.348	-0.038		1939551	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.348				ND			
398.9 > 98.9		6.348							
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.348				ND			
398.9 > 98.9		6.348							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.349				ND			
363.0 > 168.9		6.349							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.678				ND			
449.0 > 98.9		6.678							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.678				ND			
449.0 > 98.9		6.678							
$ 14 13C8 PFOA									
421.0 > 375.9	6.641	6.688	-0.047	1.000	14389224	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.641	6.688	-0.047		18877147	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.688				ND			
413.0 > 169.0		6.688							
$ 18 13C8 PFOS									
506.9 > 80.0	6.903	6.960	-0.057	1.000	3559695	9.60			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.904	6.961	-0.057		6169209	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.951				ND			
498.9 > 98.9		6.951							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.924	6.971	-0.047		14488475	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.971				ND			
463.0 > 218.9		6.971							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.168	7.206	-0.038		13609317	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.206				ND			
513.0 > 219.0		7.206							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.385				ND			
598.9 > 99.0		7.385							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.385				ND			
598.9 > 99.0		7.385							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.366	7.404	-0.038		7308110	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.404				ND			
563.0 > 268.9		7.404							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.526	7.573	-0.047		13947110	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.574				ND			
613.0 > 168.9		7.574							
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.680	7.718	-0.038		888206	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.719				ND			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.715				ND			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.847				ND			
712.9 > 169.0		7.847							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

Report Date: 06-Sep-2016 08:22:29 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02016.d

Injection Date: 02-Sep-2016 13:22:03 Instrument ID: LC_LCMS5

Lims ID: MB 280-340544/1-A

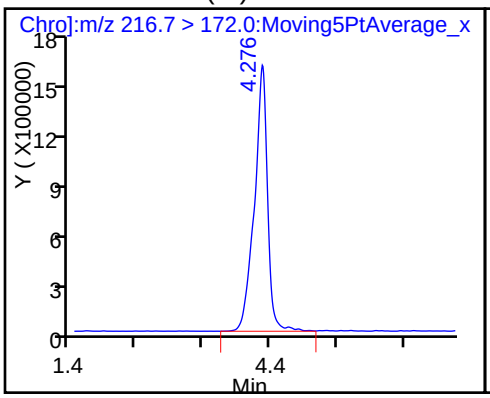
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4

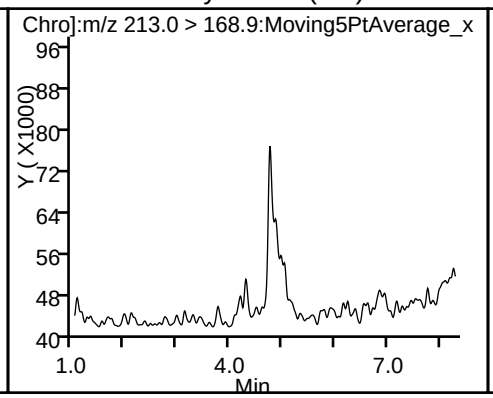
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

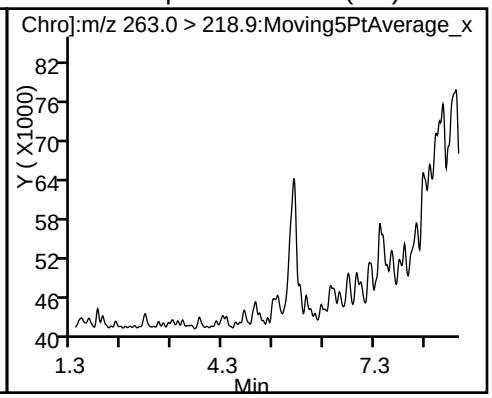
* 1 13C4 PFBA (IS)



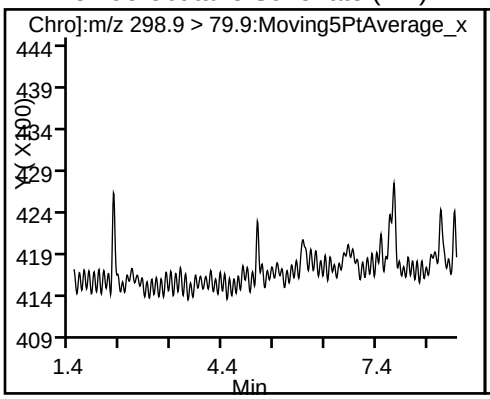
2 Perfluorobutyric acid (ND)



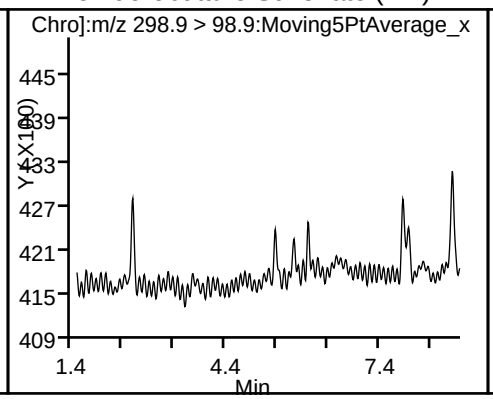
3 Perfluoropentanoic acid (ND)



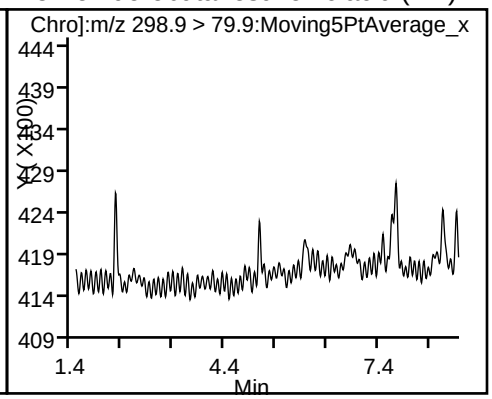
4 Perfluorobutane Sulfonate (ND)



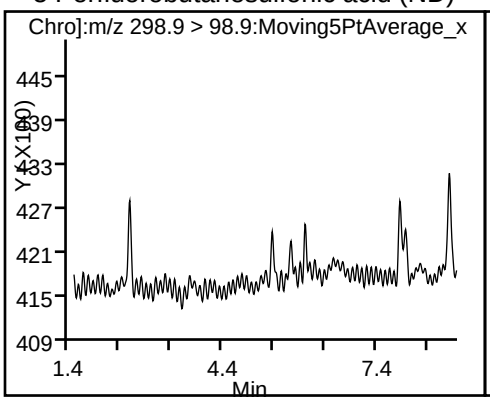
4 Perfluorobutane Sulfonate (ND)



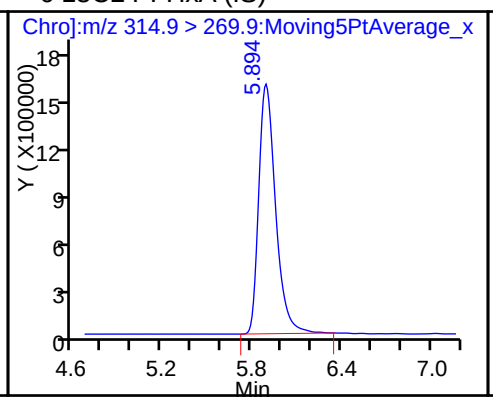
5 Perfluorobutanesulfonic acid (ND)



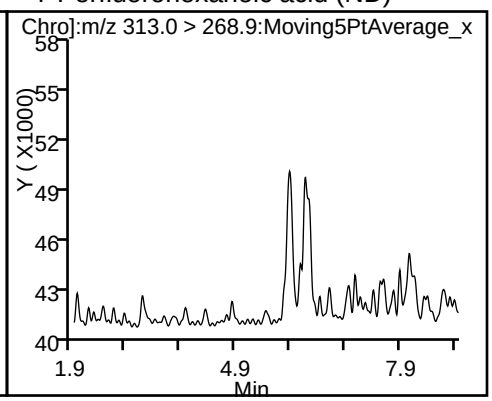
5 Perfluorobutanesulfonic acid (ND)



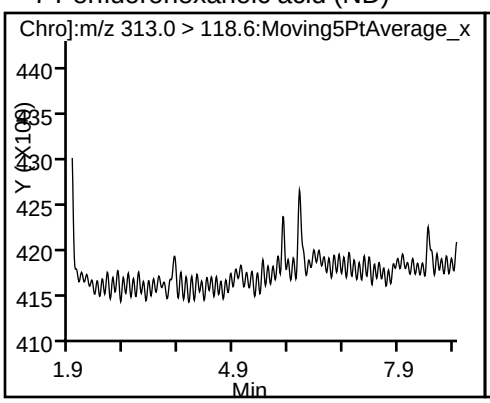
* 6 13C2 PFHxA (IS)



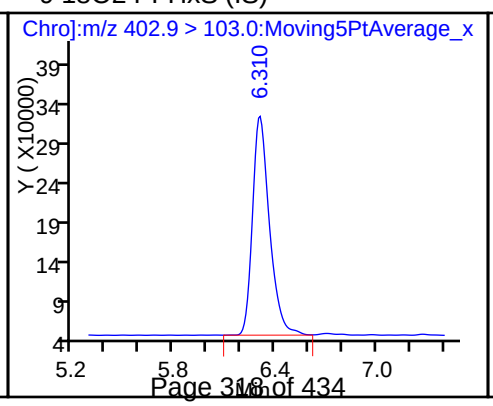
7 Perfluorohexanoic acid (ND)



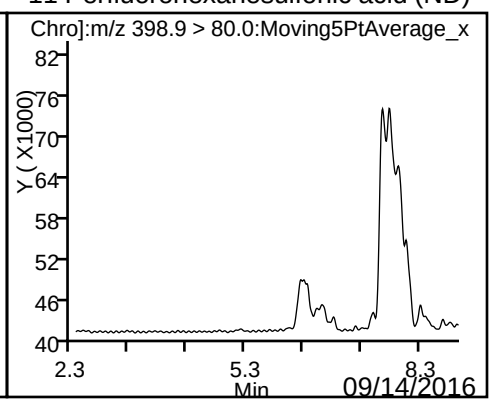
7 Perfluorohexanoic acid (ND)



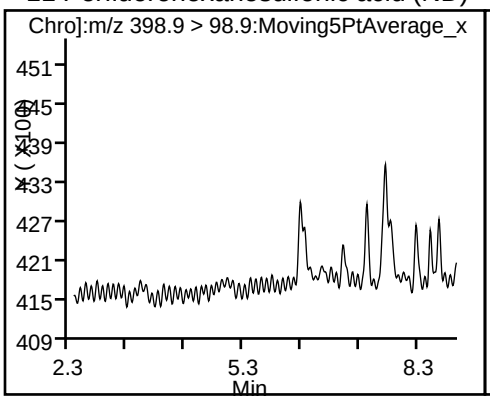
* 9 18O2 PFHxS (IS)



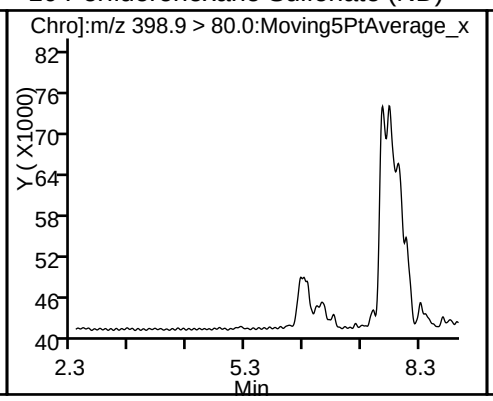
11 Perfluorohexanesulfonic acid (ND)



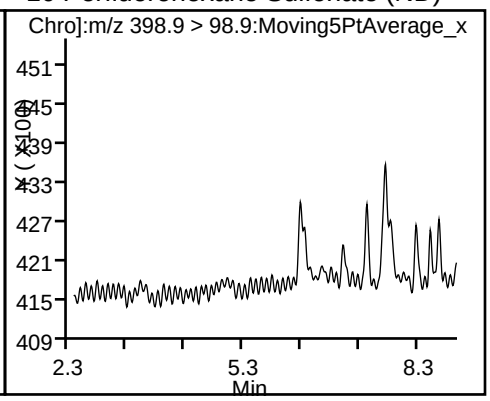
11 Perfluorohexanesulfonic acid (ND)



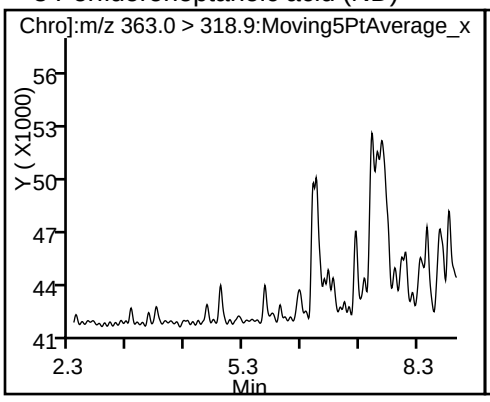
10 Perfluorohexane Sulfonate (ND)



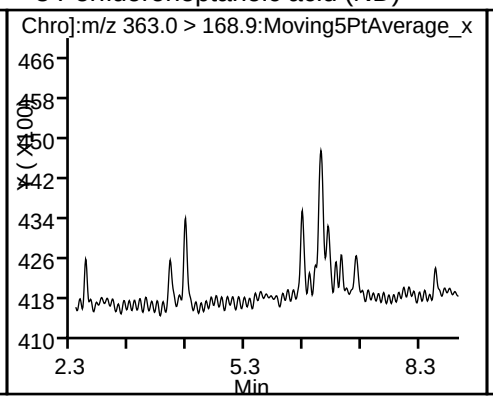
10 Perfluorohexane Sulfonate (ND)



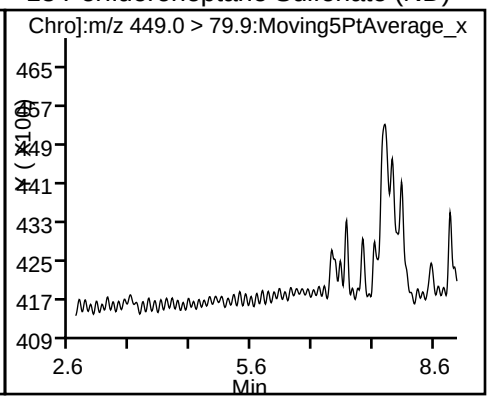
8 Perfluoroheptanoic acid (ND)



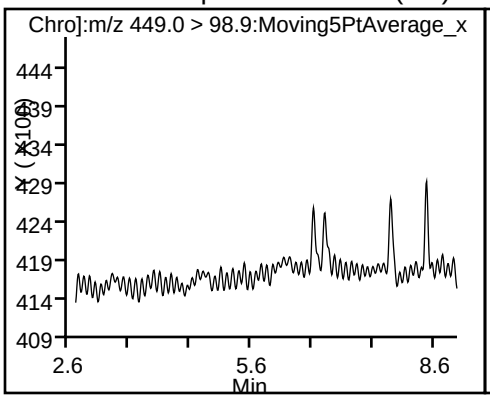
8 Perfluoroheptanoic acid (ND)



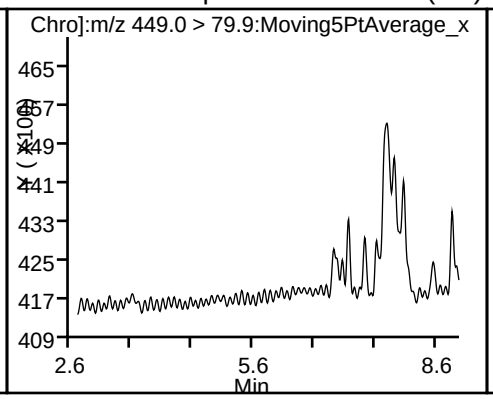
13 Perfluoroheptane Sulfonate (ND)



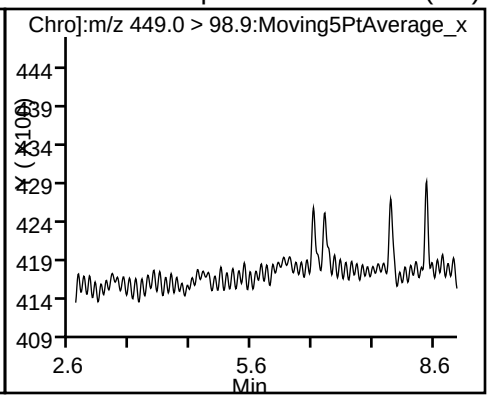
13 Perfluoroheptane Sulfonate (ND)



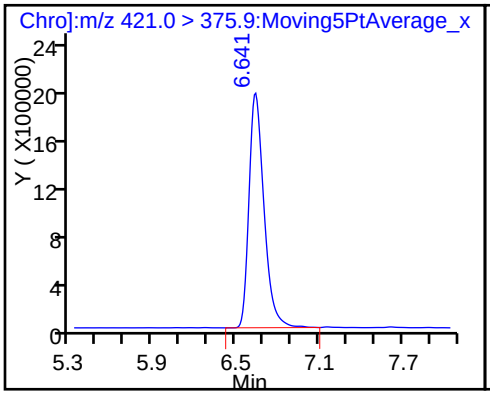
12 Perfluoroheptanesulfonic Acid (ND)



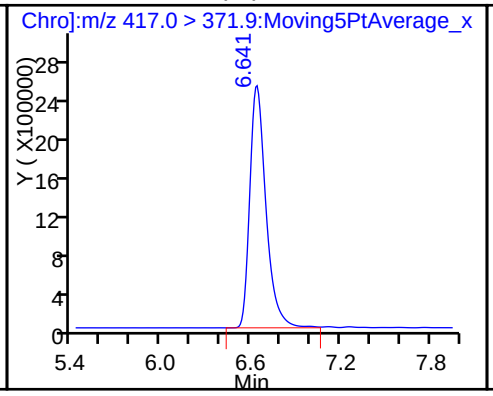
12 Perfluoroheptanesulfonic Acid (ND)



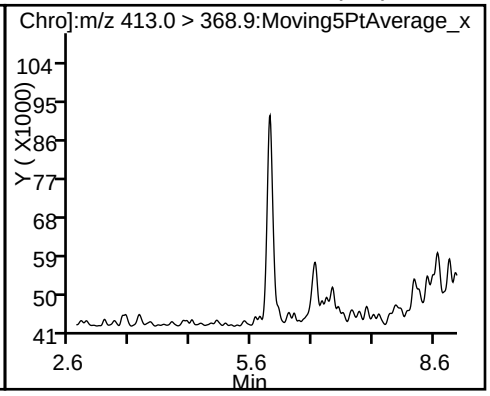
$ 14 13C8 PFOA



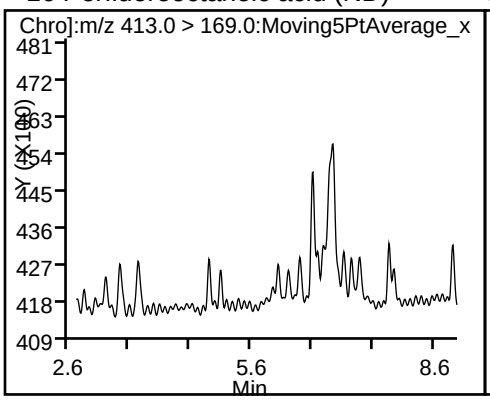
* 15 13C4 PFOA (IS)



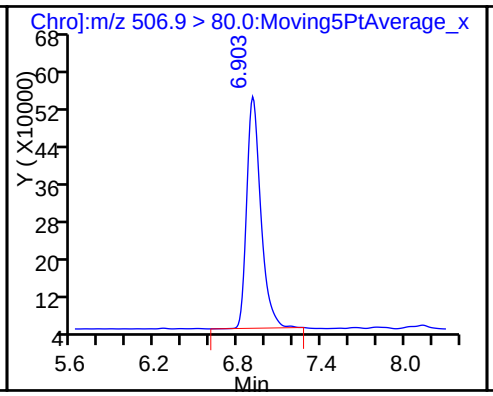
16 Perfluorooctanoic acid (ND)



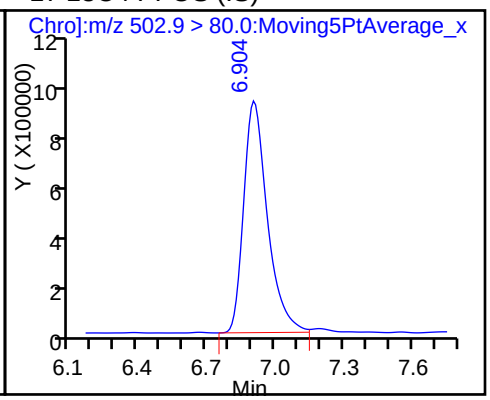
16 Perfluorooctanoic acid (ND)



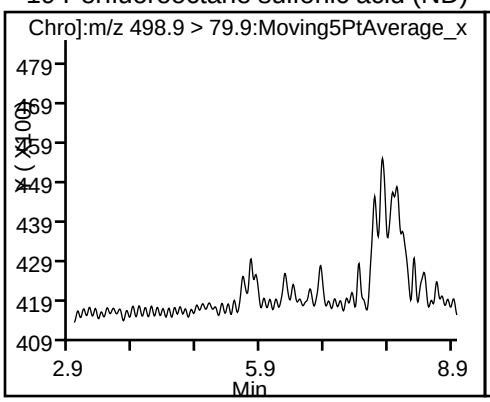
$ 18 13C8 PFOS



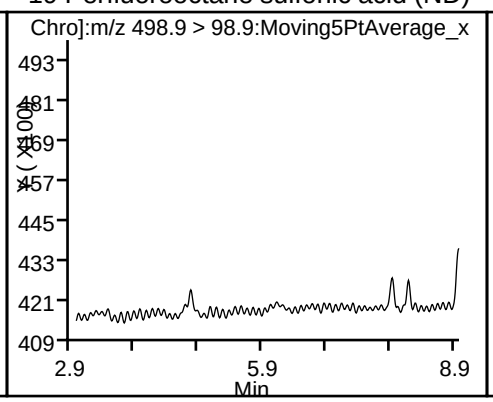
* 17 13C4 PFOS (IS)



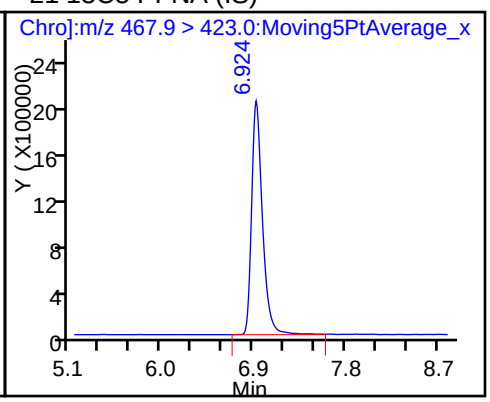
19 Perfluorooctane sulfonic acid (ND)



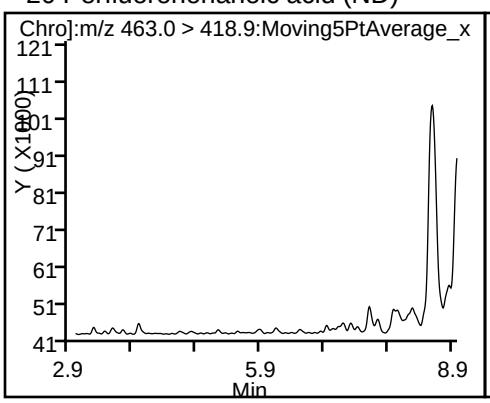
19 Perfluorooctane sulfonic acid (ND)



* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)



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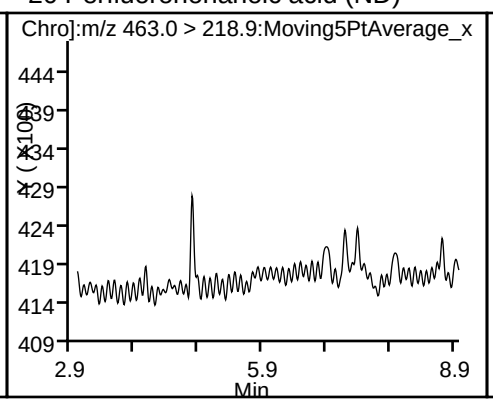
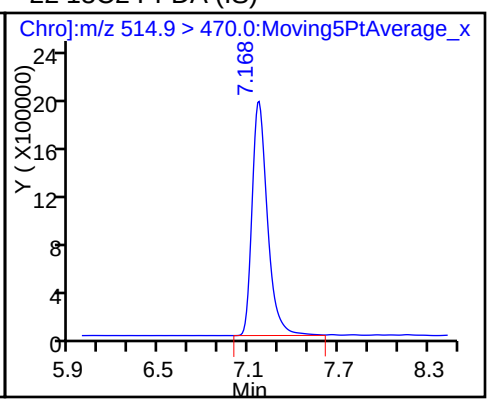
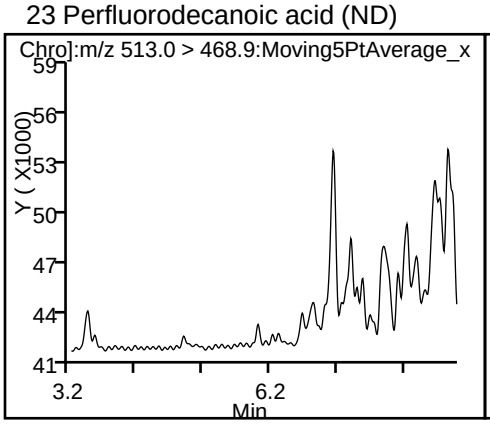


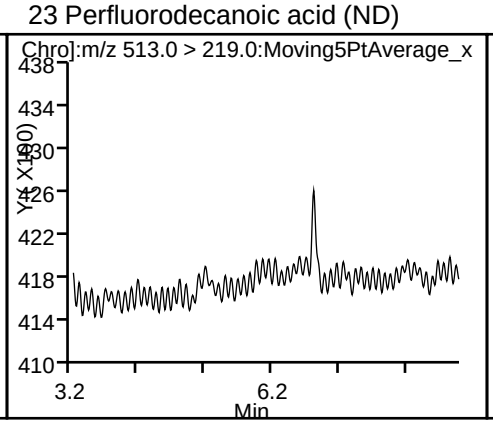
* 22 13C2 PFDA (IS)



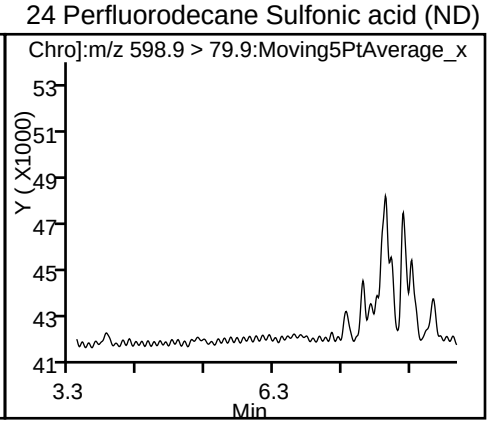
23 Perfluorodecanoic acid (ND)



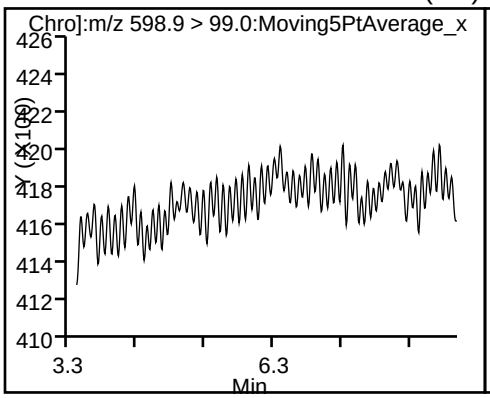
23 Perfluorodecanoic acid (ND)



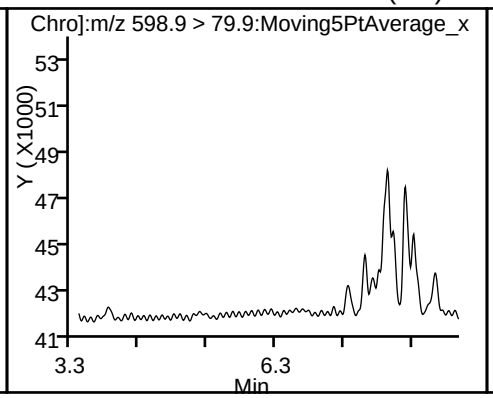
24 Perfluorodecane Sulfonic acid (ND)



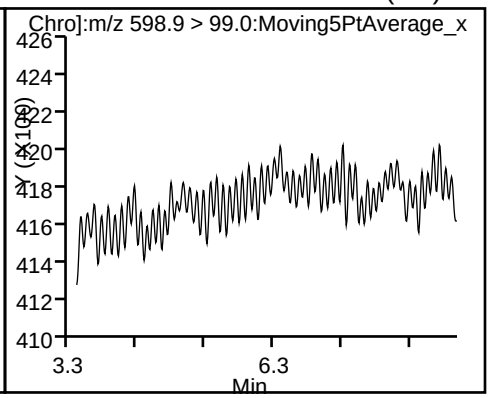
24 Perfluorodecane Sulfonic acid (ND)



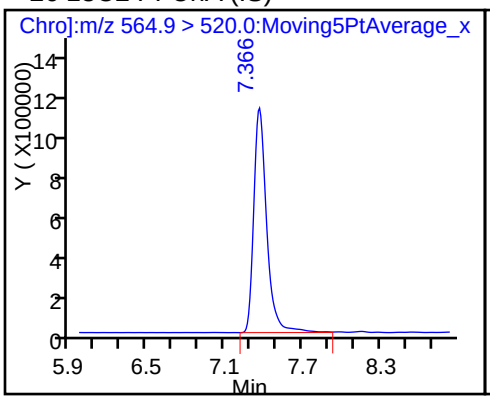
25 Perfluorodecane Sulfonate (ND)



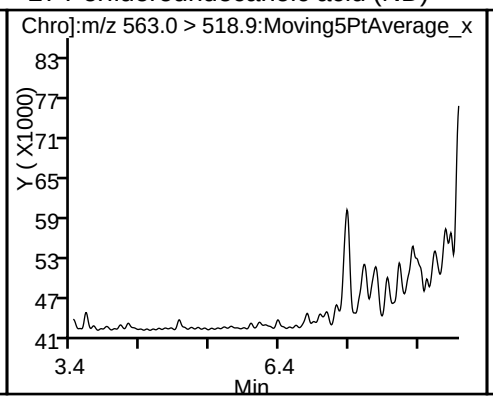
25 Perfluorodecane Sulfonate (ND)



* 26 13C2 PFUnA (IS)



27 Perfluoroundecanoic acid (ND)



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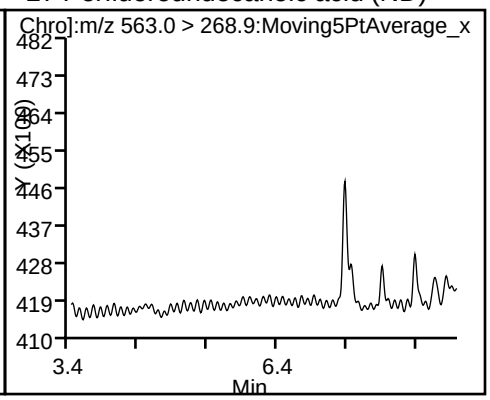

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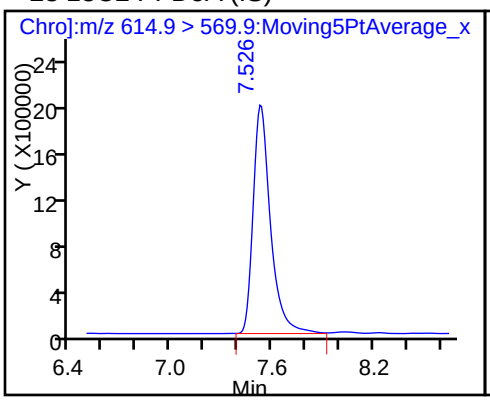

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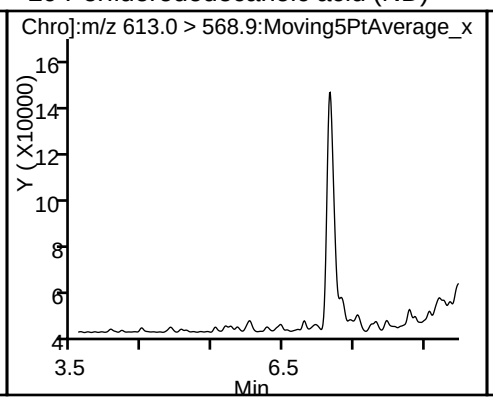
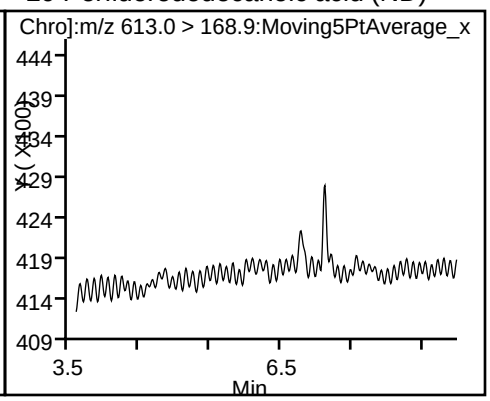


29 Perfluorododecanoic acid (ND)



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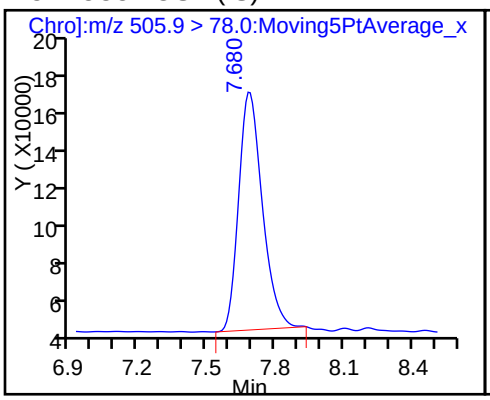
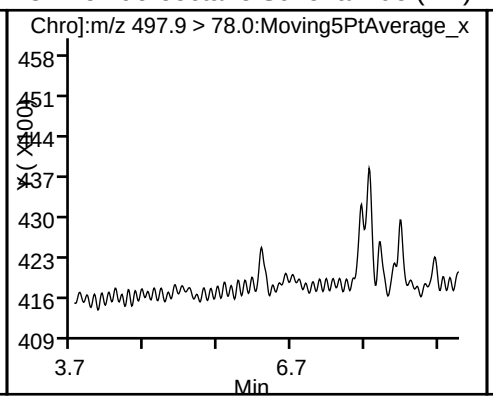
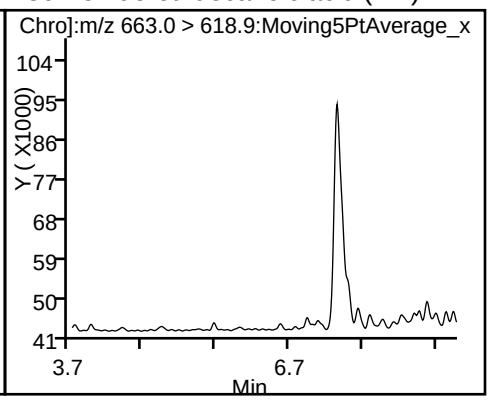


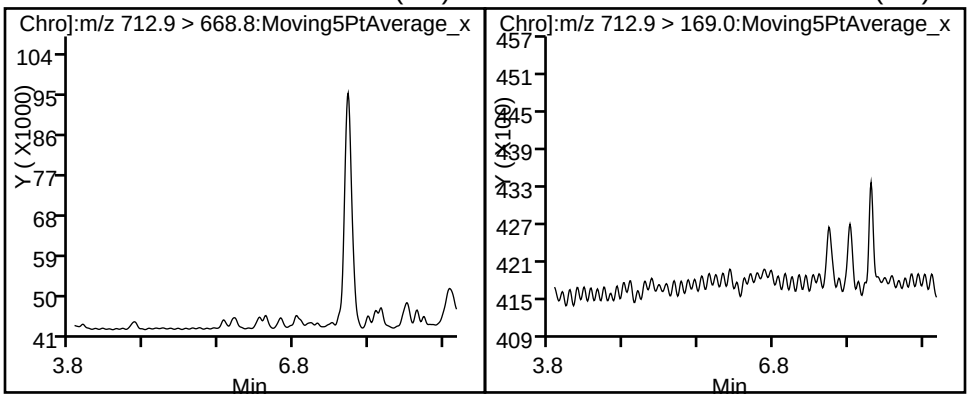
32 Perfluorooctane Sulfonamide (ND)



30 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-339617/2-A

Matrix: Water | Lab File ID: PC516I01029.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 08/25/2016 20:40

Sample wt/vol: 250(mL) | Date Analyzed: 09/01/2016 13:35

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340408 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.163		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.218		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.183		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.193		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.195		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.207		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	124		60-155
STL01054	13C8 PFOS	97		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01029.d
Lims ID: LCS 280-339617/2-A
Client ID:
Sample Type: LCS
Inject. Date: 01-Sep-2016 13:35:25 ALS Bottle#: 0 Worklist Smp#: 16
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-339617/2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:36 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:50:06

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.944	4.058	-0.114		14166591	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.944	4.068	-0.124	1.000	13425321	9.83			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.090	5.100	-0.010	0.897	10617468	9.17			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.222	-0.009	0.854	5015257	8.14			
298.9 > 98.9	5.213	5.222	-0.009	0.854	1617990		3.10(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.232	-0.019	0.854	5015257	8.14			
298.9 > 98.9	5.213	5.232	-0.019	0.854	1617990		3.10(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.686	-0.010		10618941	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.686	0.0	1.002	8603567	9.12			
313.0 > 118.6	5.686	5.686	0.0	1.002	220509		39.02(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.093	6.112	-0.019	0.947	13241414	10.9			
363.0 > 168.9	6.093	6.112	-0.019	0.947	3218901		4.11(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.102	6.120	-0.018		1322631	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.102	6.111	-0.009	1.000	5126825	9.17			
398.9 > 98.9	6.102	6.111	-0.009	1.000	1662259		3.08(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.102	6.121	-0.019	1.000	5126825	9.17			R
398.9 > 98.9	6.102	6.121	-0.019	1.000	1662259		3.08(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.432	6.451	-0.019	0.959	4801720	8.96			
449.0 > 98.9	6.432	6.451	-0.019	0.959	1375457		3.49(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.432	6.451	-0.019	0.959	4801720	8.96			
449.0 > 98.9	6.432	6.451	-0.019	0.959	1375457		3.49(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.432	6.461	-0.029	1.000	12054893	12.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.432	6.461	-0.029		14439053	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.433	6.461	-0.028	1.000	14651695	10.4			
413.0 > 169.0	6.433	6.461	-0.028	1.000	4486386		3.27(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.705	6.733	-0.028		4671510	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.724	-0.009	1.001	4859503	9.76			R
498.9 > 98.9	6.705	6.724	-0.019	1.000	1844869		2.63(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.714	6.733	-0.019	1.001	2537925	9.03			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.725	6.753	-0.028		11704258	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.725	6.753	-0.028	1.000	11950842	9.65			
463.0 > 218.9	6.725	6.753	-0.028	1.000	1534189		7.79(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.969	6.997	-0.028		10840747	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.969	6.998	-0.029	1.000	10087733	9.80			R
513.0 > 219.0	6.969	6.998	-0.029	1.000	981677		10.28(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.157	7.167	-0.010	1.067	3729096	7.68			
598.9 > 99.0	7.157	7.167	-0.010	1.067	1177617		3.17(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.157	7.176	-0.019	1.067	3729096	7.68			
598.9 > 99.0	7.157	7.176	-0.019	1.067	1177617		3.17(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.205	-0.019		5839671	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.205	-0.019	1.000	7366052	9.70			R
563.0 > 268.9	7.177	7.205	-0.028	0.999	902597		8.16(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.384	-0.019		10074555	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.384	-0.019	1.000	10020528	10.2			
613.0 > 168.9	7.365	7.384	-0.019	1.000	1203335		8.33(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.530	-0.010	0.999	528734	9.93			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.526	7.545	-0.019	1.022	11207634	8.79			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.529	0.0		515046	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.649	7.677	-0.028	1.038	6971999	7.11			
712.9 > 169.0	7.658	7.677	-0.019	1.040	1296269		5.38(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 02-Sep-2016 11:52:47 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01029.d

Injection Date: 01-Sep-2016 13:35:25 Instrument ID: LC_LCMS5

Lims ID: LCS 280-339617/2-A

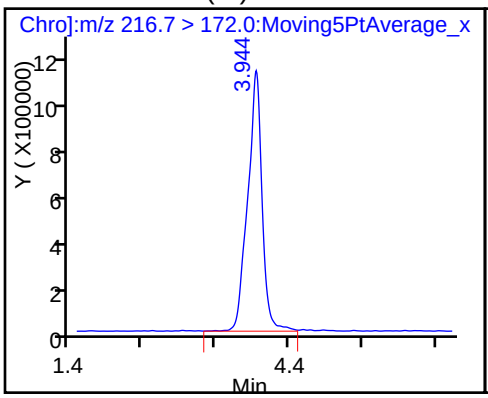
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 16

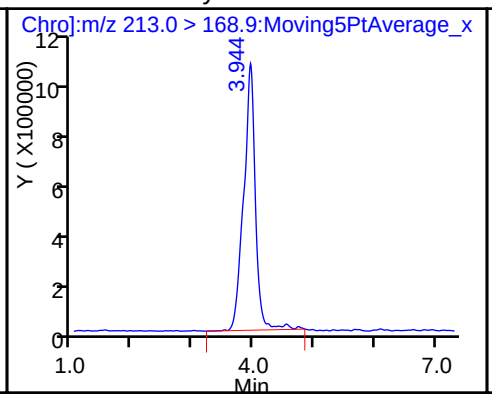
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

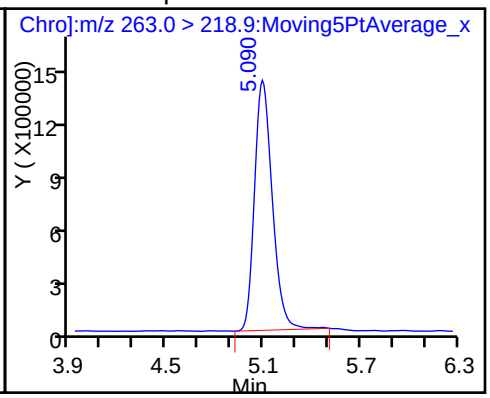
* 1 13C4 PFBA (IS)



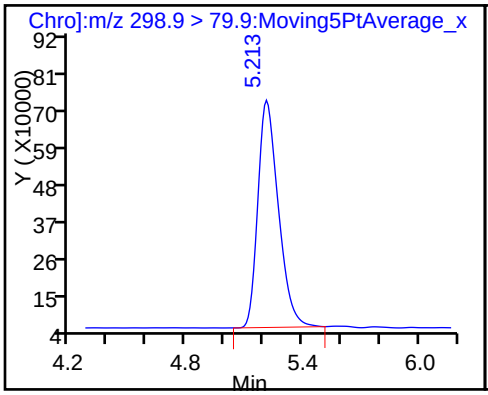
2 Perfluorobutyric acid



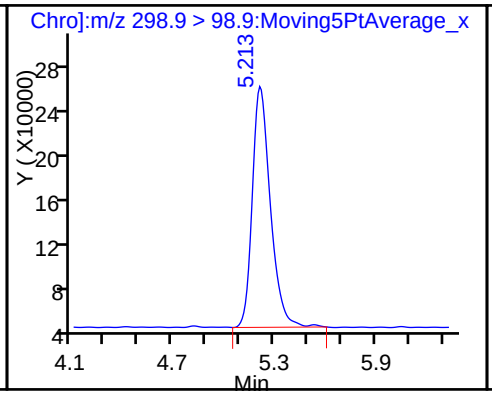
3 Perfluoropentanoic acid



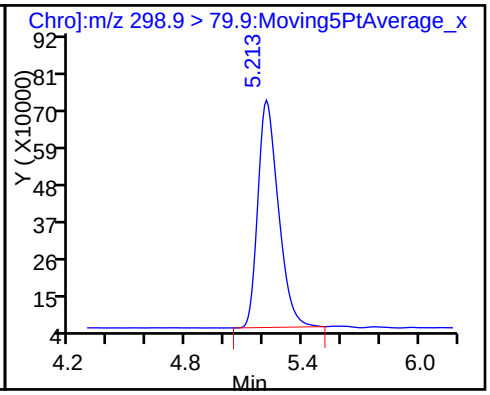
4 Perfluorobutane Sulfonate



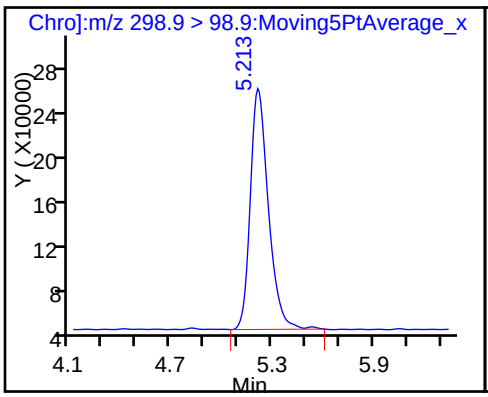
4 Perfluorobutane Sulfonate



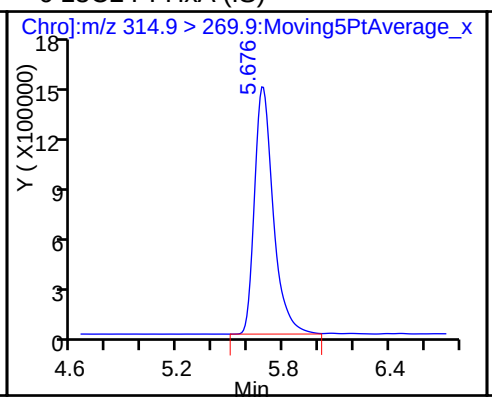
5 Perfluorobutanesulfonic acid



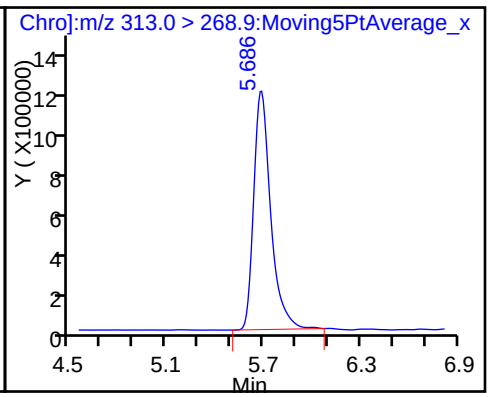
5 Perfluorobutanesulfonic acid



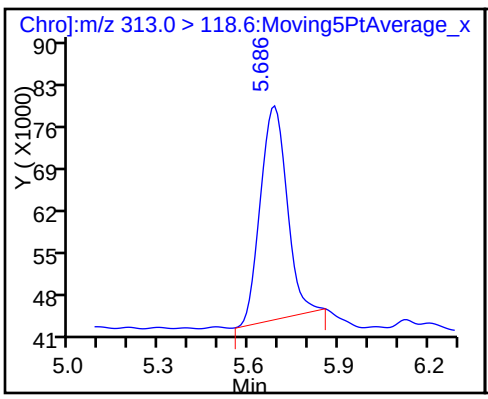
* 6 13C2 PFHxA (IS)



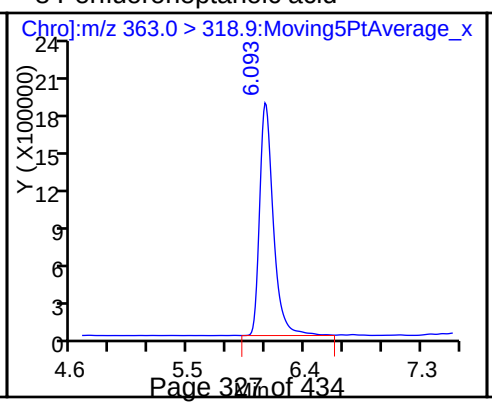
7 Perfluorohexanoic acid



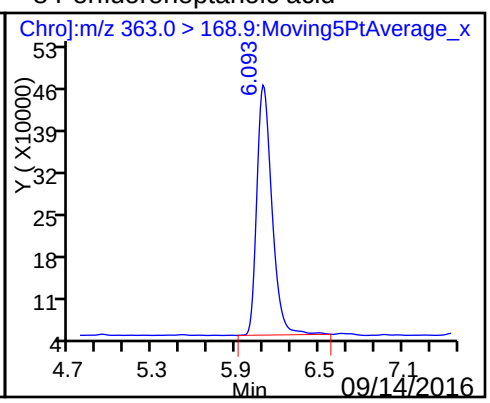
7 Perfluorohexanoic acid



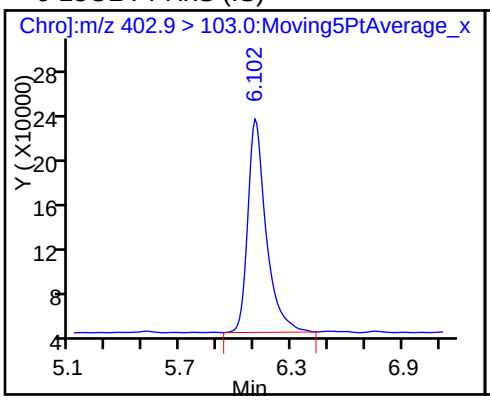
8 Perfluoroheptanoic acid



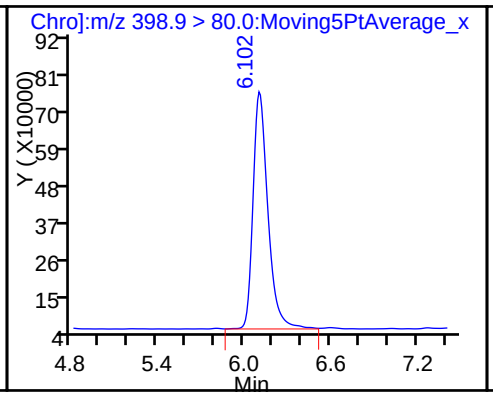
8 Perfluoroheptanoic acid



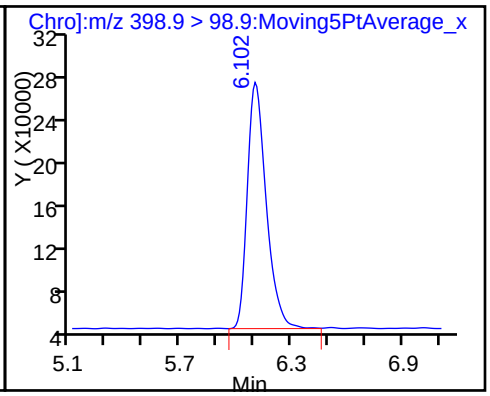
* 9 18O2 PFHxS (IS)



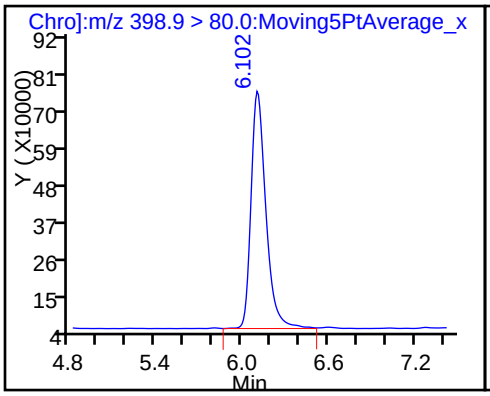
11 Perfluorohexanesulfonic acid



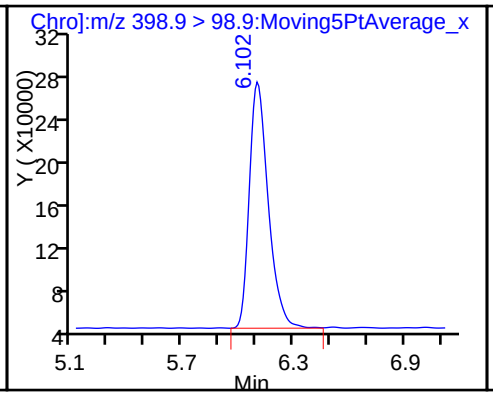
11 Perfluorohexanesulfonic acid



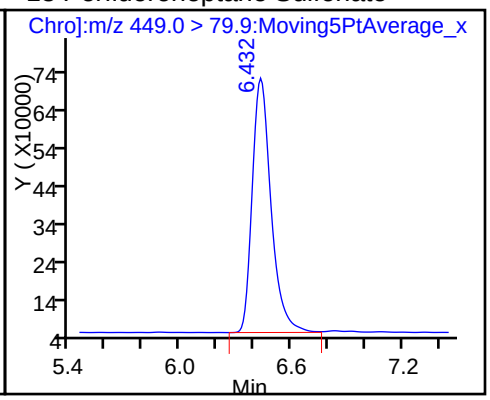
10 Perfluorohexane Sulfonate



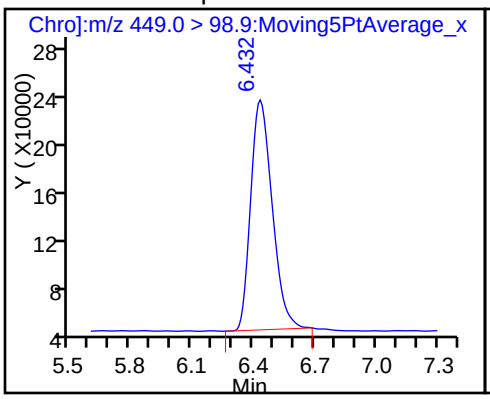
10 Perfluorohexane Sulfonate



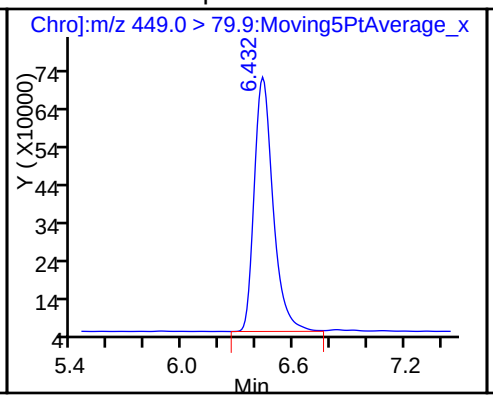
13 Perfluoroheptane Sulfonate



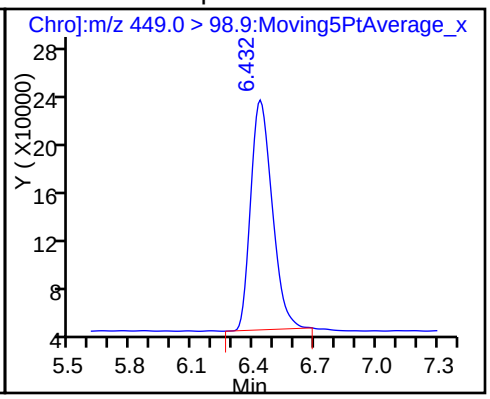
13 Perfluoroheptane Sulfonate



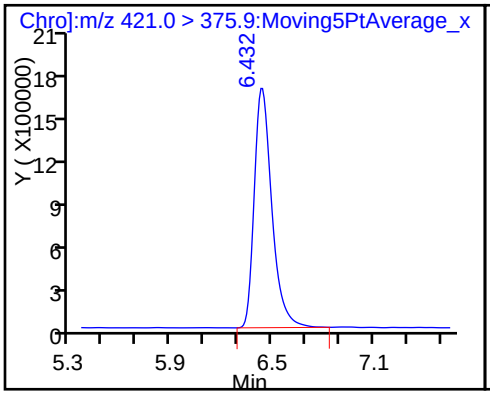
12 Perfluoroheptanesulfonic Acid



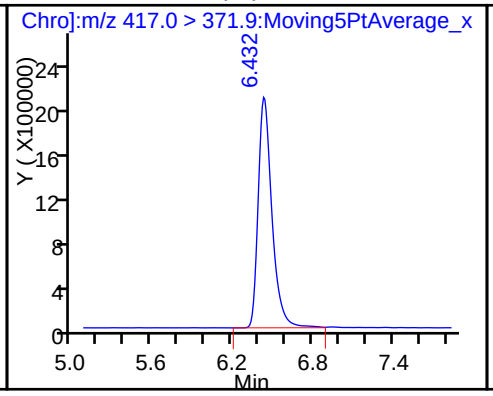
12 Perfluoroheptanesulfonic Acid



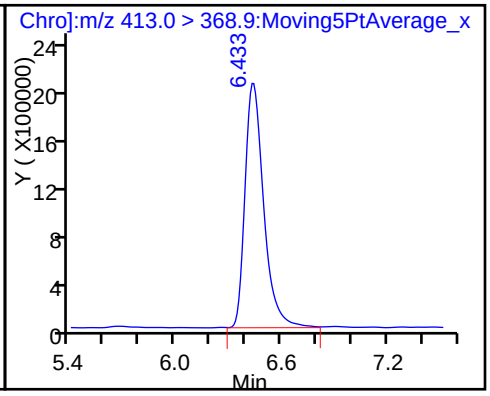
$ 14 13C8 PFOA



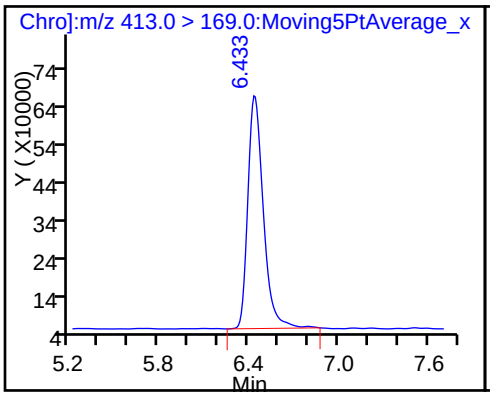
* 15 13C4 PFOA (IS)



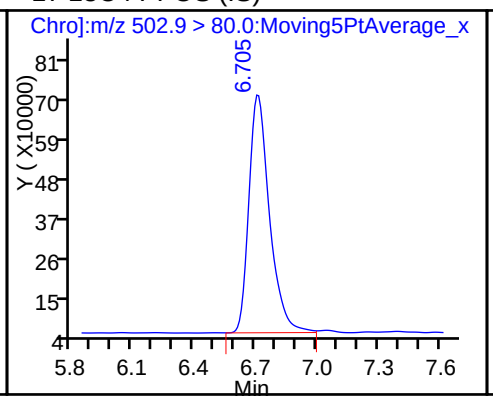
16 Perfluorooctanoic acid



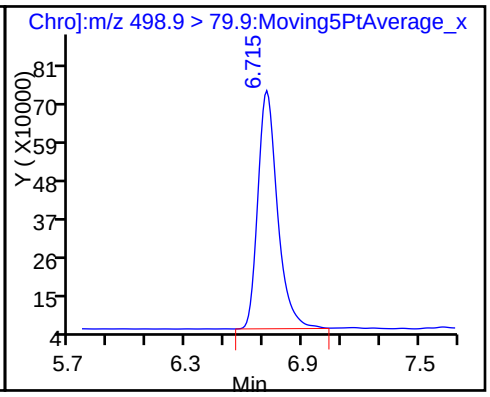
16 Perfluorooctanoic acid



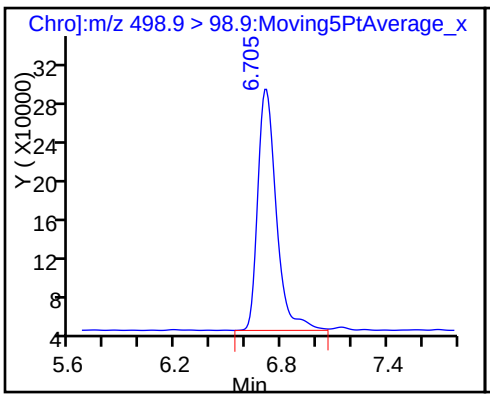
* 17 13C4 PFOS (IS)



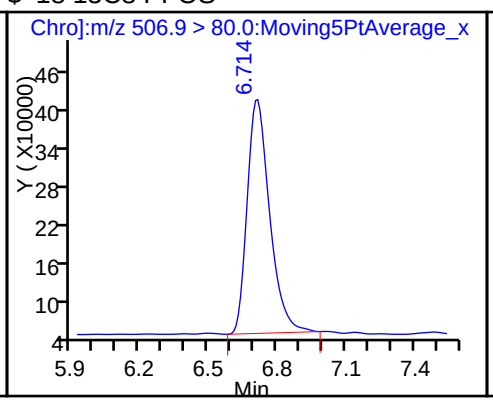
19 Perfluorooctane sulfonic acid



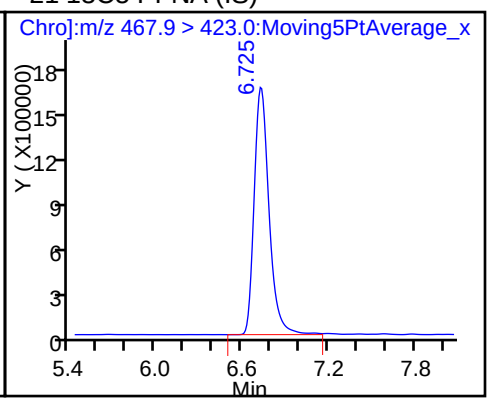
19 Perfluorooctane sulfonic acid



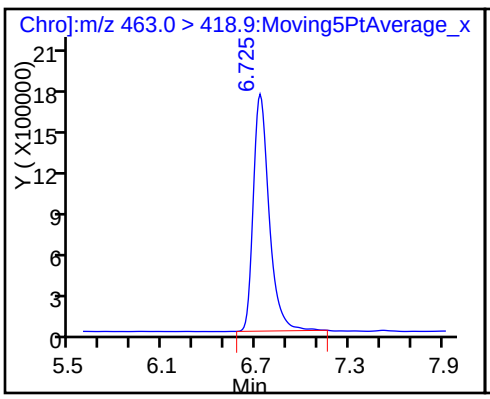
$ 18 13C8 PFOS



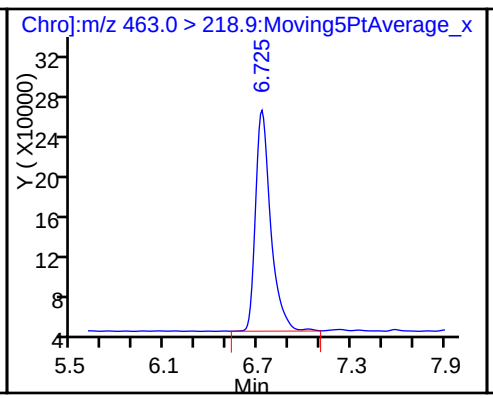
* 21 13C5 PFNA (IS)



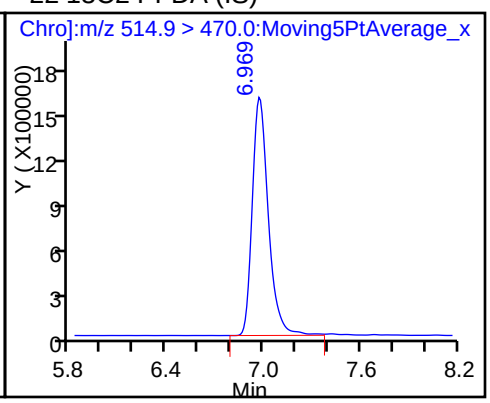
20 Perfluorononanoic acid



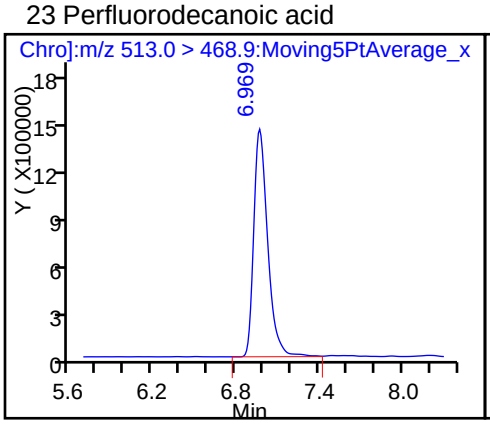
20 Perfluorononanoic acid



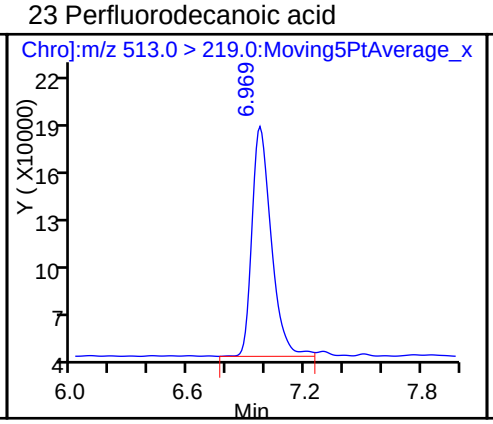
* 22 13C2 PFDA (IS)



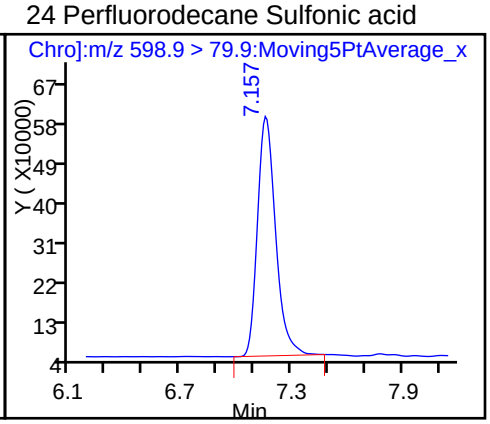
23 Perfluorodecanoic acid



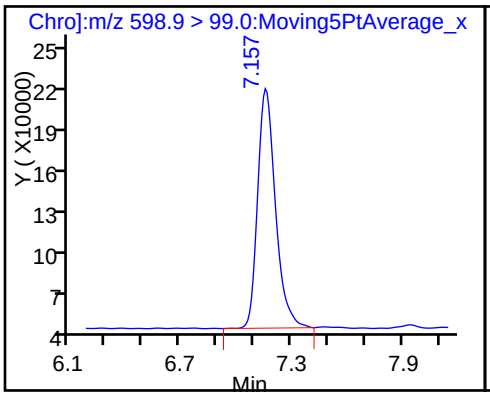
23 Perfluorodecanoic acid



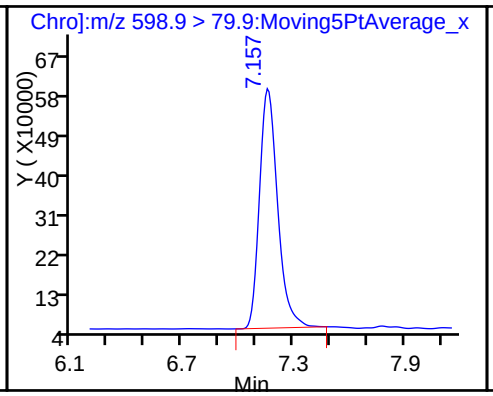
24 Perfluorodecane Sulfonic acid



24 Perfluorodecane Sulfonic acid



25 Perfluorodecane Sulfonate



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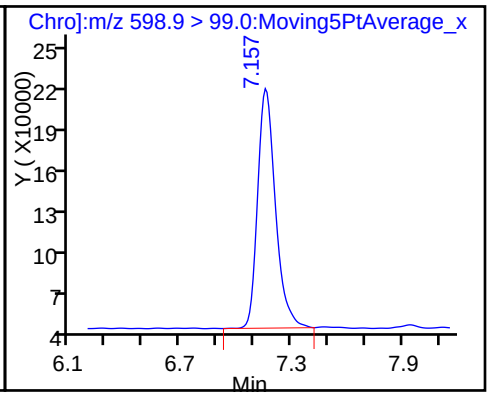
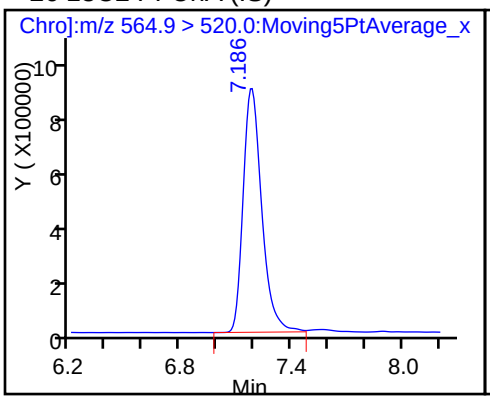
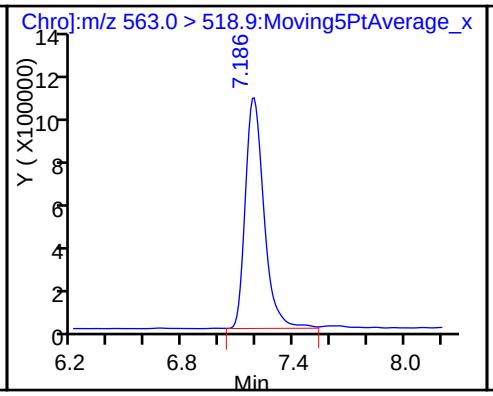


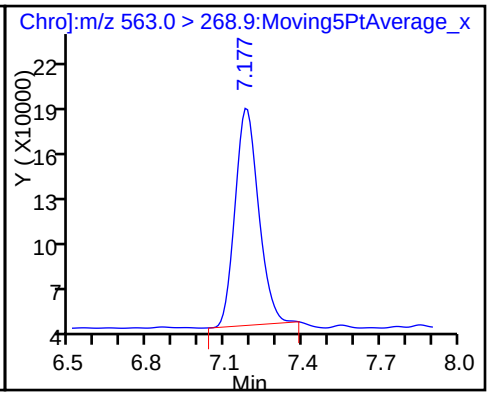
* 26 13C2 PFUnA (IS)



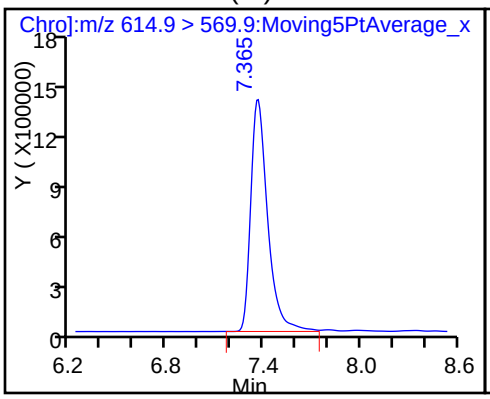
27 Perfluoroundecanoic acid



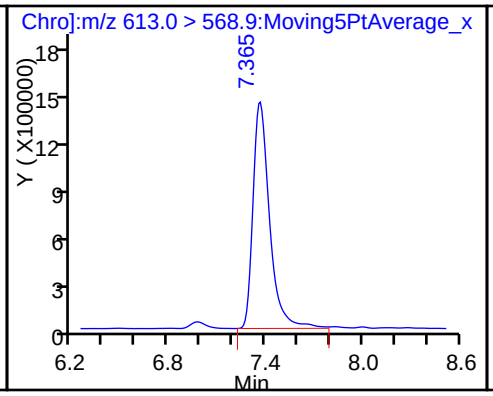
27 Perfluoroundecanoic acid



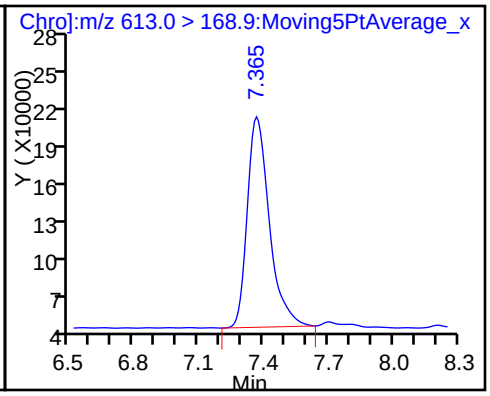
* 28 13C2 PFDoA (IS)



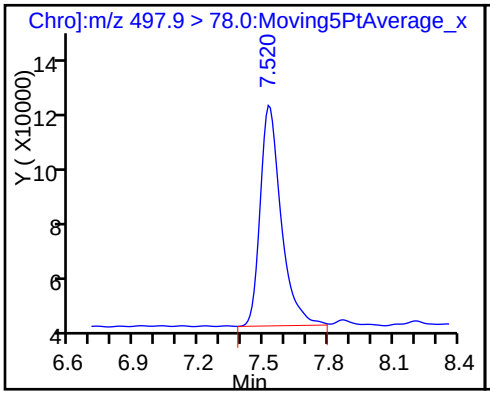
29 Perfluorododecanoic acid



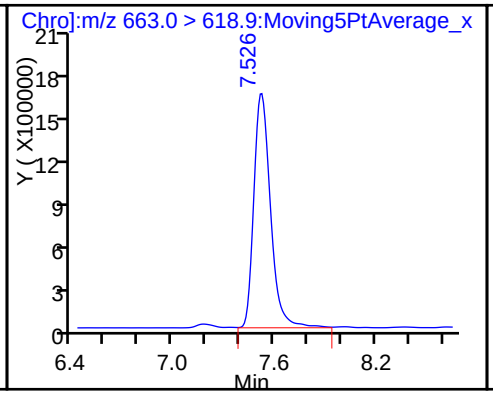
29 Perfluorododecanoic acid



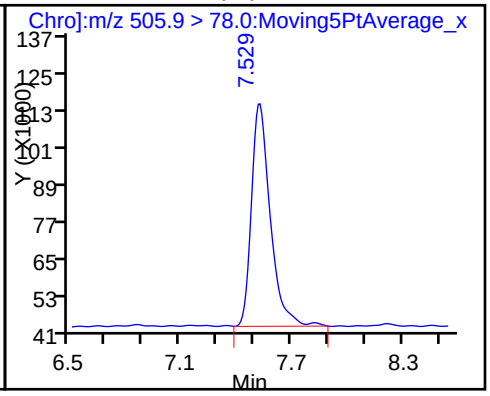
32 Perfluorooctane Sulfonamide



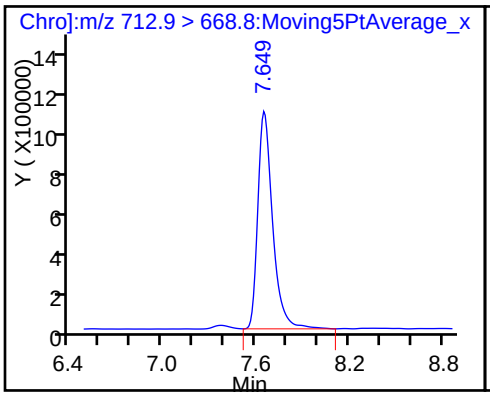
30 Perfluorotridecanoic acid



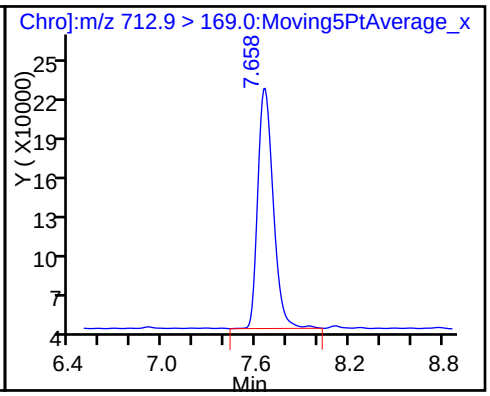
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-339633/2-A

Matrix: Solid | Lab File ID: PC516I01074.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.00(g) | Date Analyzed: 09/01/2016 22:49

Con. Extract Vol.: 20.4(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	16.29		0.82	0.14
375-85-9	Perfluoroheptanoic acid (PFHpA)	20.97		0.82	0.12
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	17.15		0.82	0.29
375-95-1	Perfluorononanoic acid (PFNA)	18.89		0.82	0.22
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19.19		0.82	0.14
335-67-1	Perfluorooctanoic acid (PFOA)	20.97		0.82	0.23

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	129		57-153
STL01054	13C8 PFOS	110		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01074.d
Lims ID: LCS 280-339633/2-A
Client ID:
Sample Type: LCS
Inject. Date: 01-Sep-2016 22:49:30 ALS Bottle#: 0 Worklist Smp#: 61
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-339633/2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:17:26

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.153	4.276	-0.123		12508934	9.80			
2 Perfluorobutyric acid									
213.0 > 168.9	4.153	4.266	-0.113	1.000	10838497	8.81			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.204	5.308	-0.104	0.899	10401055	10.4			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.317	5.431	-0.114	0.854	5085832	7.98			R
298.9 > 98.9	5.308	5.431	-0.123	0.853	1457855		3.49(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.317	5.431	-0.114	0.854	5085832	7.98			
298.9 > 98.9	5.308	5.431	-0.123	0.853	1457855		3.49(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.790	5.904	-0.114		8986316	9.80			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.790	5.894	-0.104	1.000	7418301	9.11			
313.0 > 118.6	5.790	5.894	-0.104	1.000	253496		29.26(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.225	6.330	-0.105	0.947	11504537	10.3			
363.0 > 168.9	6.225	6.330	-0.105	0.947	2728893		4.22(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.225	6.338	-0.113		1340660	9.27			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.234	6.329	-0.095	1.002	4860276	8.41			R
398.9 > 98.9	6.234	6.329	-0.095	1.002	1592176		3.05(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.234	6.329	-0.095	1.002	4860276	8.41			
398.9 > 98.9	6.234	6.329	-0.095	1.002	1592176		3.05(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.564	6.659	-0.095	0.960	4578355	8.75			
449.0 > 98.9	6.564	6.659	-0.095	0.960	1382588		3.31(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.564	6.659	-0.095	0.960	4578355	8.75			
449.0 > 98.9	6.564	6.659	-0.095	0.960	1382588		3.31(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.574	6.669	-0.095	1.000	11285382	12.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.575	6.669	-0.095		13068803	9.80			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.575	6.669	-0.094	1.000	13417300	10.3			
413.0 > 169.0	6.575	6.669	-0.094	1.000	4359758		3.08(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.837	6.941	-0.104	1.000	2754005	10.0			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.837	6.942	-0.105		4472760	9.37			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.838	6.942	-0.104	1.000	4571985	9.40			R
498.9 > 98.9	6.838	6.942	-0.104	1.000	1809175		2.53(1.31-2.43)		
20 Perfluorononanoic acid									
463.0 > 418.9	6.858	6.952	-0.094	1.000	10775716	9.26			
463.0 > 218.9	6.848	6.952	-0.104	0.999	1422895		7.57(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.857	6.962	-0.105		10786103	9.80			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.111	7.206	-0.095		10416057	9.80			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.111	7.206	-0.095	1.000	9012439	8.94			R
513.0 > 219.0	7.111	7.206	-0.095	1.000	924830		9.74(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.290	7.375	-0.085	1.066	4983572	10.5			
598.9 > 99.0	7.290	7.375	-0.085	1.066	1456332		3.42(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.290	7.375	-0.085	1.066	4983572	10.5			
598.9 > 99.0	7.290	7.375	-0.085	1.066	1456332		3.42(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.319	7.414	-0.095		6483521	9.80			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.319	7.414	-0.095	1.000	7989010	9.29			R
563.0 > 268.9	7.319	7.414	-0.095	1.000	921163		8.67(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.498	7.583	-0.085		15091783	9.80			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.498	7.583	-0.085	1.000	13689444	9.15			
613.0 > 168.9	7.488	7.583	-0.095	0.999	1597921		8.57(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.649	7.734	-0.085	1.020	17121186	8.79			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.568	7.672	-0.104	1.000	14576915	8.34			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.567	7.671	-0.104		16568427	9.80			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.781	7.857	-0.076	1.038	13299830	8.88			
712.9 > 169.0	7.791	7.857	-0.066	1.039	2041321		6.52(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Report Date: 02-Sep-2016 11:55:12 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01074.d

Injection Date: 01-Sep-2016 22:49:30 Instrument ID: LC_LCMS5

Lims ID: LCS 280-339633/2-A

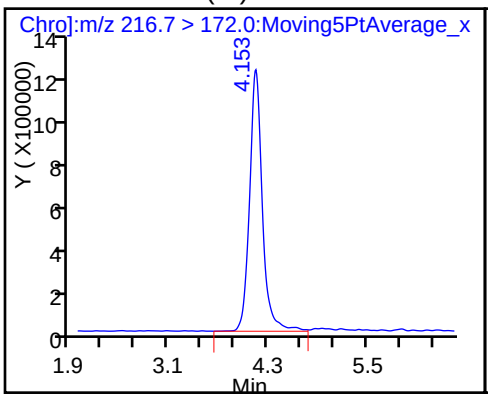
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 61

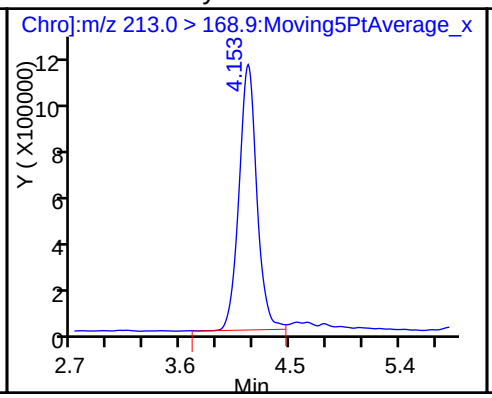
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

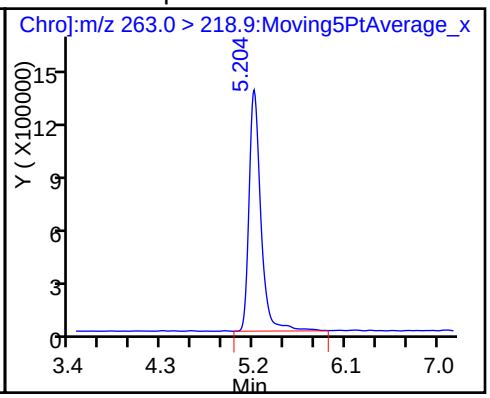
* 1 13C4 PFBA (IS)



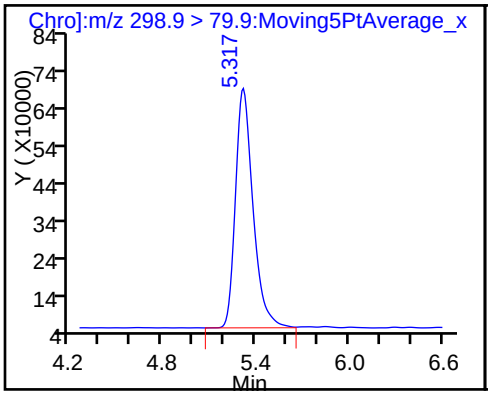
2 Perfluorobutyric acid



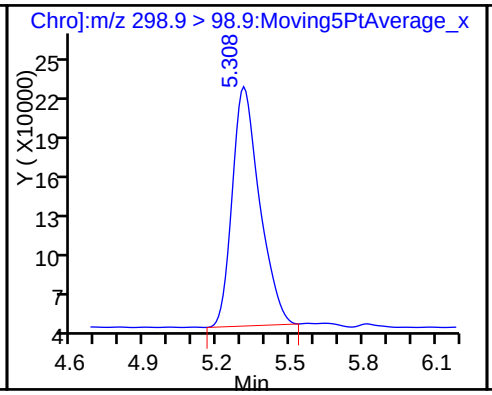
3 Perfluoropentanoic acid



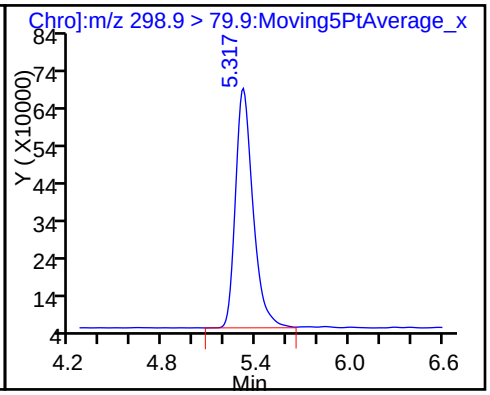
4 Perfluorobutane Sulfonate



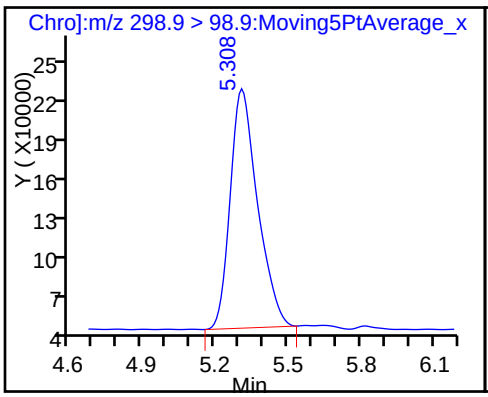
4 Perfluorobutane Sulfonate



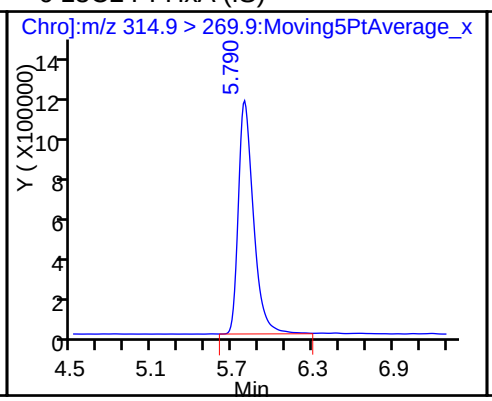
5 Perfluorobutanesulfonic acid



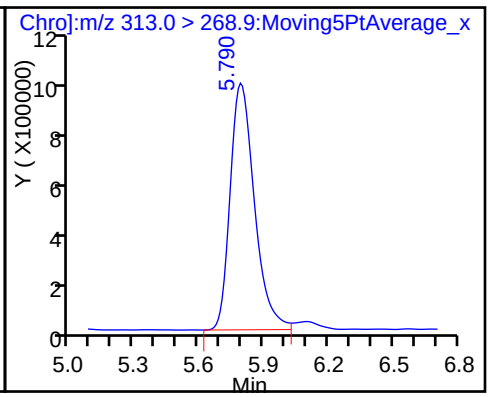
5 Perfluorobutanesulfonic acid



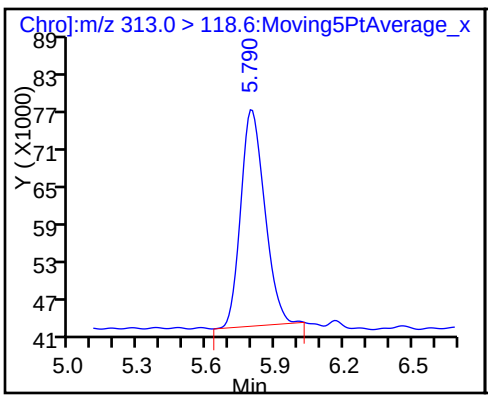
* 6 13C2 PFHxA (IS)



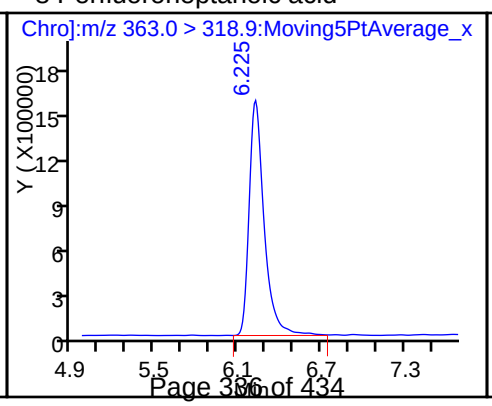
7 Perfluorohexanoic acid



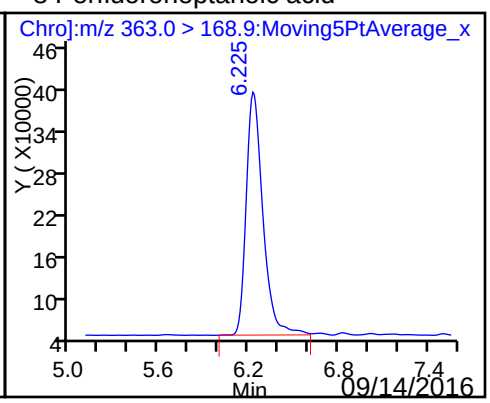
7 Perfluorohexanoic acid



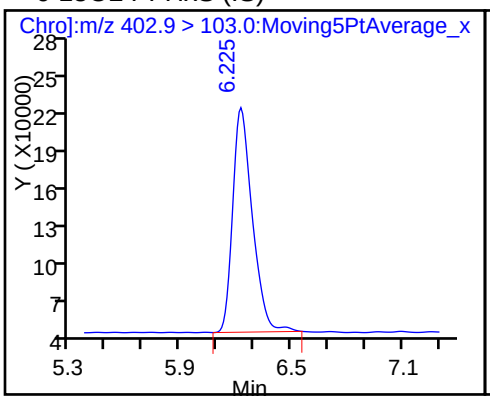
8 Perfluoroheptanoic acid



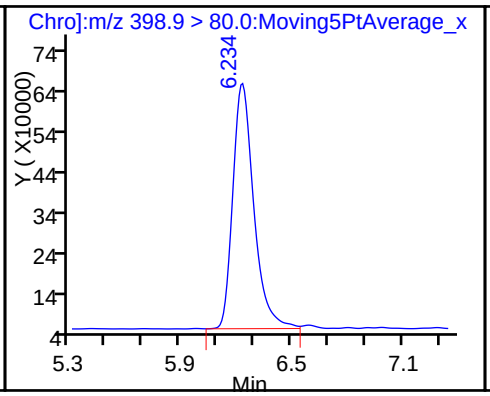
8 Perfluoroheptanoic acid



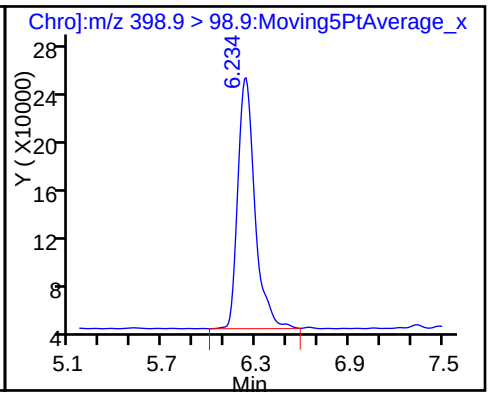
* 9 18O2 PFHxS (IS)



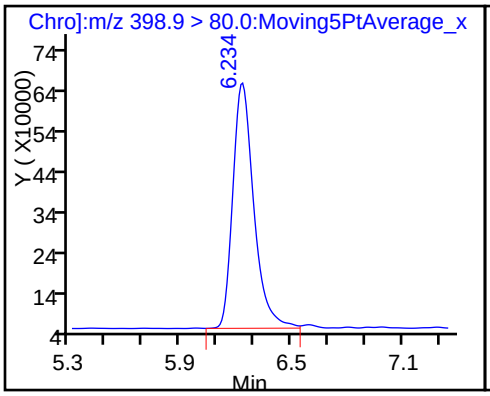
10 Perfluorohexane Sulfonate



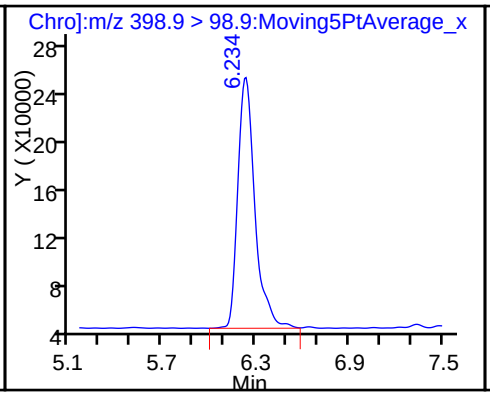
10 Perfluorohexane Sulfonate



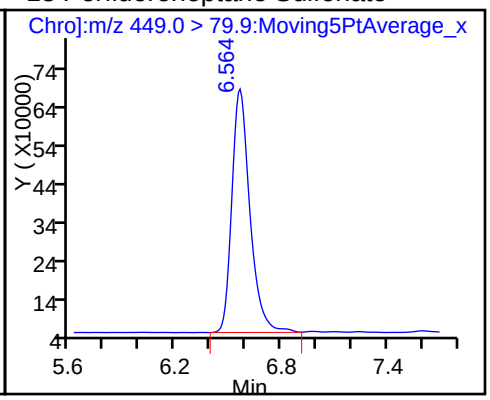
11 Perfluorohexanesulfonic acid



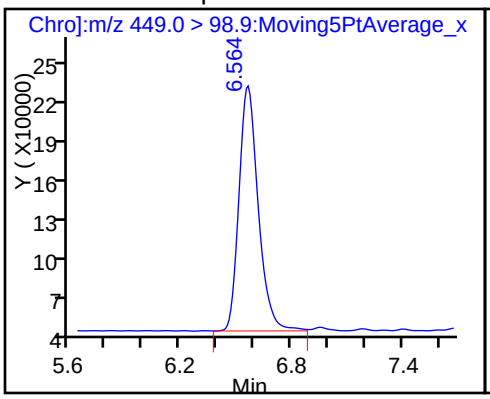
11 Perfluorohexanesulfonic acid



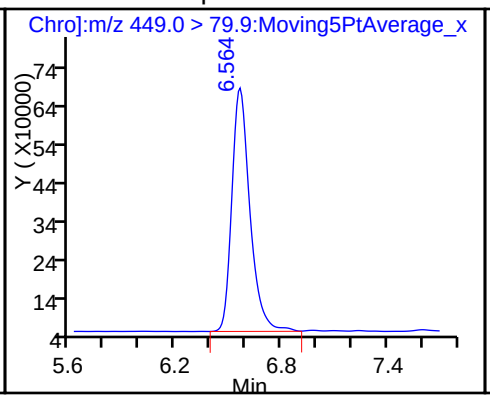
13 Perfluoroheptane Sulfonate



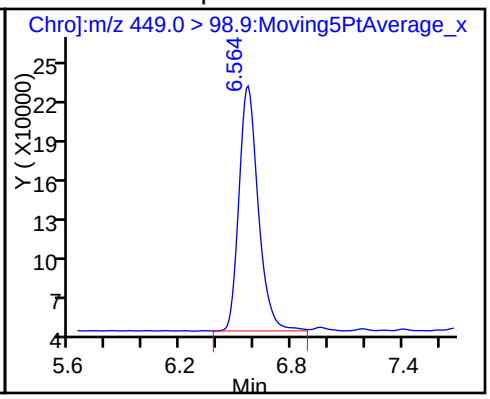
13 Perfluoroheptane Sulfonate



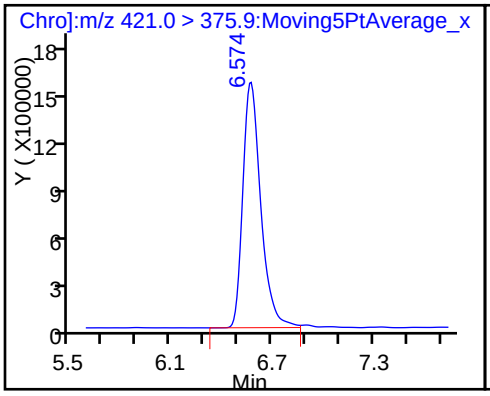
12 Perfluoroheptanesulfonic Acid



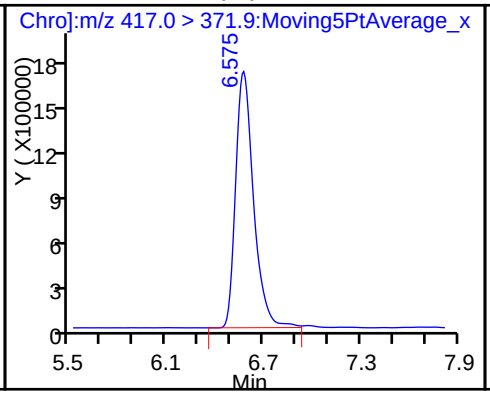
12 Perfluoroheptanesulfonic Acid



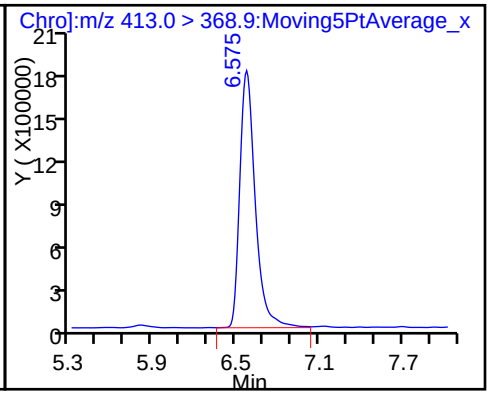
$ 14 13C8 PFOA



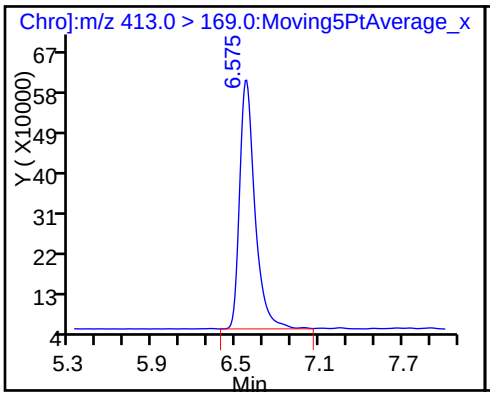
* 15 13C4 PFOA (IS)



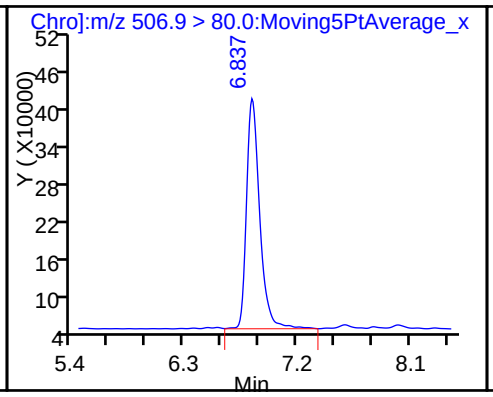
16 Perfluorooctanoic acid



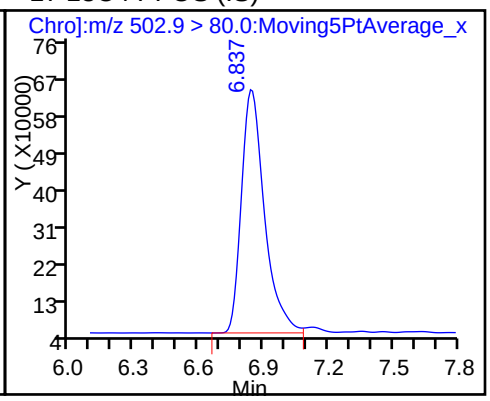
16 Perfluorooctanoic acid



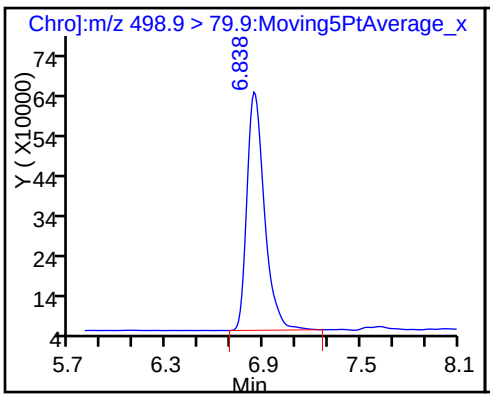
$ 18 13C8 PFOS



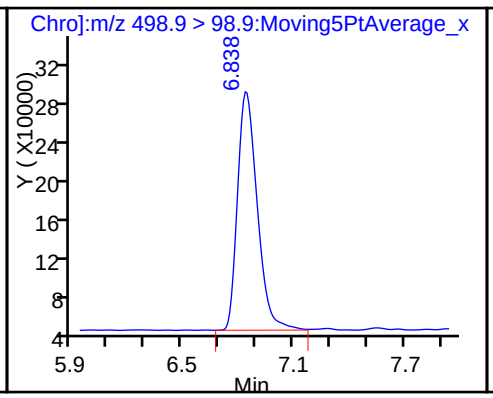
* 17 13C4 PFOS (IS)



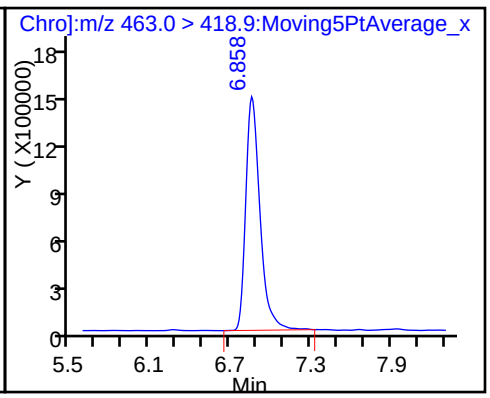
19 Perfluorooctane sulfonic acid



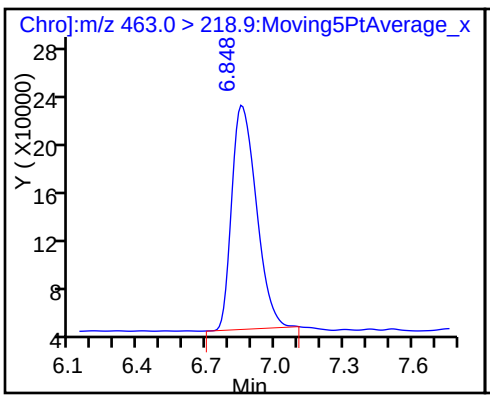
19 Perfluorooctane sulfonic acid



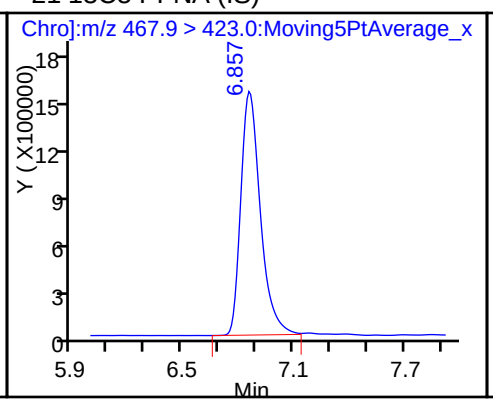
20 Perfluorononanoic acid



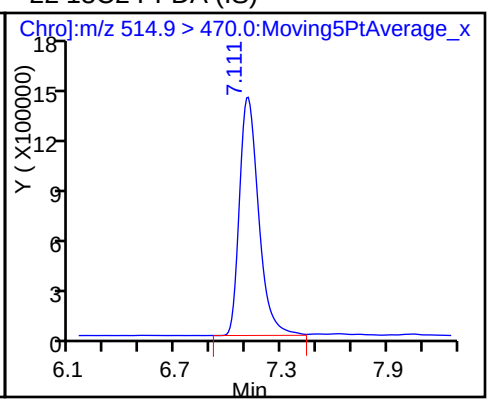
20 Perfluorononanoic acid



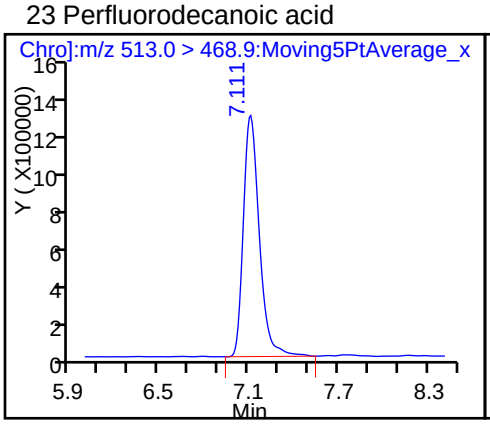
* 21 13C5 PFNA (IS)



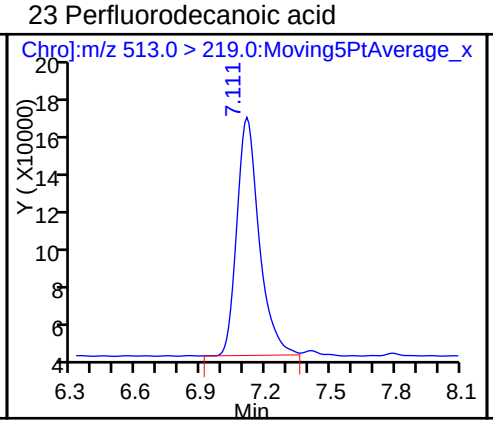
* 22 13C2 PFDA (IS)



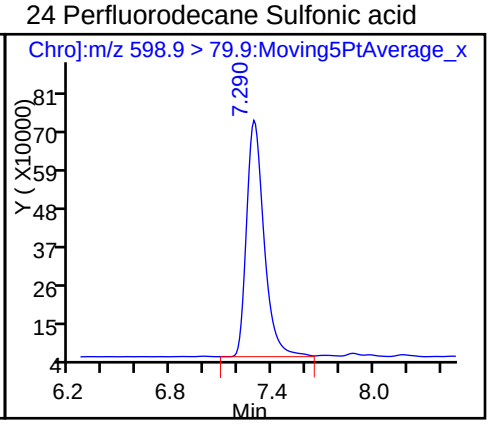
23 Perfluorodecanoic acid



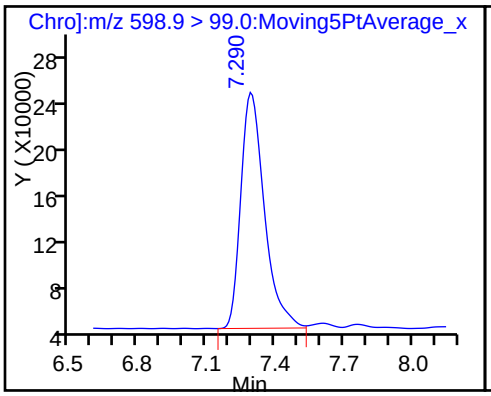
23 Perfluorodecanoic acid



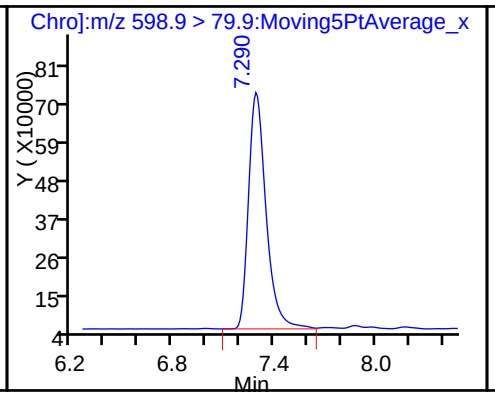
24 Perfluorodecane Sulfonic acid



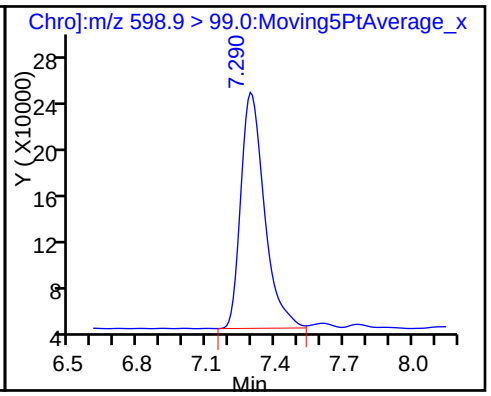
24 Perfluorodecane Sulfonic acid



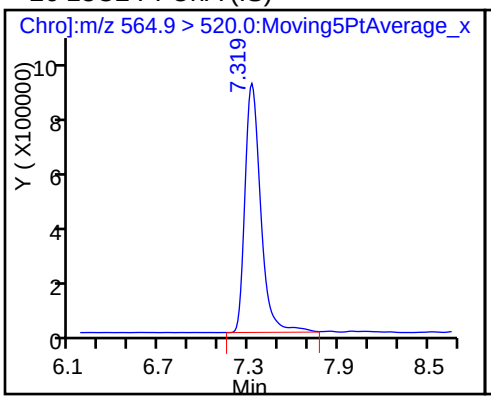
25 Perfluorodecane Sulfonate



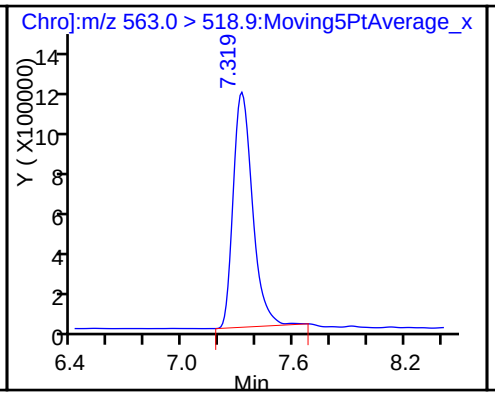
25 Perfluorodecane Sulfonate



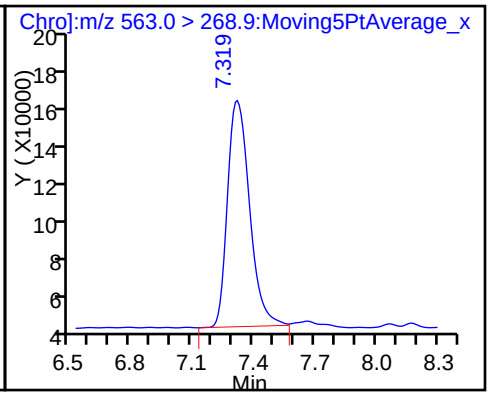
* 26 13C2 PFUnA (IS)



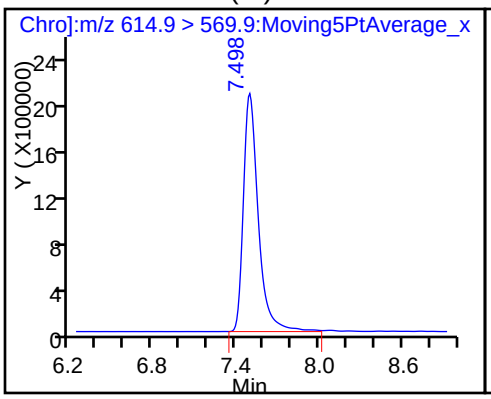
27 Perfluoroundecanoic acid



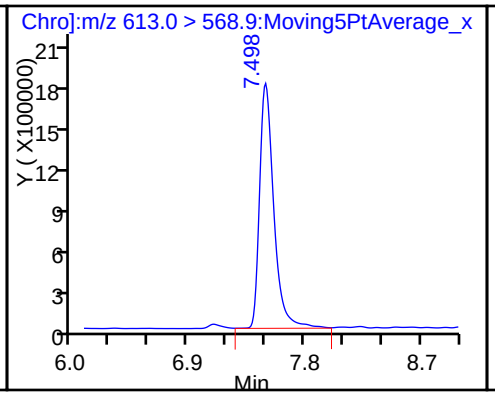
27 Perfluoroundecanoic acid



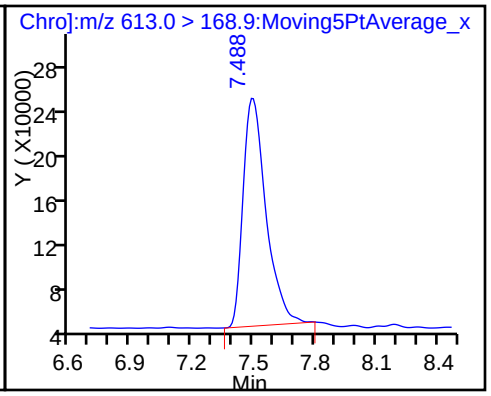
* 28 13C2 PFDoA (IS)



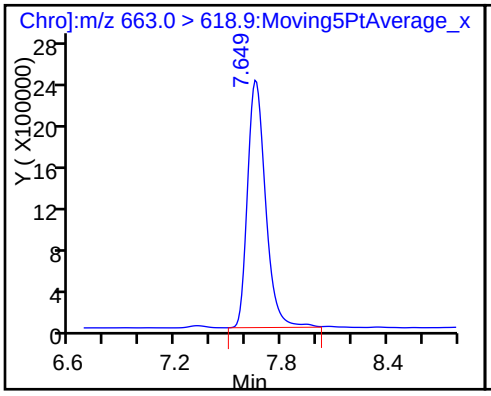
29 Perfluorododecanoic acid



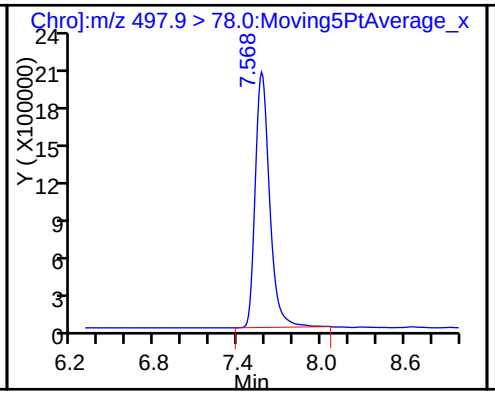
29 Perfluorododecanoic acid



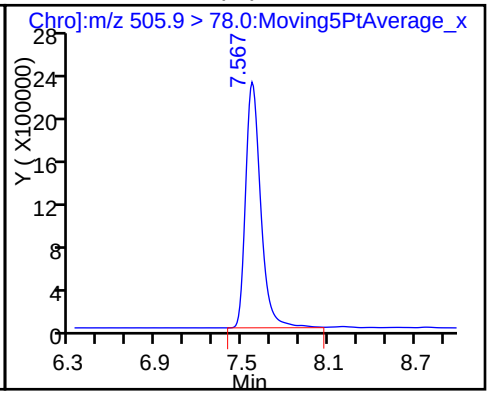
30 Perfluorotridecanoic acid



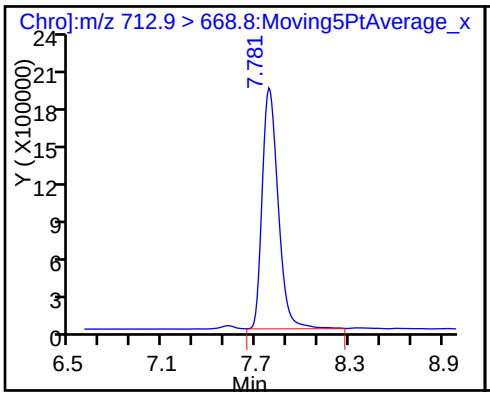
32 Perfluorooctane Sulfonamide



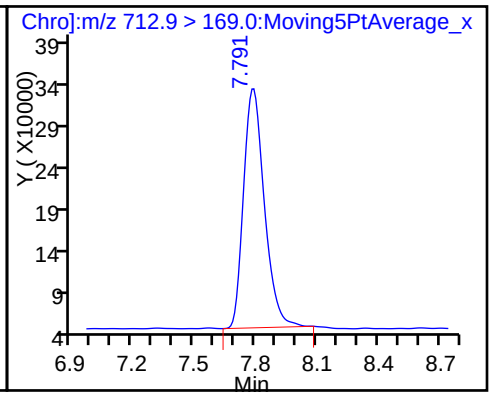
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-340007/2-A

Matrix: Water | Lab File ID: PC516I01107.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 08/29/2016 19:57

Sample wt/vol: 250(mL) | Date Analyzed: 09/02/2016 05:36

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340694 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.151		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.213		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.177		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.180		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.182		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.206		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	124		60-155
STL01054	13C8 PFOS	114		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01107.d
Lims ID: LCS 280-340007/2-A
Client ID:
Sample Type: LCS
Inject. Date: 02-Sep-2016 05:36:18 ALS Bottle#: 0 Worklist Smp#: 94
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-340007/2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:51 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:41:20

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.944	4.020	-0.076		13936644	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.944	4.020	-0.076	1.000	12420138	9.24			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.090	5.119	-0.029	0.895	10515078	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.241	-0.028	0.850	5074203	7.57			
298.9 > 98.9	5.213	5.241	-0.028	0.850	1544605		3.29(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.241	-0.028	0.850	5074203	7.57			
298.9 > 98.9	5.213	5.241	-0.028	0.850	1544605		3.29(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.686	5.724	-0.038		9598249	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.724	-0.038	1.000	8649762	10.1			
313.0 > 118.6	5.686	5.724	-0.038	1.000	239891		36.06(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.121	6.159	-0.038	0.946	13064346	10.6			
363.0 > 168.9	6.121	6.159	-0.038	0.946	3614624		3.61(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.130	6.168	-0.038		1439033	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.130	6.168	-0.038	1.000	5383198	8.85			R
398.9 > 98.9	6.130	6.168	-0.038	1.000	1684677		3.20(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.130	6.168	-0.038	1.000	5383198	8.85			
398.9 > 98.9	6.130	6.168	-0.038	1.000	1684677		3.20(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.460	6.498	-0.038	0.958	4956656	8.67			
449.0 > 98.9	6.460	6.498	-0.038	0.958	1486177		3.34(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.460	6.498	-0.038	0.958	4956656	8.67			
449.0 > 98.9	6.460	6.498	-0.038	0.958	1486177		3.34(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.470	6.508	-0.038	1.000	12204879	12.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.470	6.508	-0.038		14632057	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.471	6.508	-0.037	1.000	14776202	10.3			
413.0 > 169.0	6.471	6.508	-0.037	1.000	4631105		3.19(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.742	6.790	-0.048	1.000	3167934	10.6			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.743	6.790	-0.047		4987459	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.743	6.790	-0.047	1.000	4830333	9.09			R
498.9 > 98.9	6.743	6.790	-0.047	1.000	1975925		2.44(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.763	6.810	-0.047		12906793	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.763	6.810	-0.047	1.000	12299119	9.01			
463.0 > 218.9	6.753	6.810	-0.057	0.999	1753524		7.01(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	7.054	-0.047		11968703	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.007	7.054	-0.047	1.000	10921719	9.61			
513.0 > 219.0	7.007	7.054	-0.047	1.000	1008789		10.83(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.195	7.243	-0.048	1.067	4011450	7.74			
598.9 > 99.0	7.195	7.243	-0.048	1.067	1299705		3.09(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.195	7.243	-0.048	1.067	4011450	7.74			
598.9 > 99.0	7.195	7.243	-0.048	1.067	1299705		3.09(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.262	-0.047		6805216	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.262	-0.047	1.000	8091504	9.14			R
563.0 > 268.9	7.215	7.262	-0.047	1.000	1103589		7.33(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.441	-0.048		12697876	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.441	-0.047	1.000	10779032	8.73			
613.0 > 168.9	7.394	7.441	-0.047	1.000	1417306		7.61(5.96-11.06)		
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.529	0.0		509333	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.530	-0.010	0.999	506366	9.62			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.554	7.602	-0.048	1.022	11551266	7.18			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.686	7.734	-0.048	1.040	8624487	6.97			
712.9 > 169.0	7.686	7.734	-0.048	1.040	1433761		6.02(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 02-Sep-2016 11:55:58 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01107.d

Injection Date: 02-Sep-2016 05:36:18 Instrument ID: LC_LCMS5

Lims ID: LCS 280-340007/2-A

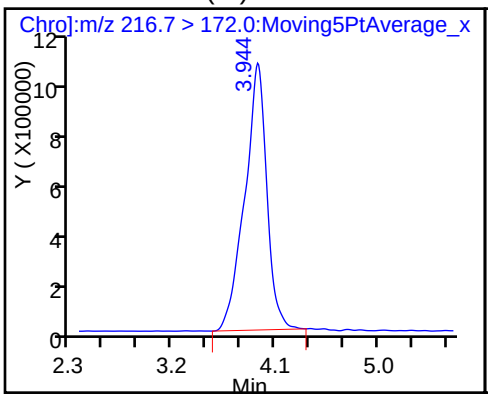
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 94

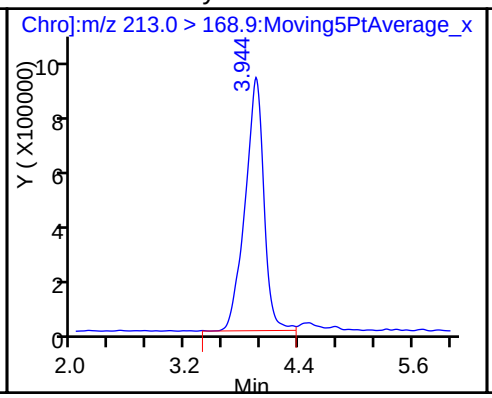
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

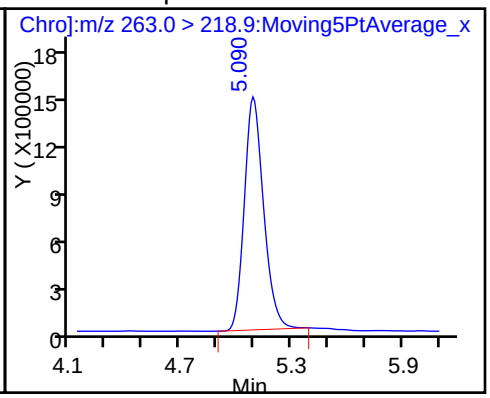
* 1 13C4 PFBA (IS)



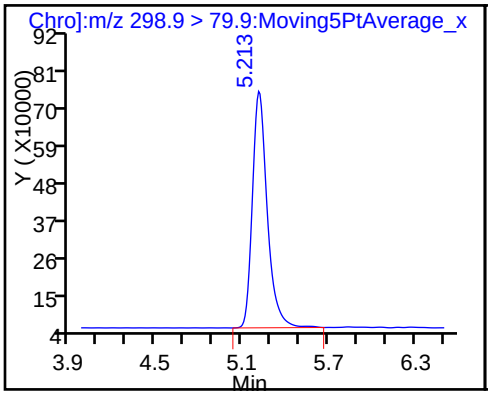
2 Perfluorobutyric acid



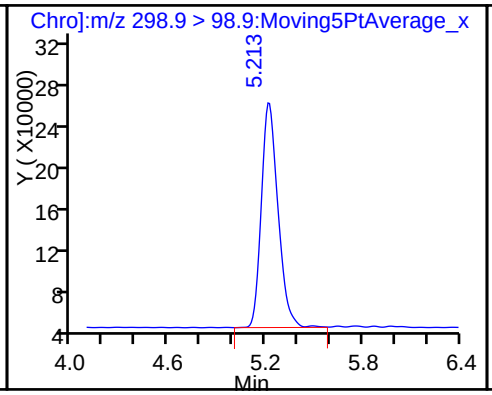
3 Perfluoropentanoic acid



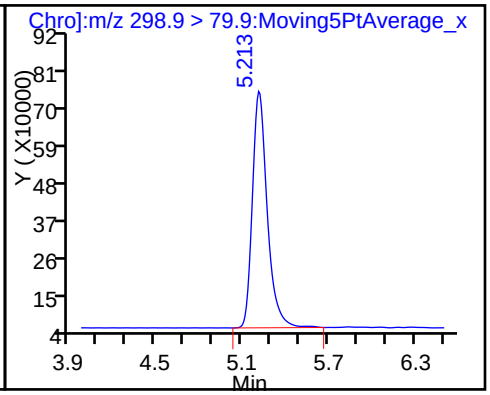
4 Perfluorobutane Sulfonate



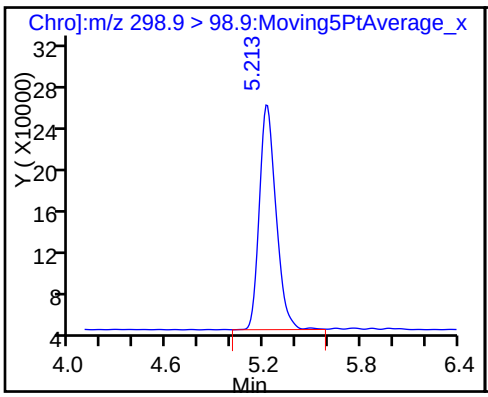
4 Perfluorobutane Sulfonate



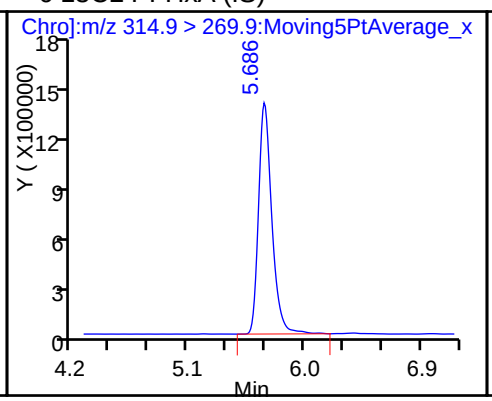
5 Perfluorobutanesulfonic acid



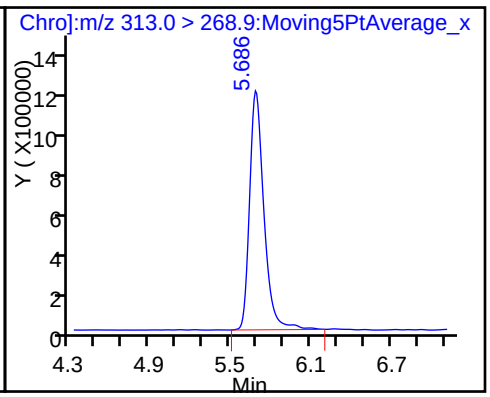
5 Perfluorobutanesulfonic acid



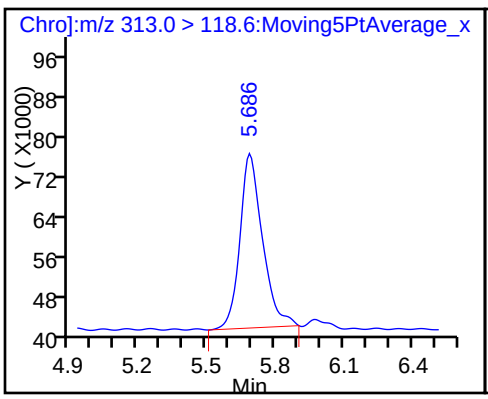
* 6 13C2 PFHxA (IS)



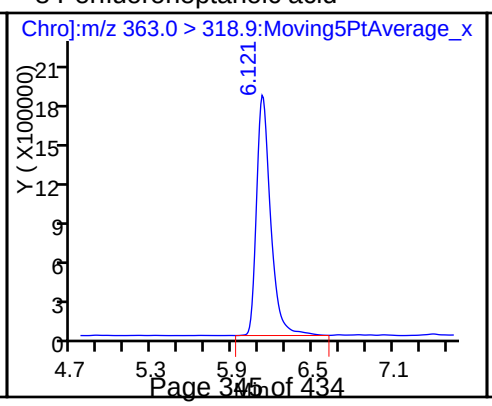
7 Perfluorohexanoic acid



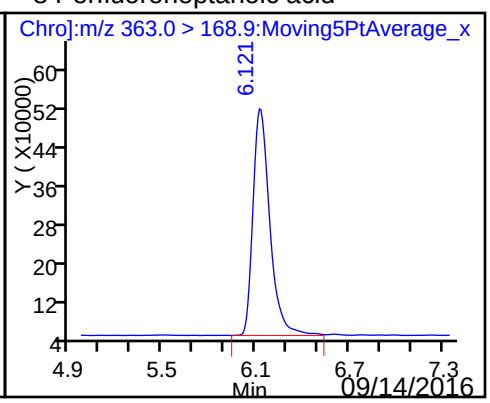
7 Perfluorohexanoic acid



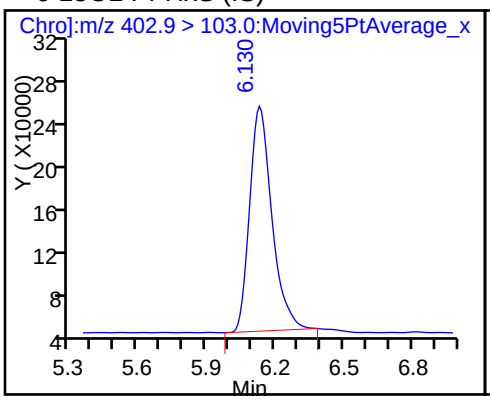
8 Perfluoroheptanoic acid



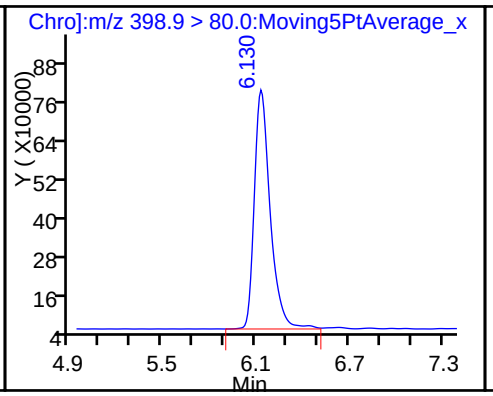
8 Perfluoroheptanoic acid



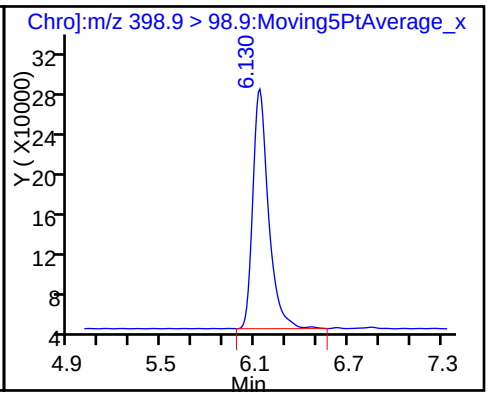
* 9 18O2 PFHxS (IS)



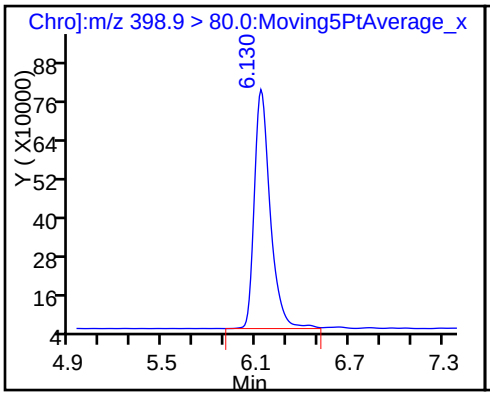
10 Perfluorohexane Sulfonate



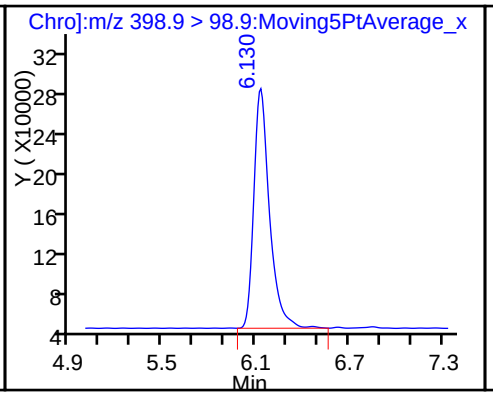
10 Perfluorohexane Sulfonate



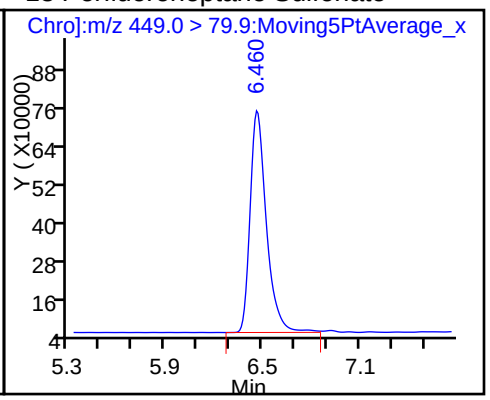
11 Perfluorohexanesulfonic acid



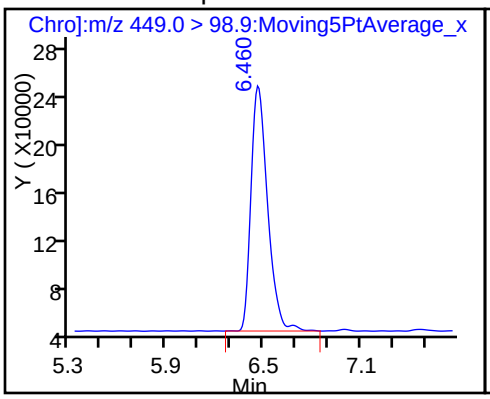
11 Perfluorohexanesulfonic acid



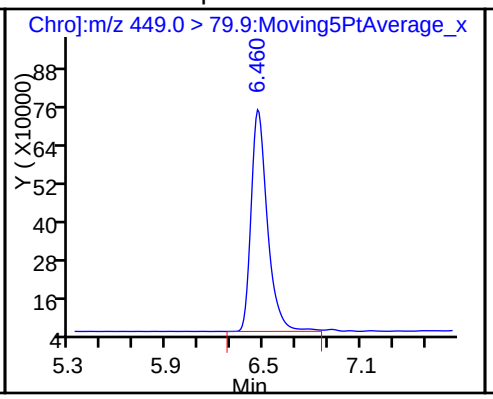
13 Perfluoroheptane Sulfonate



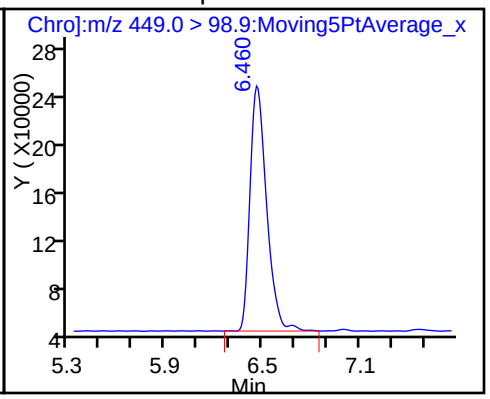
13 Perfluoroheptane Sulfonate



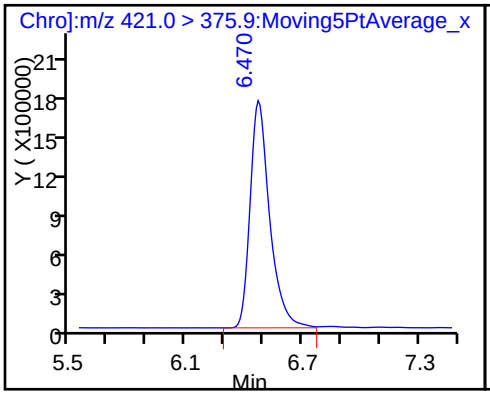
12 Perfluoroheptanesulfonic Acid



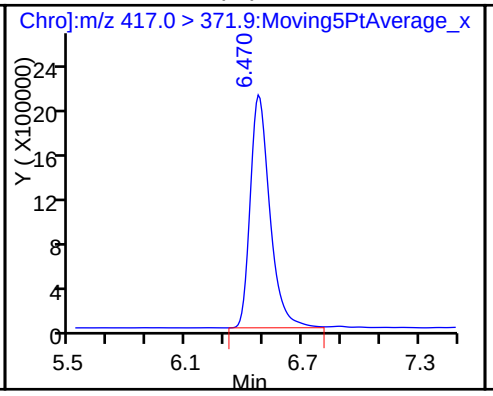
12 Perfluoroheptanesulfonic Acid



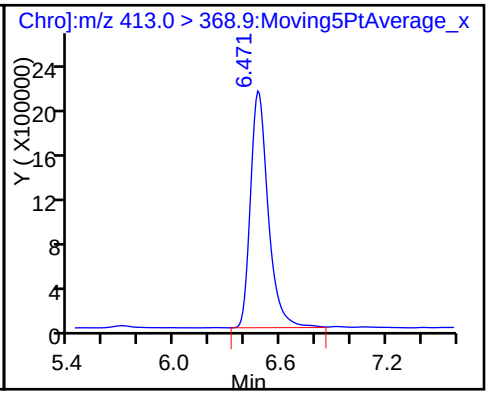
$ 14 13C8 PFOA



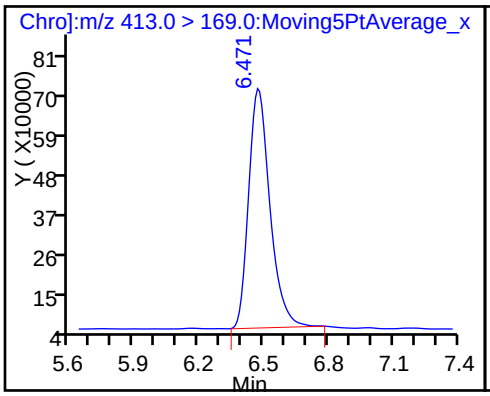
* 15 13C4 PFOA (IS)



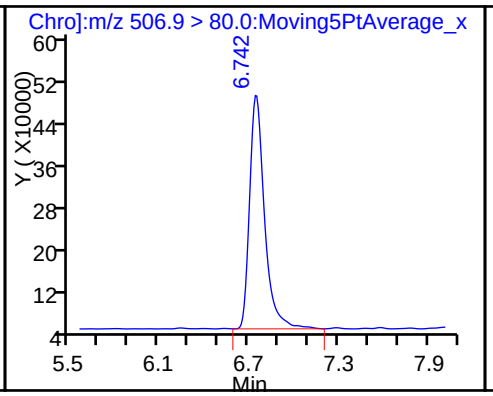
16 Perfluorooctanoic acid



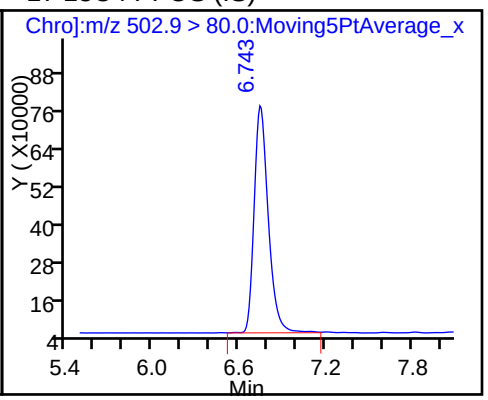
16 Perfluorooctanoic acid



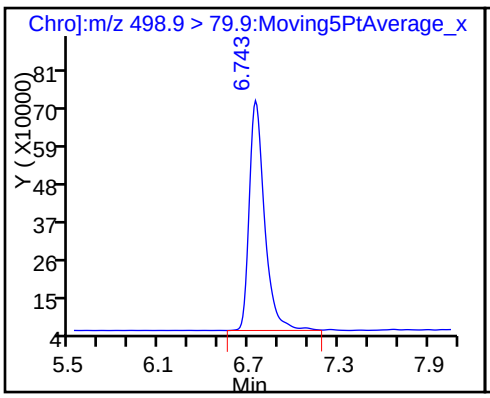
$ 18 13C8 PFOS



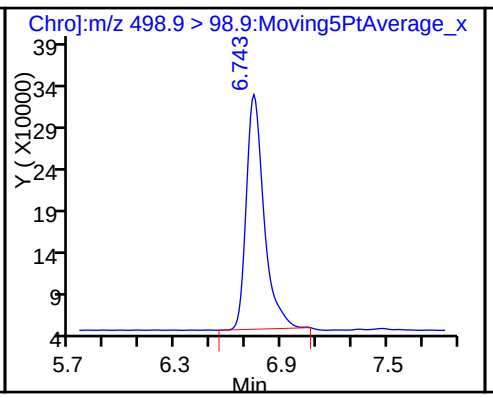
* 17 13C4 PFOS (IS)



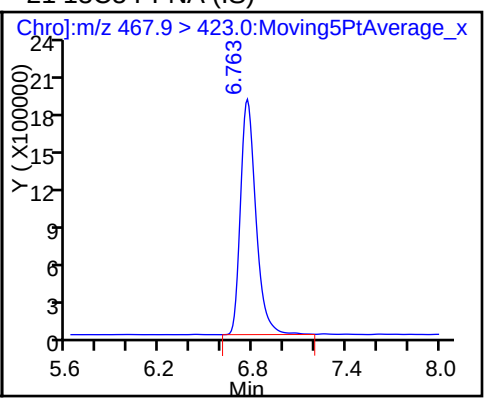
19 Perfluorooctane sulfonic acid



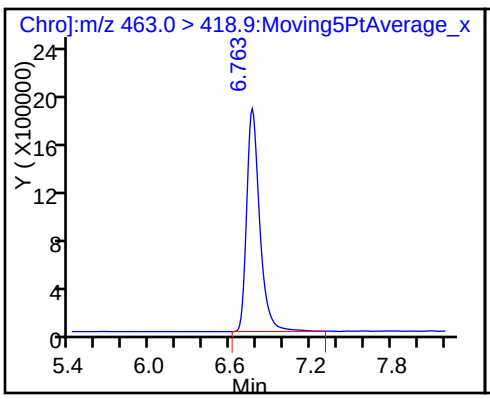
19 Perfluorooctane sulfonic acid



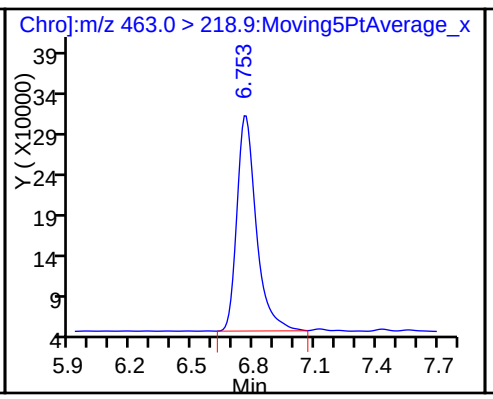
* 21 13C5 PFNA (IS)



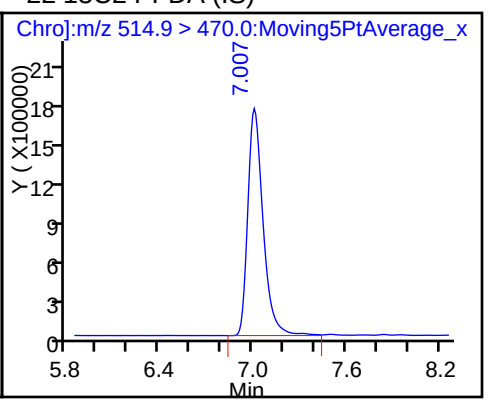
20 Perfluorononanoic acid



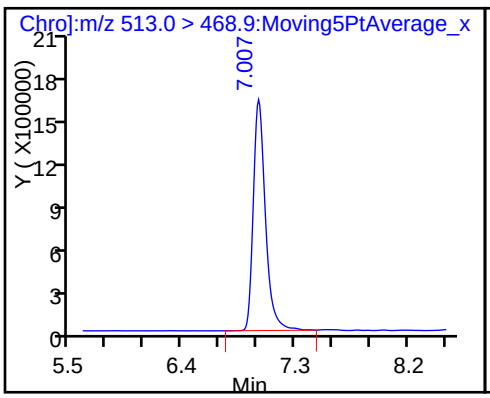
20 Perfluorononanoic acid



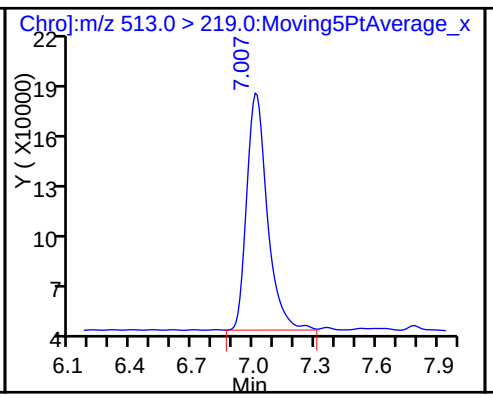
* 22 13C2 PFDA (IS)



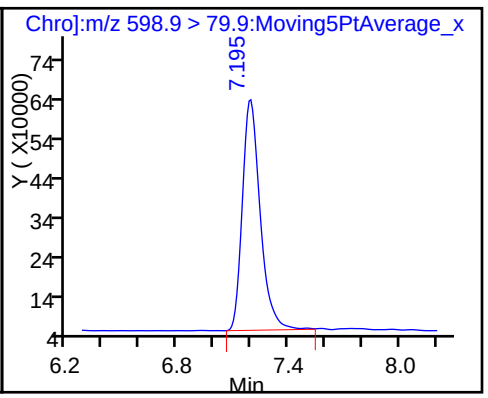
23 Perfluorodecanoic acid



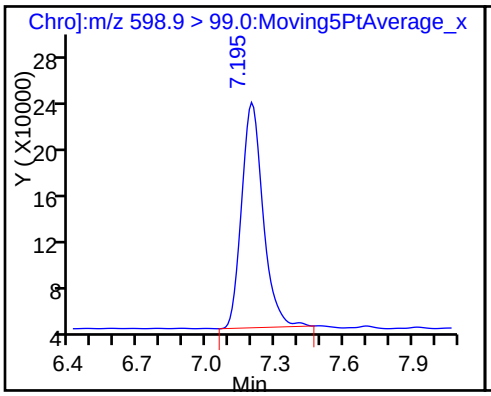
23 Perfluorodecanoic acid



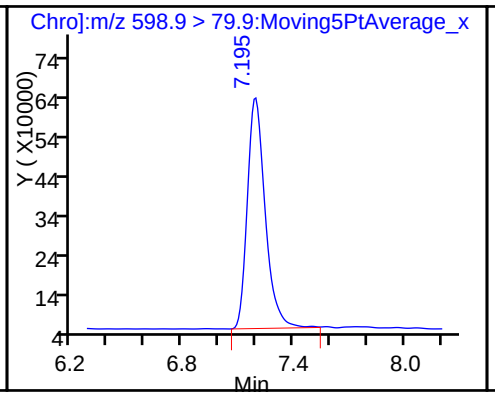
24 Perfluorodecane Sulfonic acid



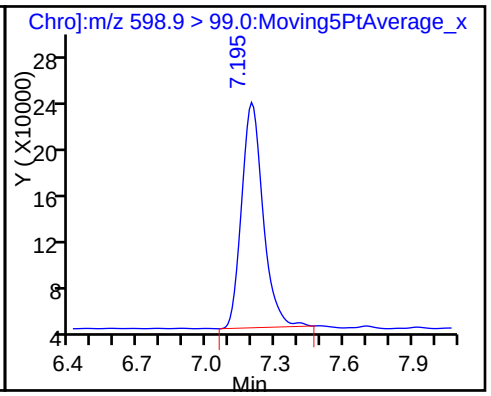
24 Perfluorodecane Sulfonic acid



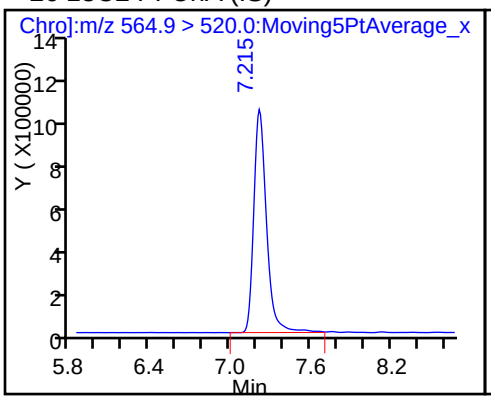
25 Perfluorodecane Sulfonate



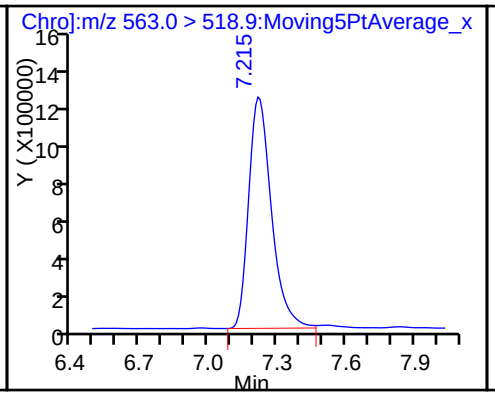
25 Perfluorodecane Sulfonate



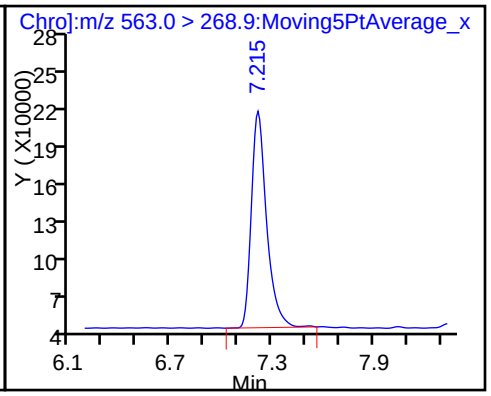
* 26 13C2 PFUnA (IS)



27 Perfluoroundecanoic acid



27 Perfluoroundecanoic acid



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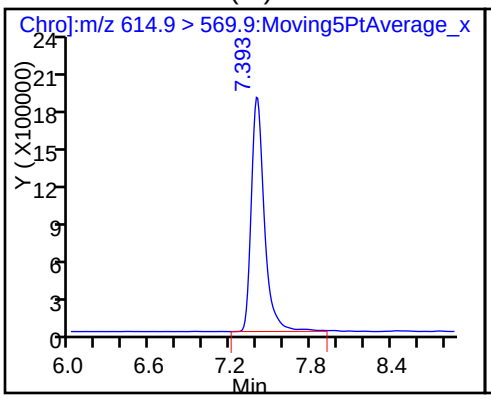

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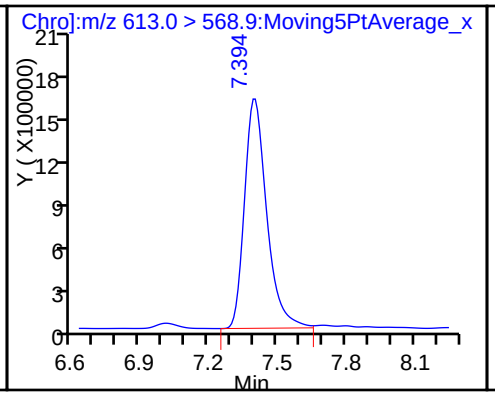
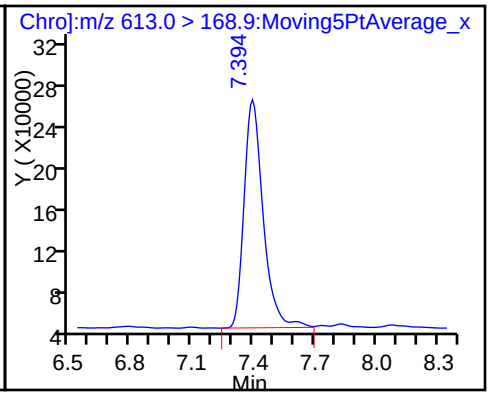
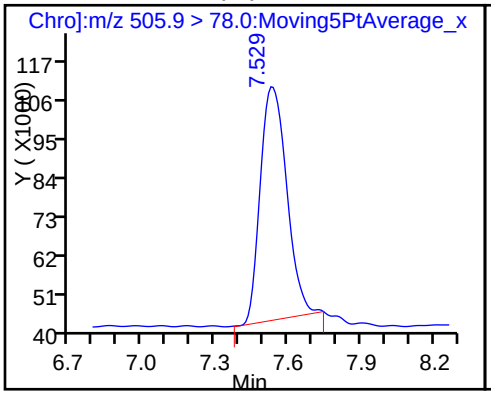


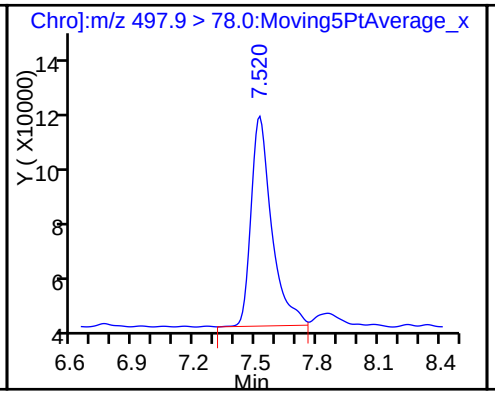
29 Perfluorododecanoic acid



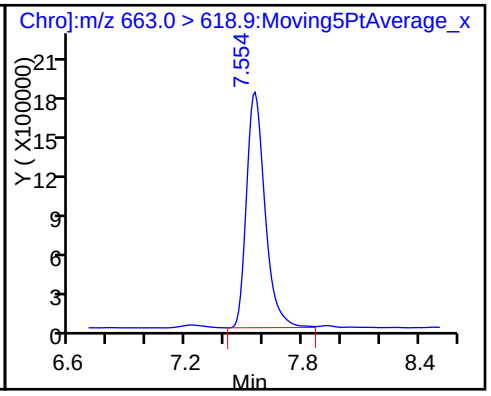
* 31 13C8 FOSA (IS)



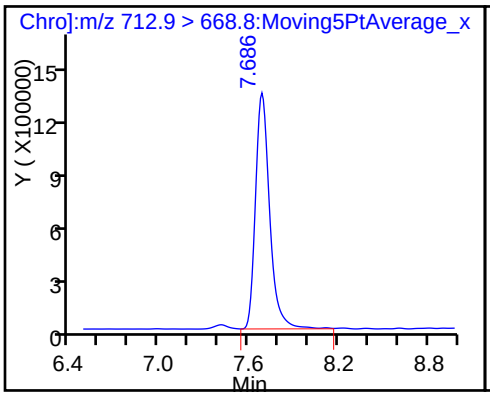
32 Perfluorooctane Sulfonamide



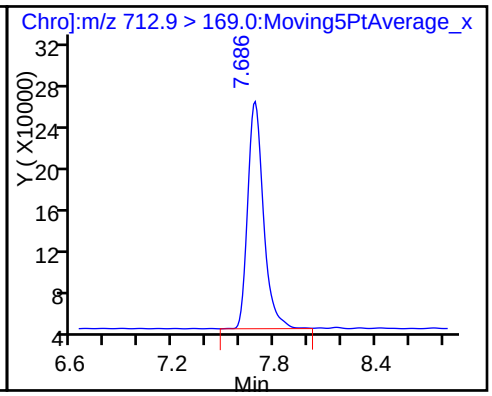
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-340544/2-A

Matrix: Water | Lab File ID: PC516I02017.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/01/2016 19:29

Sample wt/vol: 250(mL) | Date Analyzed: 09/02/2016 13:34

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340829 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.167		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.186		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.170		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.172		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.170		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.182		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	125		60-155
STL01054	13C8 PFOS	103		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02017.d
Lims ID: LCS 280-340544/2-A
Client ID:
Sample Type: LCS
Inject. Date: 02-Sep-2016 13:34:23 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-340544/2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:24 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:26:54

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.077	4.314	-0.237		17606729	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.068	4.314	-0.246	0.998	15652279	9.22			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.138	5.346	-0.208	0.901	12261670	9.21			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.251	5.459	-0.208	0.855	6010048	8.33			R
298.9 > 98.9	5.251	5.459	-0.208	0.855	1726803		3.48(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.251	5.459	-0.208	0.855	6010048	8.33			
298.9 > 98.9	5.251	5.459	-0.208	0.855	1726803		3.48(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.923	-0.218		12206841	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.705	5.923	-0.218	1.000	9432137	8.70			
313.0 > 118.6	5.705	5.923	-0.218	1.000	274617		34.35(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.139	6.348	-0.209		1549466	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.140	6.348	-0.208	1.000	5562981	8.49			
398.9 > 98.9	6.140	6.348	-0.208	1.000	1617951		3.44(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.140	6.348	-0.208	1.000	5562981	8.49			R
398.9 > 98.9	6.140	6.348	-0.208	1.000	1617951		3.44(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.131	6.349	-0.218	0.948	13345919	9.32			
363.0 > 168.9	6.131	6.349	-0.218	0.948	3504020		3.81(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.460	6.678	-0.218	0.958	5203064	7.91			
449.0 > 98.9	6.460	6.678	-0.218	0.958	1712418		3.04(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.460	6.678	-0.218	0.958	5203064	7.91			
449.0 > 98.9	6.460	6.678	-0.218	0.958	1712418		3.04(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.470	6.688	-0.218	1.000	14364304	12.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.470	6.688	-0.218		17060212	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.471	6.688	-0.217	1.000	15241923	9.12			
413.0 > 169.0	6.471	6.688	-0.217	1.000	5008404		3.04(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.742	6.960	-0.218	1.000	3314695	9.60			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.743	6.961	-0.218		5742336	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.743	6.951	-0.208	1.000	5195856	8.50			R
498.9 > 98.9	6.743	6.951	-0.208	1.000	1985457		2.62(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.763	6.971	-0.208		13504779	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.971	-0.218	0.999	12265716	8.59			
463.0 > 218.9	6.763	6.971	-0.208	1.000	1628017		7.53(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	7.206	-0.199		12816337	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.998	7.206	-0.208	0.999	11177349	9.19			
513.0 > 219.0	6.998	7.206	-0.208	0.999	1009321		11.07(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.385	-0.199	1.066	4450053	7.46			
598.9 > 99.0	7.195	7.385	-0.190	1.067	1509164		2.95(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.385	-0.199	1.066	4450053	7.46			
598.9 > 99.0	7.195	7.385	-0.190	1.067	1509164		2.95(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.404	-0.189		7402956	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.404	-0.189	1.000	8966359	9.31			R
563.0 > 268.9	7.205	7.404	-0.199	0.999	1021471		8.78(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.573	-0.180		12365149	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.574	-0.180	1.000	10914227	9.08			
613.0 > 168.9	7.384	7.574	-0.190	0.999	1291837		8.45(5.96-11.06)		
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.538	7.718	-0.180		960815	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.719	-0.189	0.999	742339	7.47			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.715	-0.170	1.020	11091473	7.08			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.847	-0.170	1.038	8106019	6.73			
712.9 > 169.0	7.677	7.847	-0.170	1.038	1394174		5.81(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 06-Sep-2016 08:22:32 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02017.d

Injection Date: 02-Sep-2016 13:34:23 Instrument ID: LC_LCMS5

Lims ID: LCS 280-340544/2-A

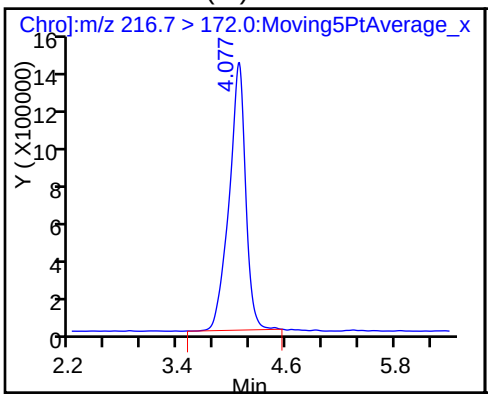
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

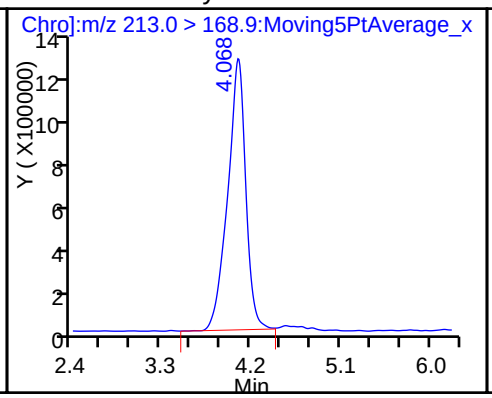
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

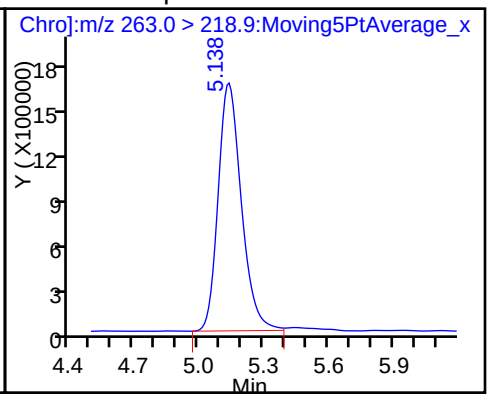
* 1 13C4 PFBA (IS)



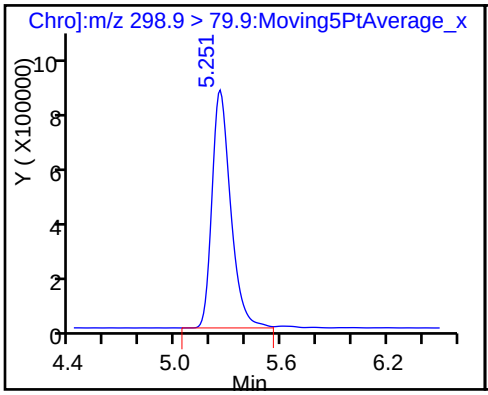
2 Perfluorobutyric acid



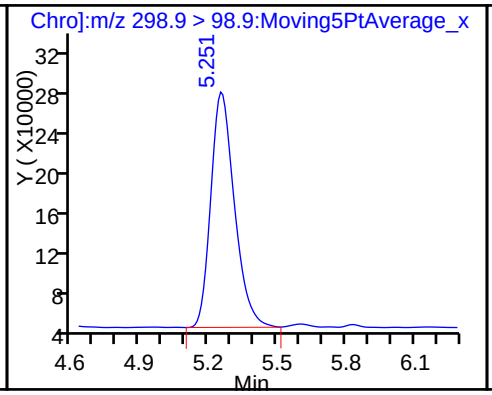
3 Perfluoropentanoic acid



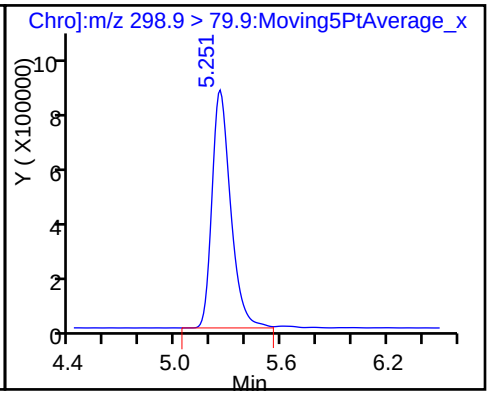
4 Perfluorobutane Sulfonate



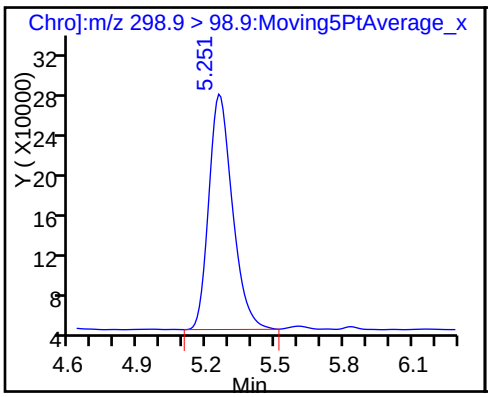
4 Perfluorobutane Sulfonate



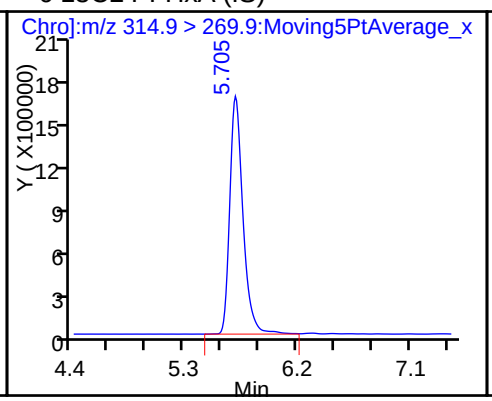
5 Perfluorobutanesulfonic acid



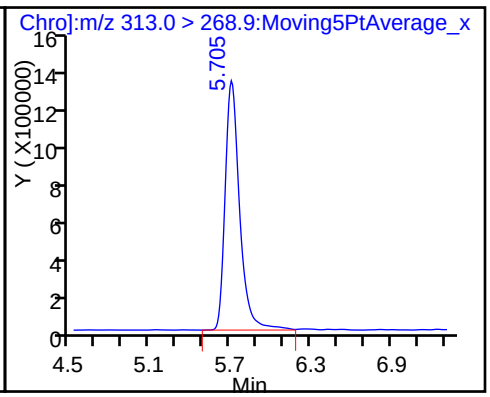
5 Perfluorobutanesulfonic acid



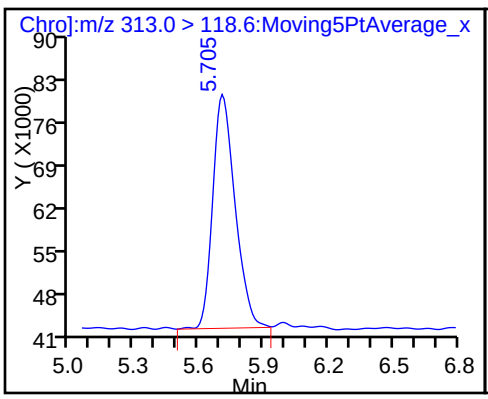
* 6 13C2 PFHxA (IS)



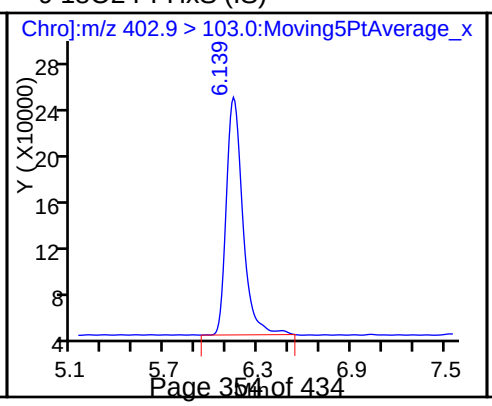
7 Perfluorohexanoic acid



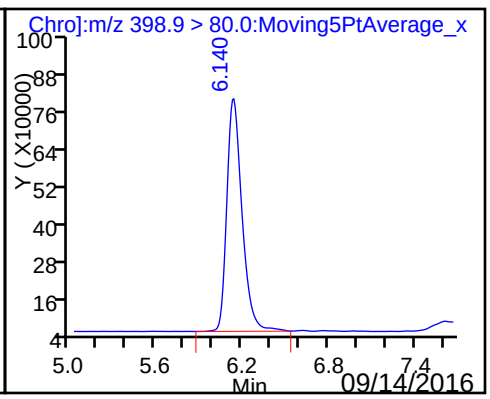
7 Perfluorohexanoic acid



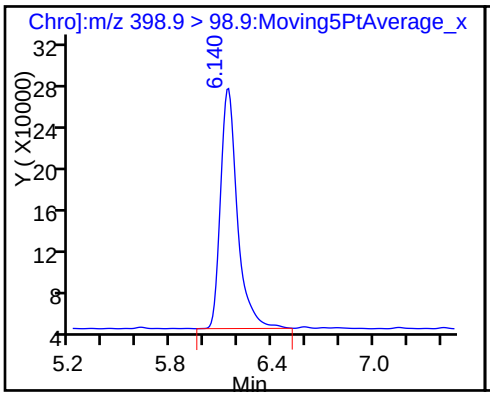
* 9 18O2 PFHxS (IS)



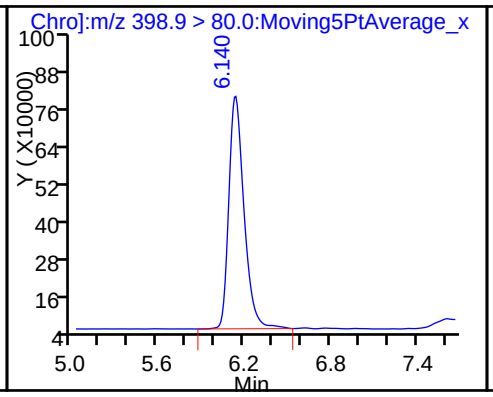
11 Perfluorohexanesulfonic acid



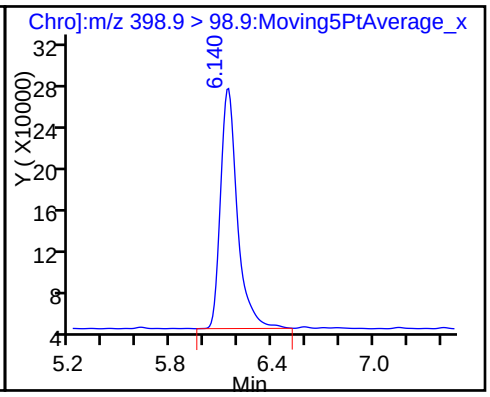
11 Perfluorohexanesulfonic acid



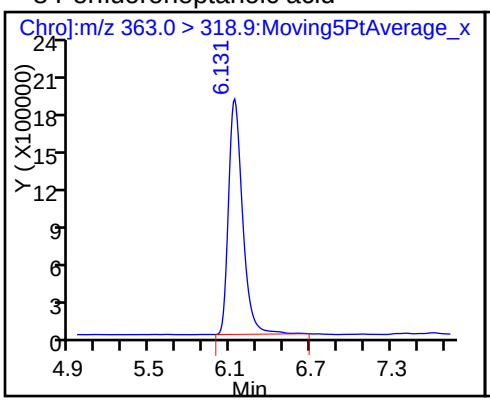
10 Perfluorohexane Sulfonate



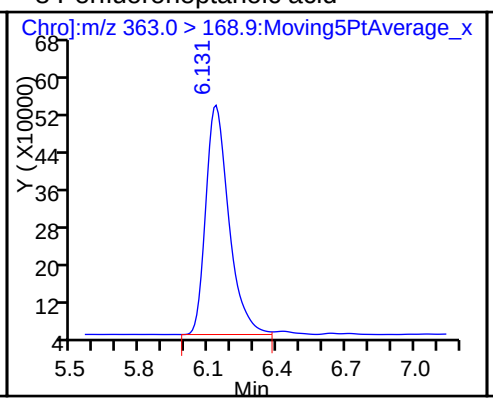
10 Perfluorohexane Sulfonate



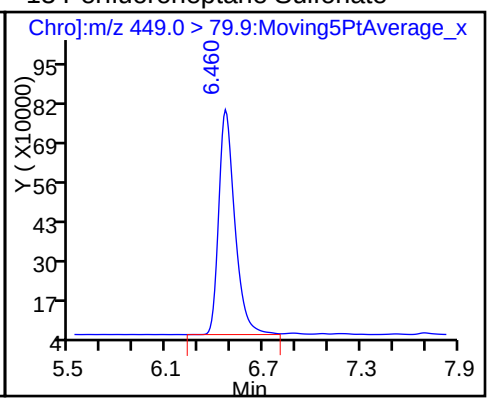
8 Perfluoroheptanoic acid



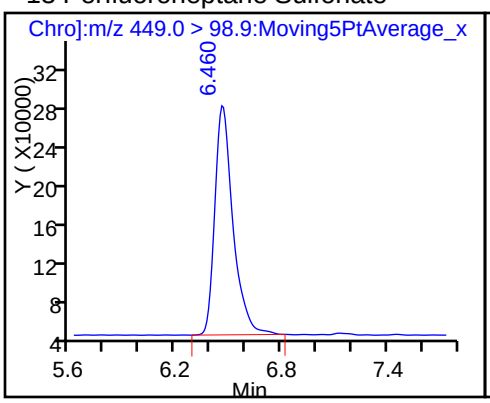
8 Perfluoroheptanoic acid



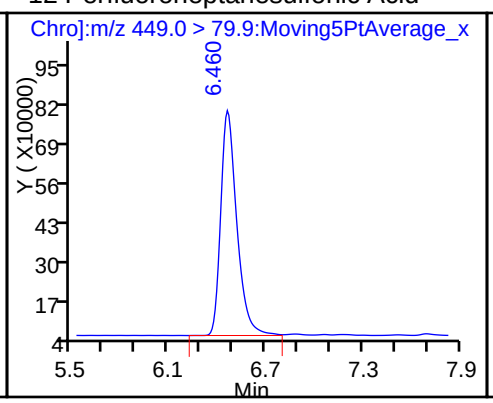
13 Perfluoroheptane Sulfonate



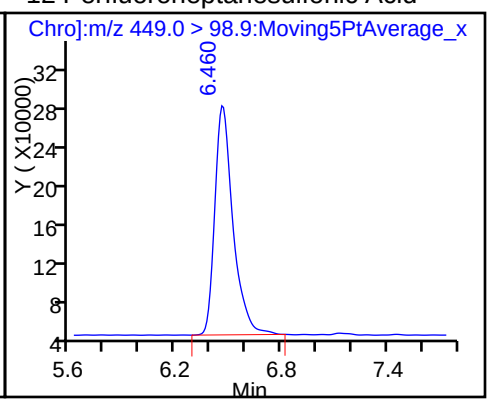
13 Perfluoroheptane Sulfonate



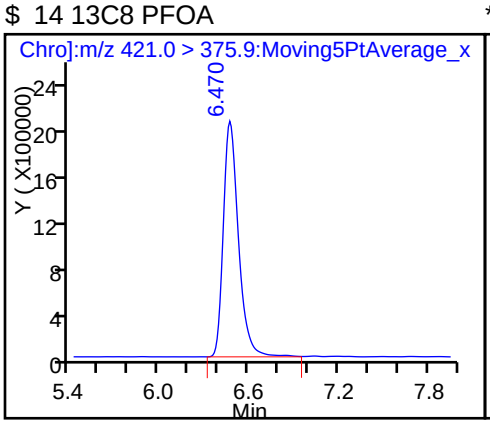
12 Perfluoroheptanesulfonic Acid



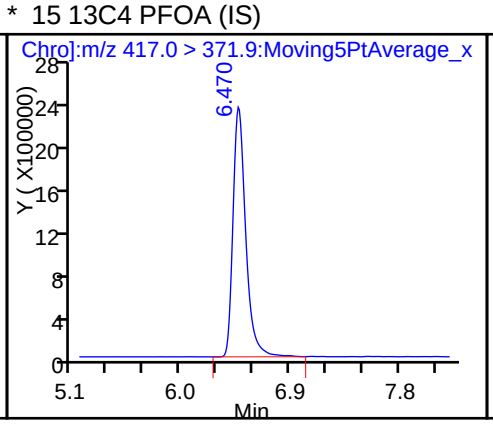
12 Perfluoroheptanesulfonic Acid



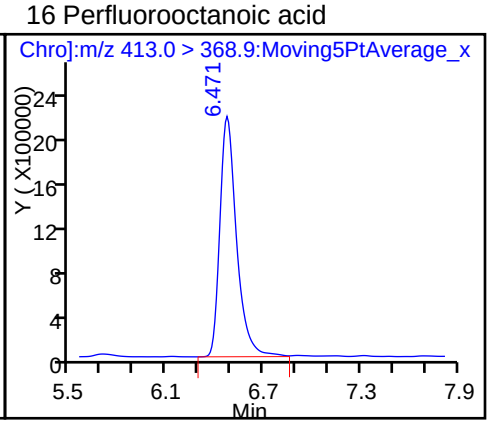
$ 14 13C8 PFOA



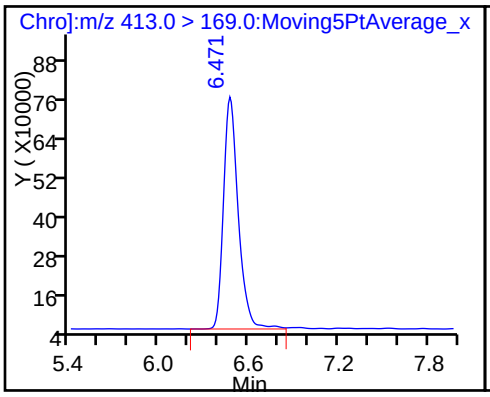
* 15 13C4 PFOA (IS)



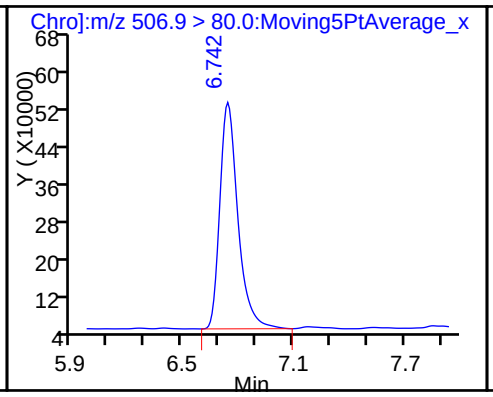
16 Perfluorooctanoic acid



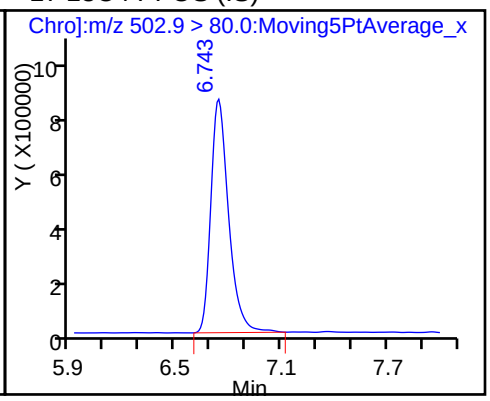
16 Perfluorooctanoic acid



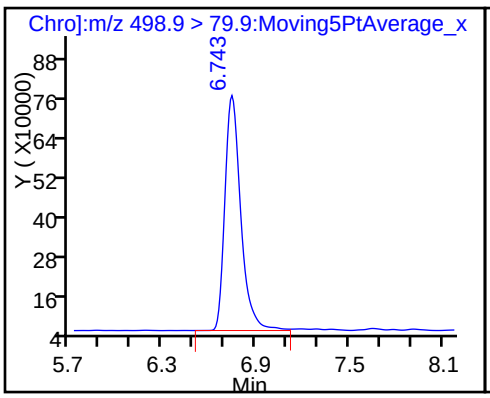
$ 18 13C8 PFOS



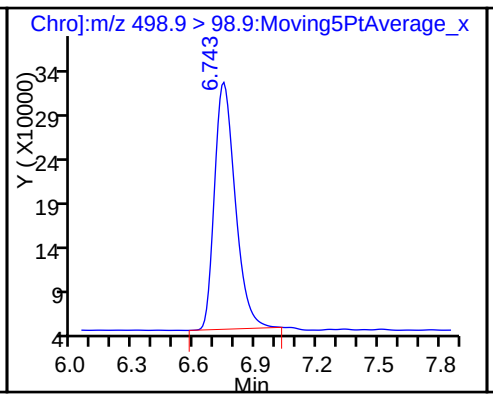
* 17 13C4 PFOS (IS)



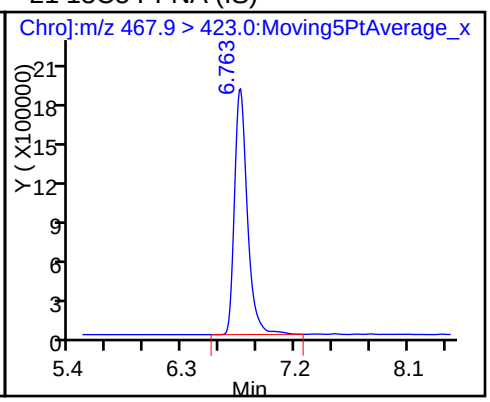
19 Perfluorooctane sulfonic acid



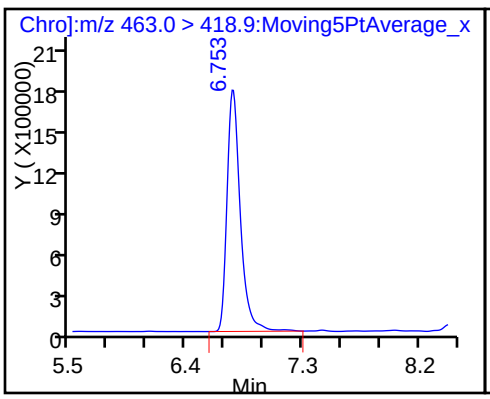
19 Perfluorooctane sulfonic acid



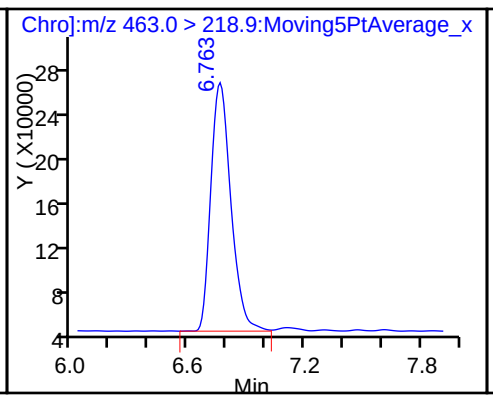
* 21 13C5 PFNA (IS)



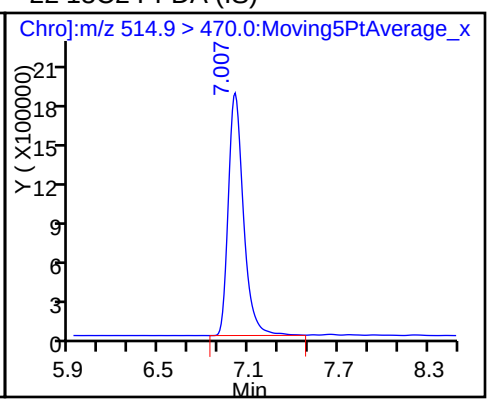
20 Perfluorononanoic acid



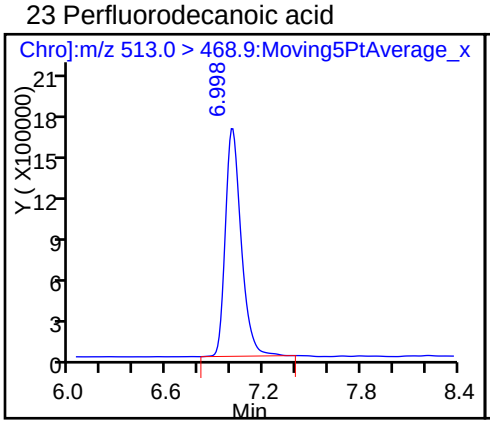
20 Perfluorononanoic acid



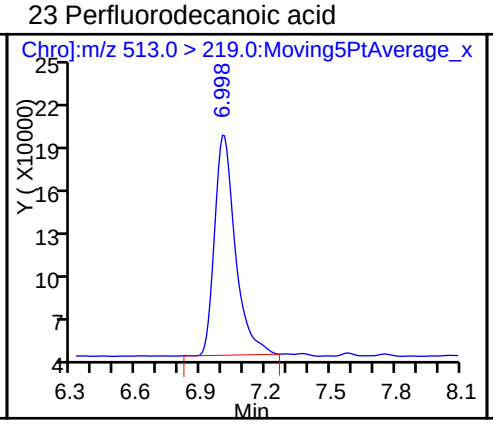
* 22 13C2 PFDA (IS)



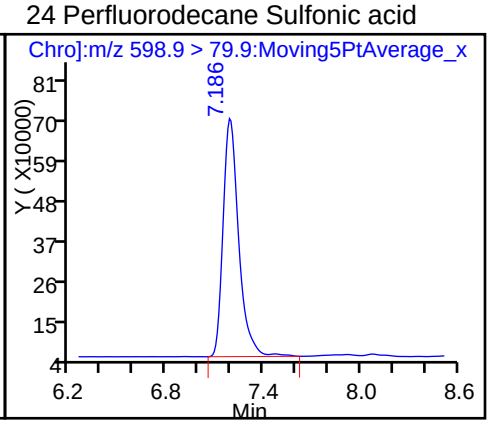
23 Perfluorodecanoic acid



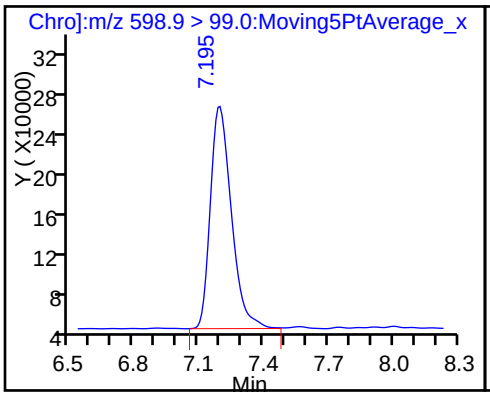
23 Perfluorodecanoic acid



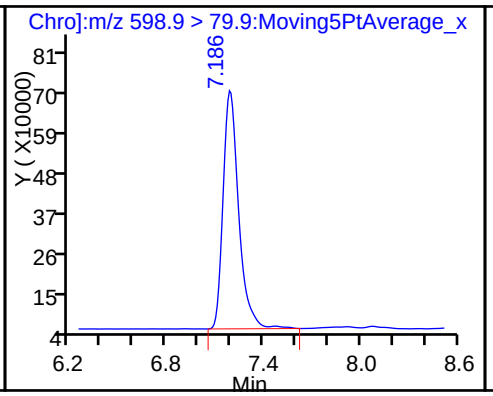
24 Perfluorodecane Sulfonic acid



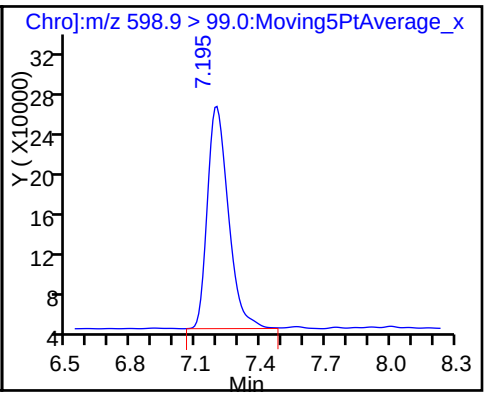
24 Perfluorodecane Sulfonic acid



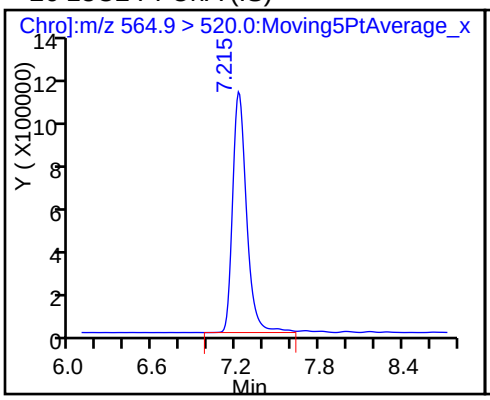
25 Perfluorodecane Sulfonate



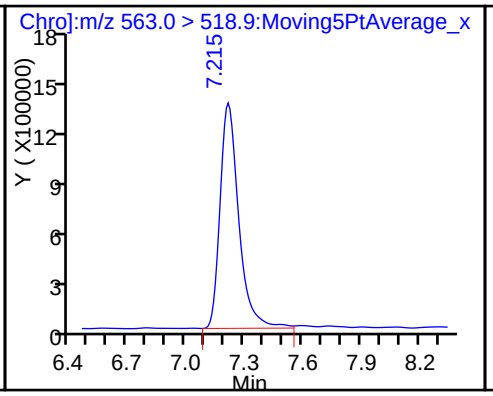
25 Perfluorodecane Sulfonate



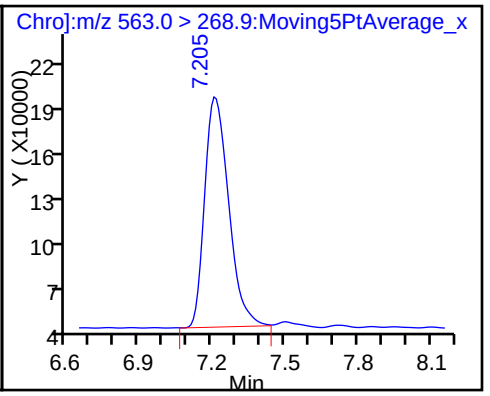
* 26 13C2 PFUnA (IS)



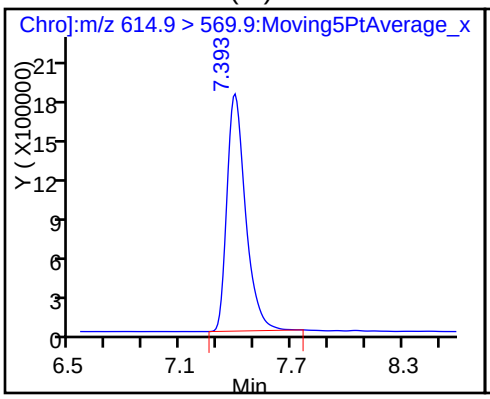
27 Perfluoroundecanoic acid



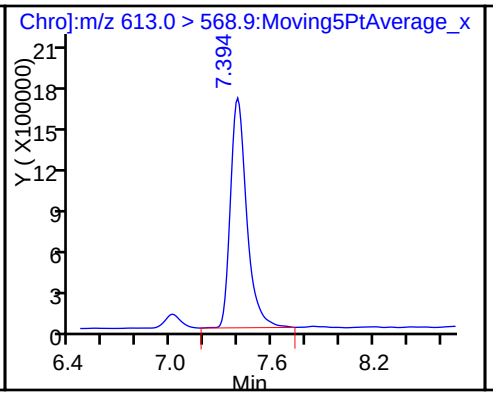
27 Perfluoroundecanoic acid



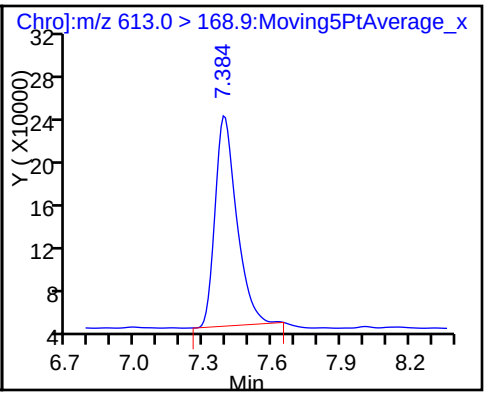
* 28 13C2 PFDoA (IS)



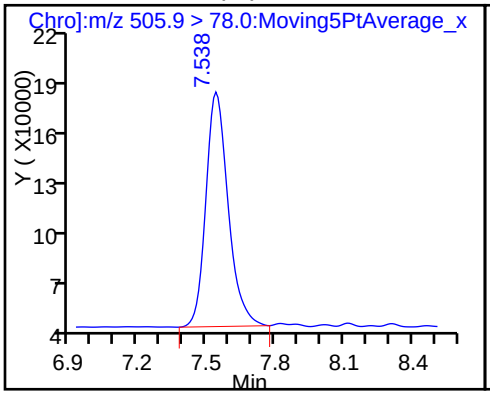
29 Perfluorododecanoic acid



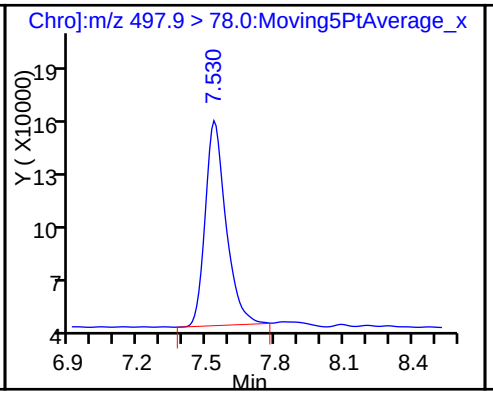
29 Perfluorododecanoic acid



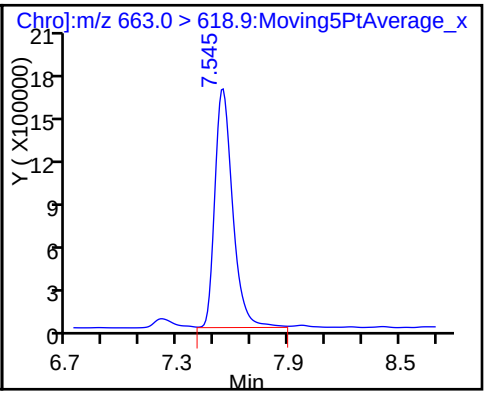
* 31 13C8 FOSA (IS)



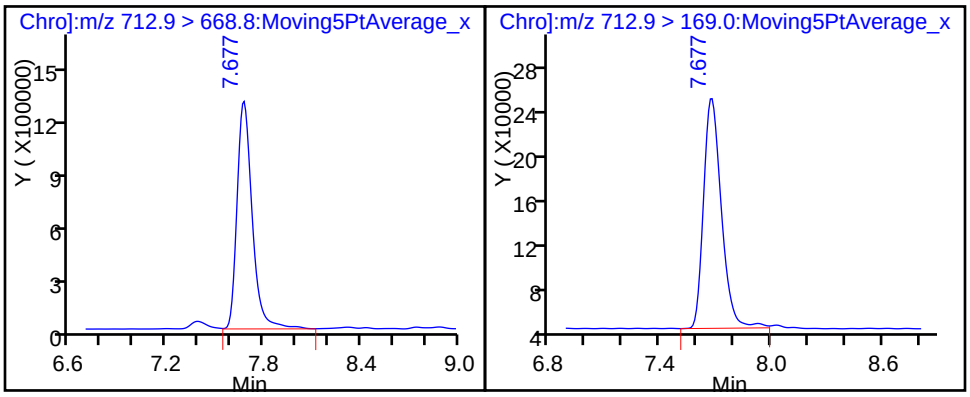
32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-339617/3-A

Matrix: Water | Lab File ID: PC516I01030.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 08/25/2016 20:40

Sample wt/vol: 250(mL) | Date Analyzed: 09/01/2016 13:47

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340408 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.169		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.207		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.170		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.190		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.182		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.198		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	120		60-155
STL01054	13C8 PFOS	97		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01030.d
Lims ID: LCSD 280-339617/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 01-Sep-2016 13:47:44 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 280-339617/3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:36 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:50:20

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.925	4.058	-0.133		13732331	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.925	4.068	-0.143	1.000	12600837	9.52			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.052	5.100	-0.048	0.896	10327646	9.47			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.175	5.222	-0.047	0.852	5314244	8.46			R
298.9 > 98.9	5.175	5.222	-0.047	0.852	1499529		3.54(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.175	5.232	-0.057	0.852	5314244	8.46			
298.9 > 98.9	5.175	5.232	-0.057	0.852	1499529		3.54(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.638	5.686	-0.048		9995898	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.639	5.686	-0.047	1.000	8254850	9.30			
313.0 > 118.6	5.639	5.686	-0.047	1.000	229290		36.00(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.064	6.112	-0.048	0.947	12624284	10.3			
363.0 > 168.9	6.064	6.112	-0.048	0.947	3147775		4.01(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.073	6.120	-0.047		1348907	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.073	6.111	-0.038	1.000	4839467	8.49			
398.9 > 98.9	6.073	6.111	-0.038	1.000	1570810		3.08(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.073	6.121	-0.048	1.000	4839467	8.49			R
398.9 > 98.9	6.073	6.121	-0.048	1.000	1570810		3.08(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.403	6.451	-0.048	0.958	4890123	8.89			
449.0 > 98.9	6.394	6.451	-0.057	0.956	1285363		3.80(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.403	6.451	-0.048	0.958	4890123	8.89			
449.0 > 98.9	6.394	6.451	-0.057	0.956	1285363		3.80(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.404	6.461	-0.057	1.000	11751995	11.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.404	6.461	-0.057		14559873	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.414	6.461	-0.047	1.002	14100486	9.89			
413.0 > 169.0	6.414	6.461	-0.047	1.002	4544066		3.10(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.686	6.733	-0.047		4797731	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.686	6.724	-0.038	1.000	4645808	9.09			R
498.9 > 98.9	6.686	6.724	-0.038	1.000	1701257		2.73(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.685	6.733	-0.048	1.000	2589557	8.97			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.706	6.753	-0.047		11352380	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.706	6.753	-0.047	1.000	11390401	9.49			
463.0 > 218.9	6.697	6.753	-0.056	0.999	1753015		6.50(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.950	6.997	-0.047		10686642	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.950	6.998	-0.048	1.000	9186998	9.06			
513.0 > 219.0	6.950	6.998	-0.048	1.000	852089		10.78(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.138	7.167	-0.029	1.068	3454588	6.92			
598.9 > 99.0	7.138	7.167	-0.029	1.068	1096548		3.15(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.138	7.176	-0.038	1.068	3454588	6.92			
598.9 > 99.0	7.138	7.176	-0.038	1.068	1096548		3.15(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.167	7.205	-0.038		5770179	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.167	7.205	-0.038	1.000	7611969	10.2			R
563.0 > 268.9	7.167	7.205	-0.038	1.000	836483		9.10(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.346	7.384	-0.038		9413820	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.346	7.384	-0.038	1.000	9202135	10.1			
613.0 > 168.9	7.356	7.384	-0.028	1.001	1075082		8.56(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.530	-0.019	1.000	437139	6.99			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.507	7.545	-0.038	1.022	9728047	8.16			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.510	7.529	-0.019		604984	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.639	7.677	-0.038	1.040	5889697	6.42			
712.9 > 169.0	7.630	7.677	-0.047	1.039	962034		6.12(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 02-Sep-2016 11:52:51 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01030.d

Injection Date: 01-Sep-2016 13:47:44 Instrument ID: LC_LCMS5

Lims ID: LCSD 280-339617/3-A

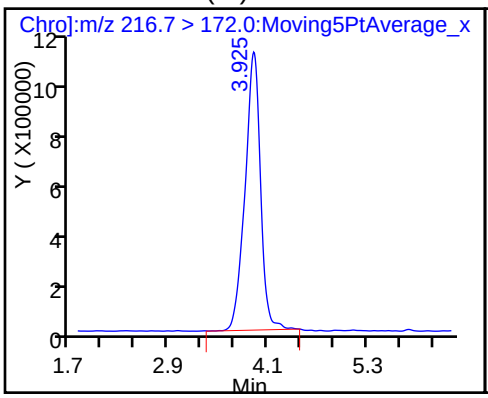
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 17

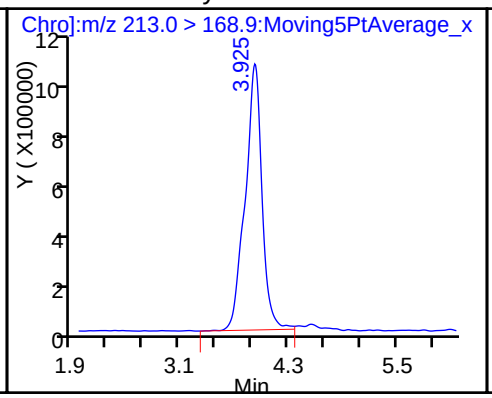
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

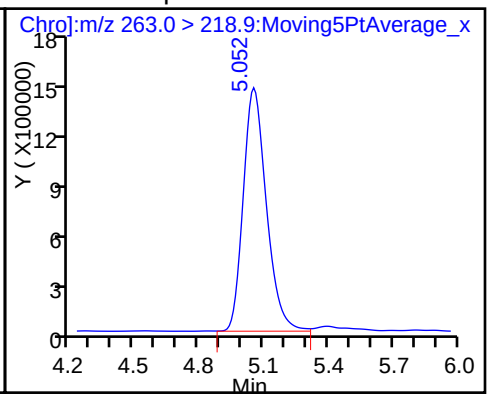
* 1 13C4 PFBA (IS)



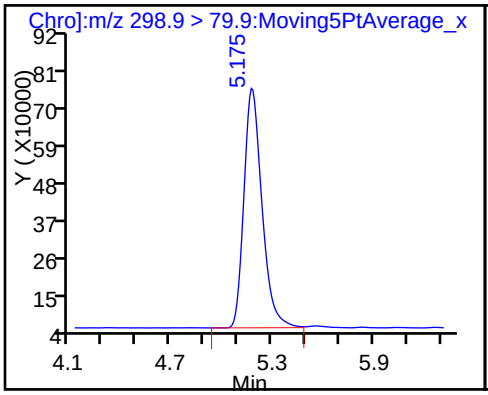
2 Perfluorobutyric acid



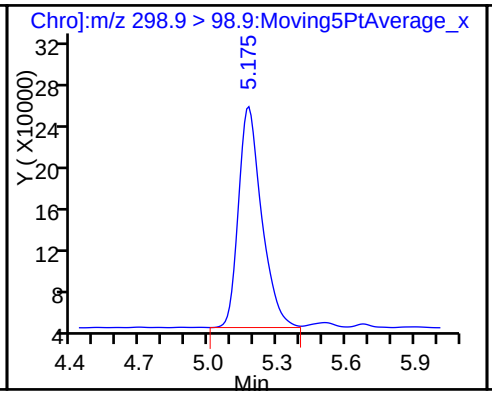
3 Perfluoropentanoic acid



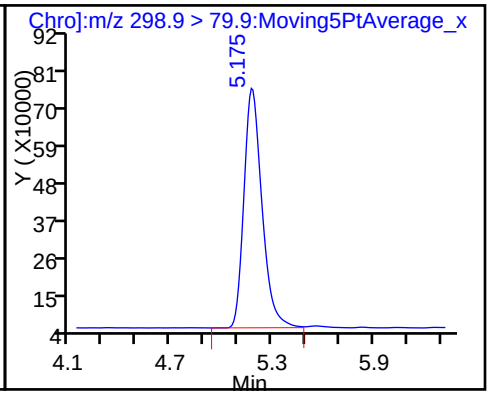
4 Perfluorobutane Sulfonate



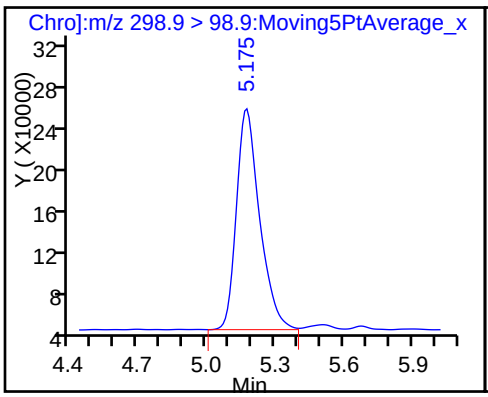
4 Perfluorobutane Sulfonate



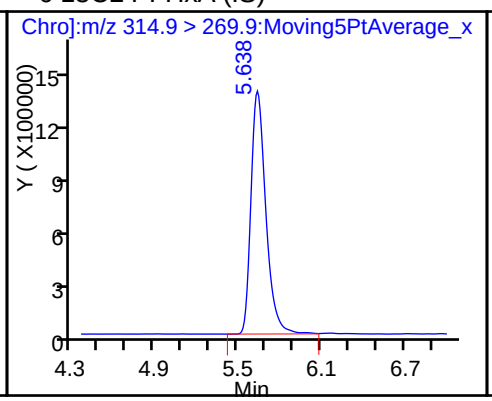
5 Perfluorobutanesulfonic acid



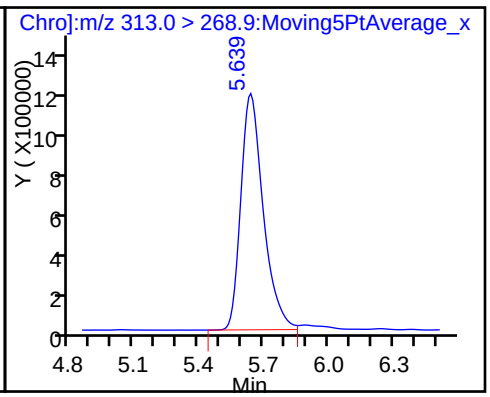
5 Perfluorobutanesulfonic acid



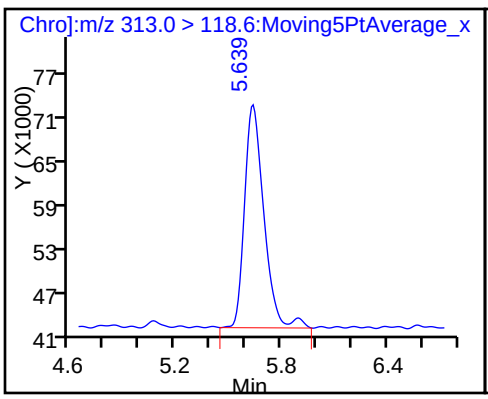
* 6 13C2 PFHxA (IS)



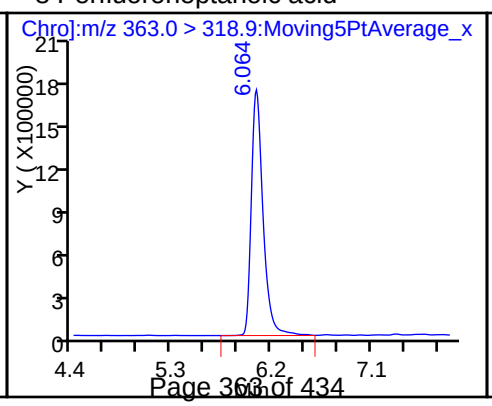
7 Perfluorohexanoic acid



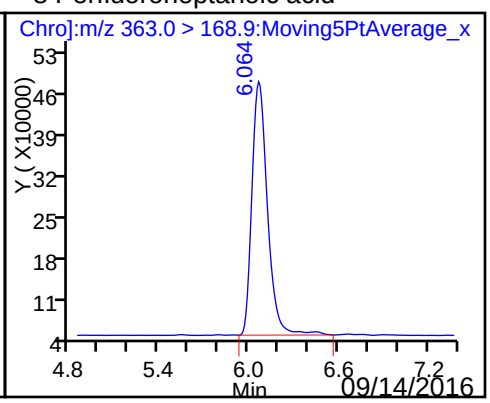
7 Perfluorohexanoic acid



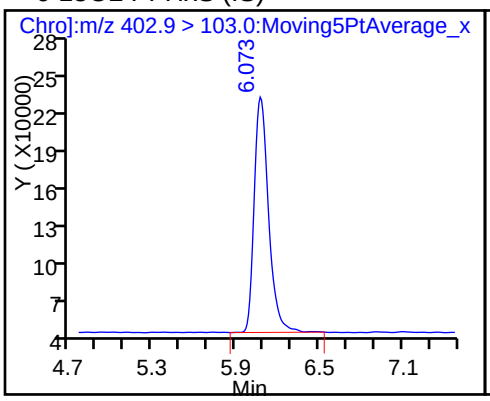
8 Perfluoroheptanoic acid



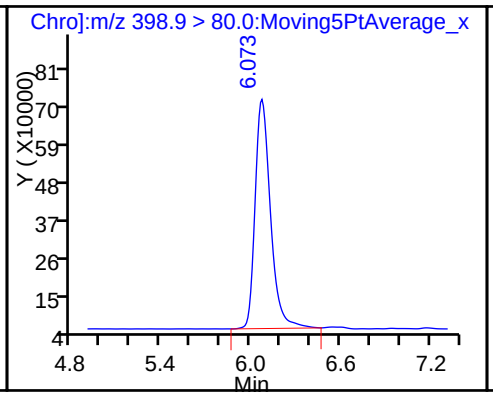
8 Perfluoroheptanoic acid



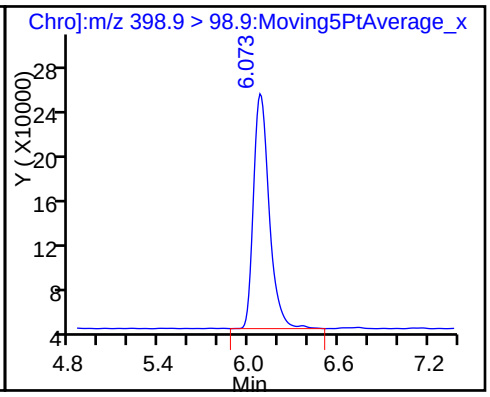
* 9 18O2 PFHxS (IS)



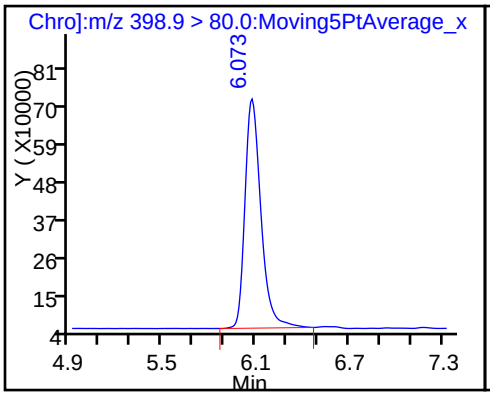
11 Perfluorohexanesulfonic acid



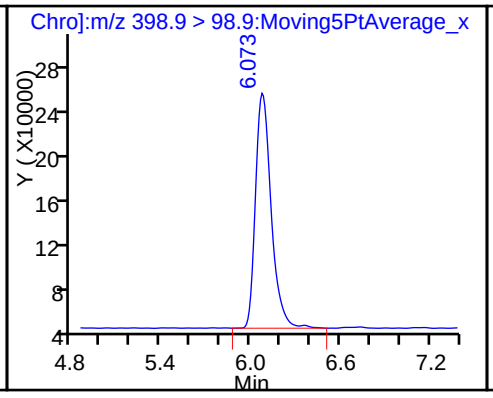
11 Perfluorohexanesulfonic acid



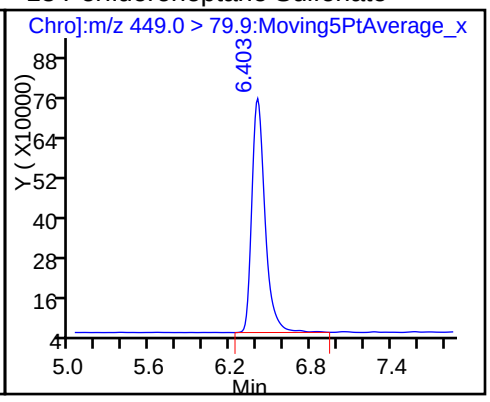
10 Perfluorohexane Sulfonate



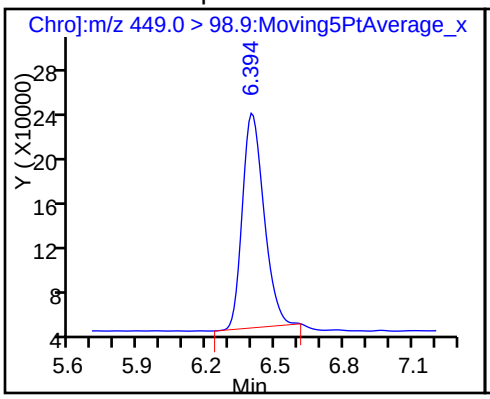
10 Perfluorohexane Sulfonate



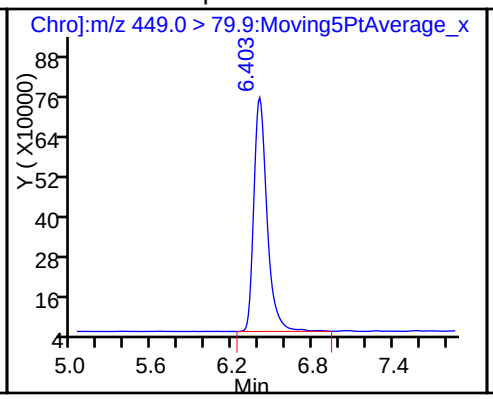
13 Perfluoroheptane Sulfonate



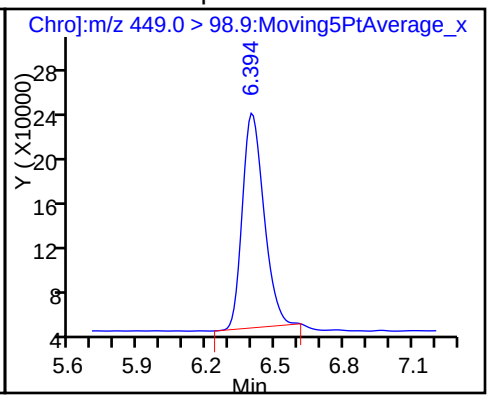
13 Perfluoroheptane Sulfonate



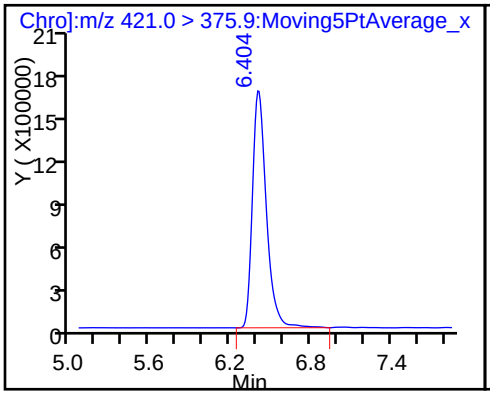
12 Perfluoroheptanesulfonic Acid



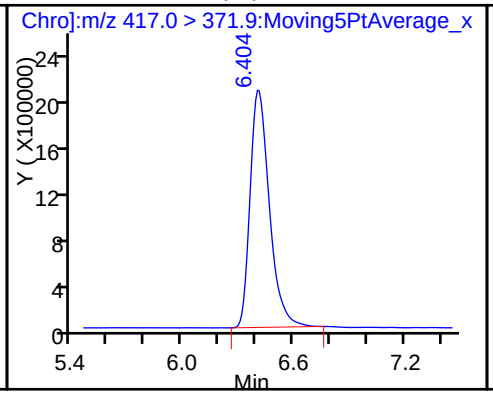
12 Perfluoroheptanesulfonic Acid



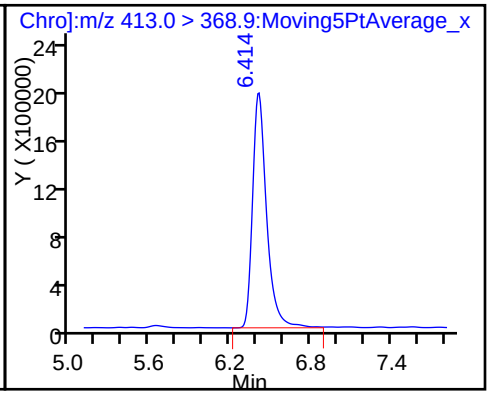
$ 14 13C8 PFOA



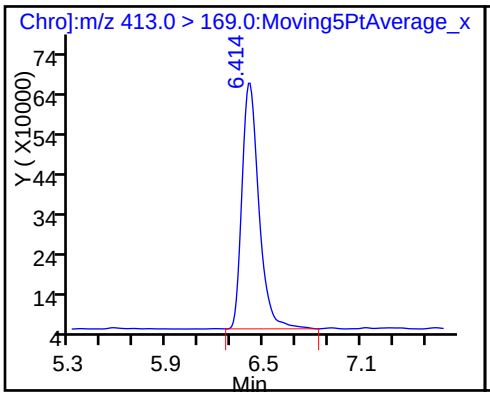
* 15 13C4 PFOA (IS)



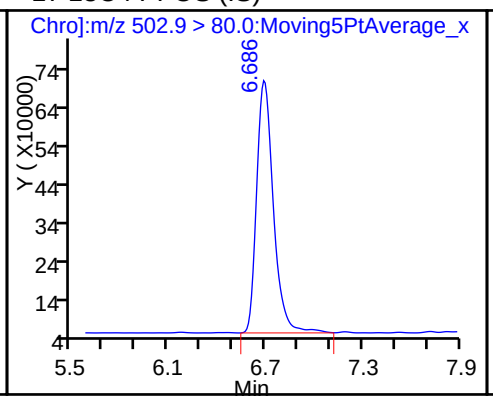
16 Perfluorooctanoic acid



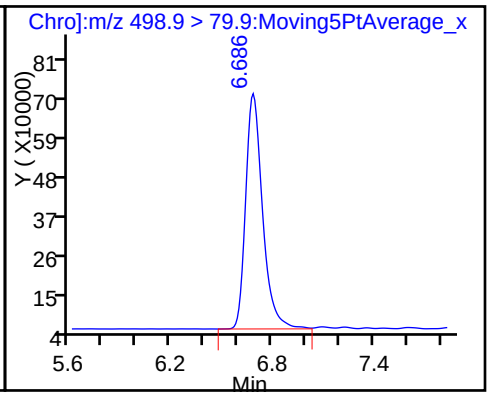
16 Perfluorooctanoic acid



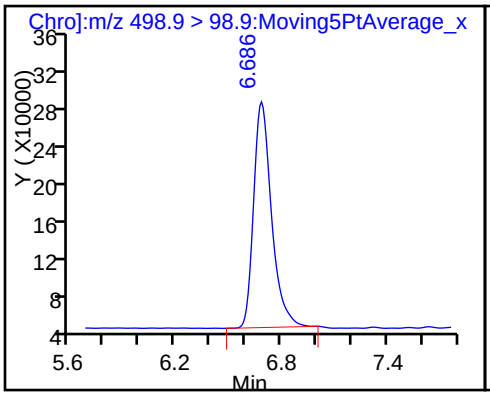
* 17 13C4 PFOS (IS)



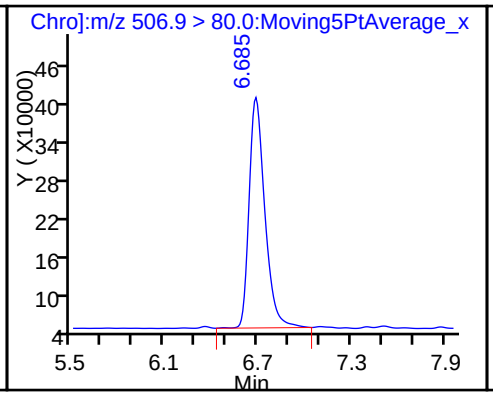
19 Perfluorooctane sulfonic acid



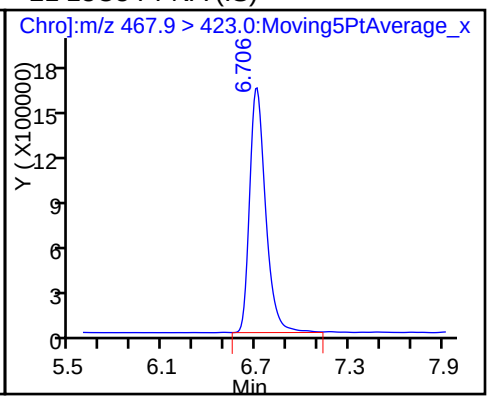
19 Perfluorooctane sulfonic acid



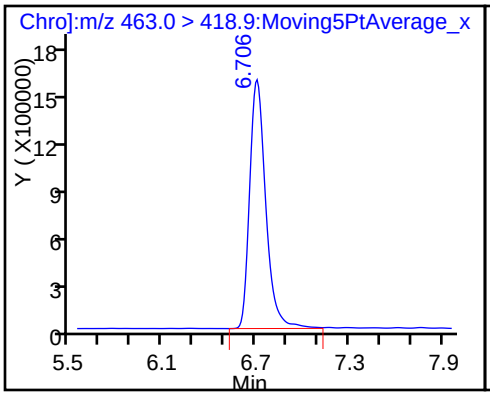
$ 18 13C8 PFOS



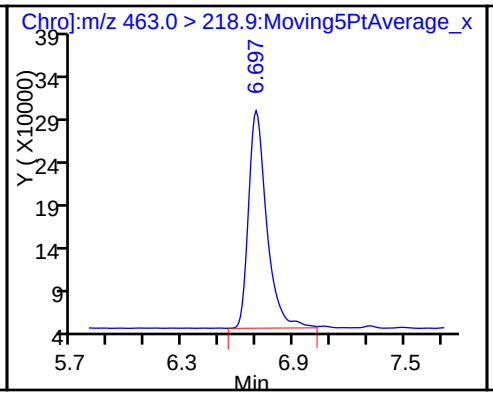
* 21 13C5 PFNA (IS)



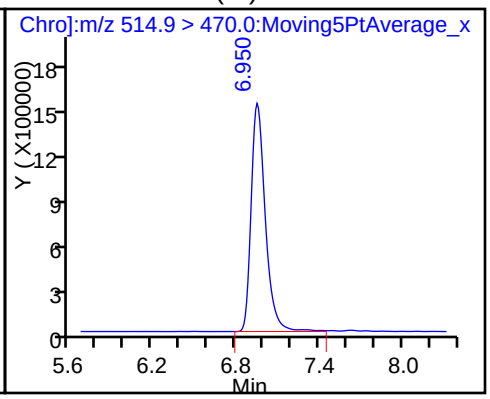
20 Perfluorononanoic acid



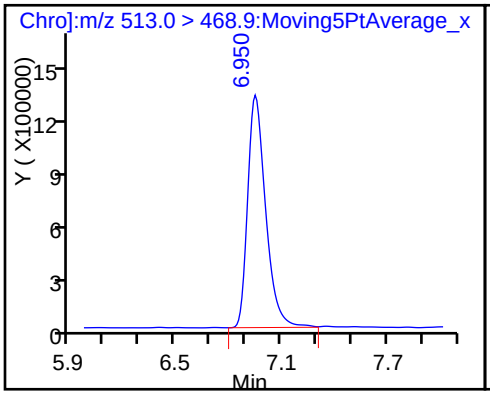
20 Perfluorononanoic acid



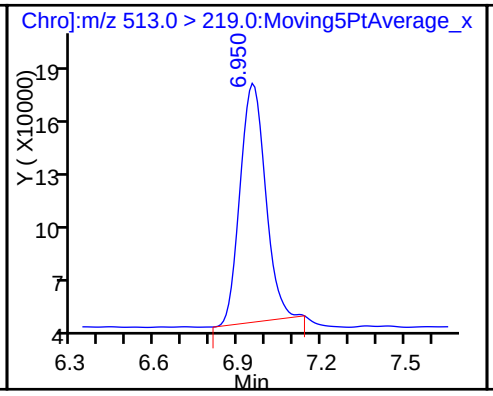
* 22 13C2 PFDA (IS)



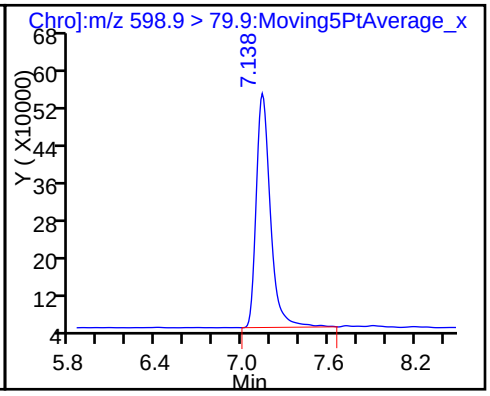
23 Perfluorodecanoic acid



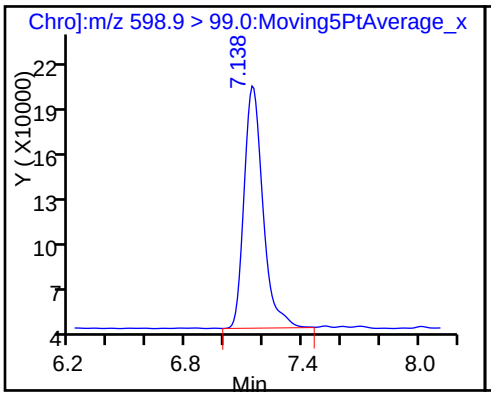
23 Perfluorodecanoic acid



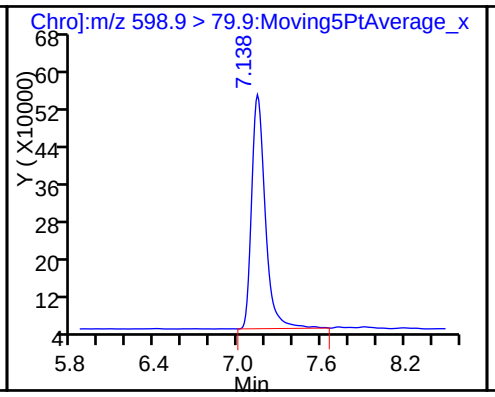
24 Perfluorodecane Sulfonic acid



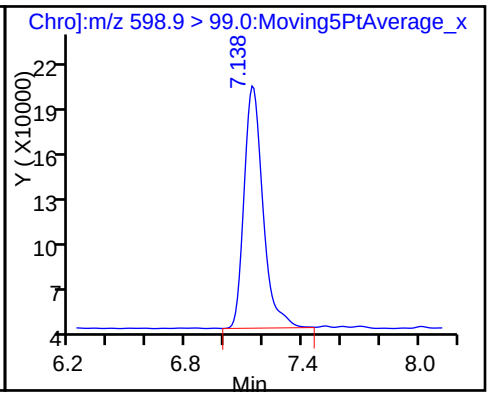
24 Perfluorodecane Sulfonic acid



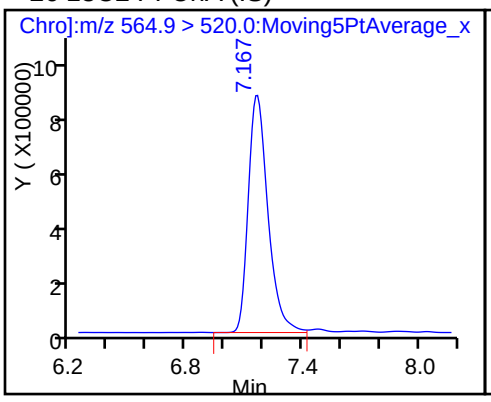
25 Perfluorodecane Sulfonate



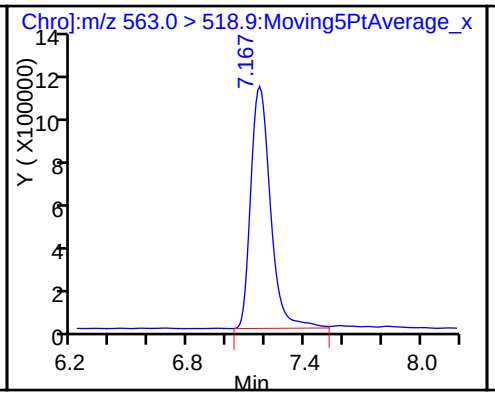
25 Perfluorodecane Sulfonate



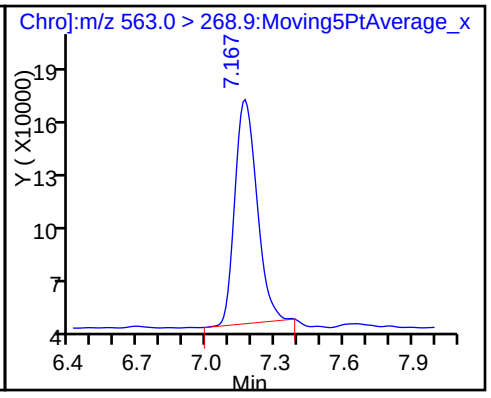
* 26 13C2 PFUnA (IS)



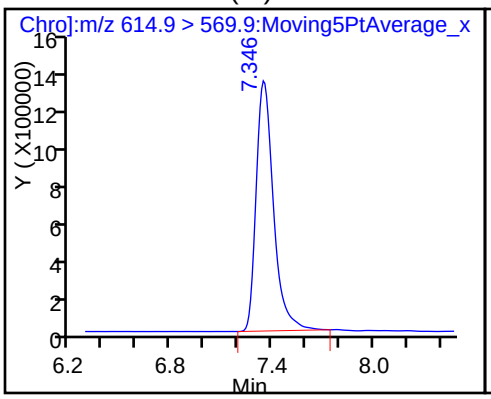
27 Perfluoroundecanoic acid



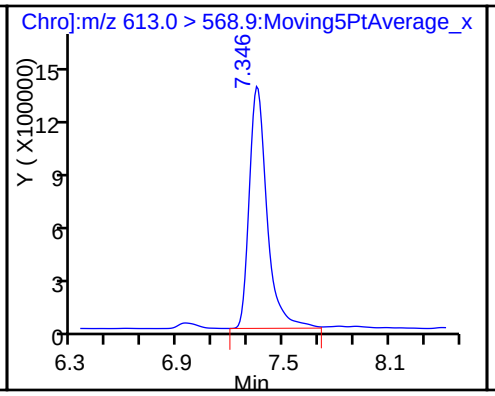
27 Perfluoroundecanoic acid



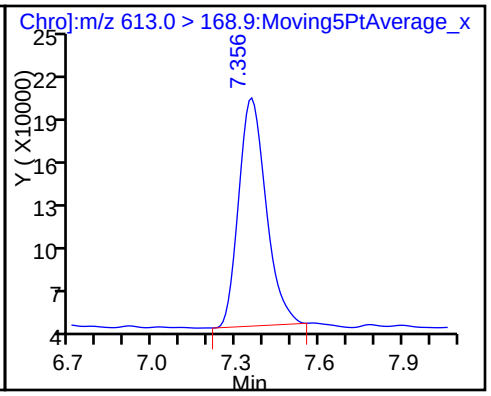
* 28 13C2 PFDoA (IS)



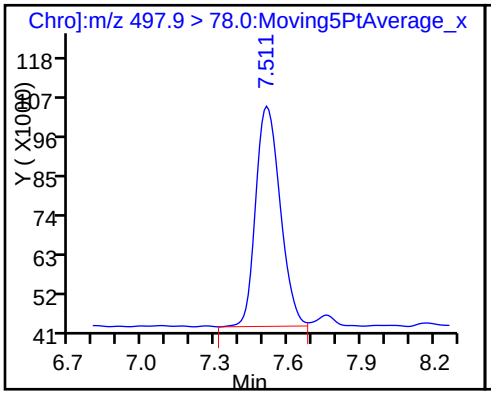
29 Perfluorododecanoic acid



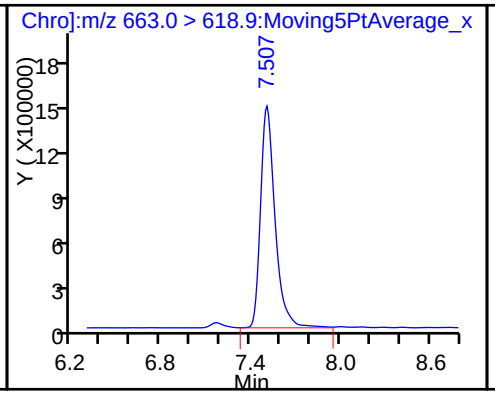
29 Perfluorododecanoic acid



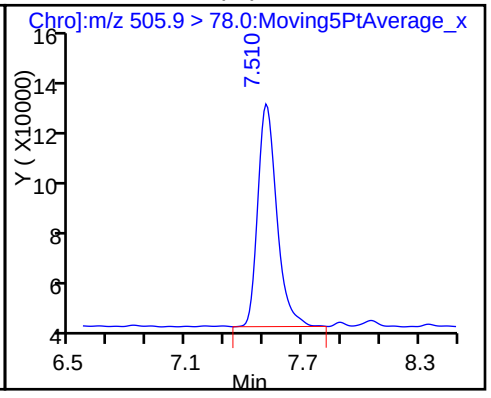
32 Perfluorooctane Sulfonamide



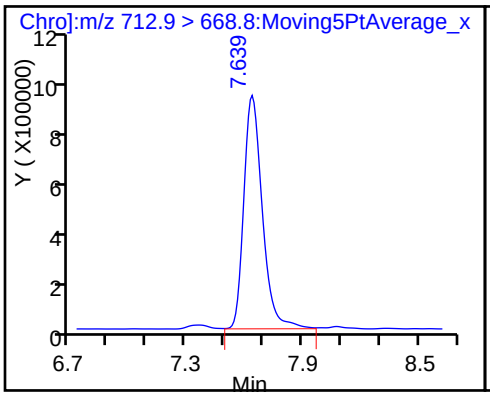
30 Perfluorotridecanoic acid



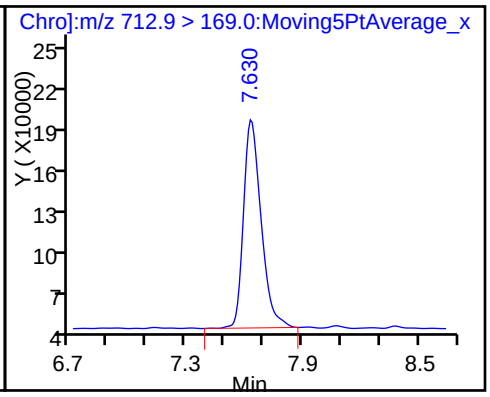
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-340007/3-A

Matrix: Water | Lab File ID: PC516I01108.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 08/29/2016 19:57

Sample wt/vol: 250(mL) | Date Analyzed: 09/02/2016 05:48

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340694 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.159		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.210		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.184		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.190		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.181		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.213		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	123		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01108.d
Lims ID: LCSD 280-340007/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 02-Sep-2016 05:48:36 ALS Bottle#: 0 Worklist Smp#: 95
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 280-340007/3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:51 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:41:33

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.020	4.020	0.0		14480937	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.011	4.020	-0.009	0.998	12950906	9.28			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.147	5.119	0.028	0.896	10586487	9.84			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.270	5.241	0.029	0.853	5164700	7.94			
298.9 > 98.9	5.270	5.241	0.029	0.853	1608420		3.21(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.270	5.241	0.029	0.853	5164700	7.94			
298.9 > 98.9	5.270	5.241	0.029	0.853	1608420		3.21(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.743	5.724	0.019		9866605	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.733	5.724	0.009	0.998	8734922	9.97			
313.0 > 118.6	5.743	5.724	0.019	1.000	258383		33.81(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.169	6.159	0.010	0.948	13145806	10.5			
363.0 > 168.9	6.169	6.159	0.010	0.948	3327820		3.95(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.177	6.168	0.009		1397280	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.178	6.168	0.010	1.000	5426849	9.19			R
398.9 > 98.9	6.178	6.168	0.010	1.000	1661963		3.27(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.178	6.168	0.010	1.000	5426849	9.19			
398.9 > 98.9	6.178	6.168	0.010	1.000	1661963		3.27(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.508	6.498	0.010	0.960	4968763	8.77			
449.0 > 98.9	6.498	6.498	0.0	0.958	1447569		3.43(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.508	6.498	0.010	0.960	4968763	8.77			
449.0 > 98.9	6.498	6.498	0.0	0.958	1447569		3.43(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.508	0.009	1.001	12354216	12.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.508	0.0		14892260	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	1.000	15509678	10.6			
413.0 > 169.0	6.518	6.508	0.010	1.001	4803876		3.23(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.790	-0.010	1.000	2768822	9.31			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.790	-0.009		4943867	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.781	6.790	-0.009	1.000	4761894	9.04			R
498.9 > 98.9	6.781	6.790	-0.009	1.000	1805984		2.64(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.801	6.810	-0.010		12624549	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.801	6.810	-0.009	1.000	12713859	9.52			
463.0 > 218.9	6.801	6.810	-0.009	1.000	1705333		7.46(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.054	-0.019		12345349	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.045	7.054	-0.009	1.001	11125922	9.49			R
513.0 > 219.0	7.045	7.054	-0.009	1.001	1150082		9.67(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.224	7.243	-0.019	1.065	4268399	8.31			
598.9 > 99.0	7.224	7.243	-0.019	1.065	1219416		3.50(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.224	7.243	-0.019	1.065	4268399	8.31			
598.9 > 99.0	7.224	7.243	-0.019	1.065	1219416		3.50(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.262	-0.019		6591075	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.243	7.262	-0.019	1.000	8060323	9.40			R
563.0 > 268.9	7.243	7.262	-0.019	1.000	1036133		7.78(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.422	7.441	-0.019		12258862	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.422	7.441	-0.019	1.000	11886410	9.98			
613.0 > 168.9	7.432	7.441	-0.009	1.001	1470581		8.08(5.96-11.06)		
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.567	7.529	0.038		511381	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.568	7.530	0.038	1.000	495236	9.37			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.573	7.602	-0.029	1.020	12637335	8.14			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.705	7.734	-0.029	1.038	9635334	8.08			
712.9 > 169.0	7.705	7.734	-0.029	1.038	1633043		5.90(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 02-Sep-2016 11:56:01 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01108.d

Injection Date: 02-Sep-2016 05:48:36 Instrument ID: LC_LCMS5

Lims ID: LCSD 280-340007/3-A

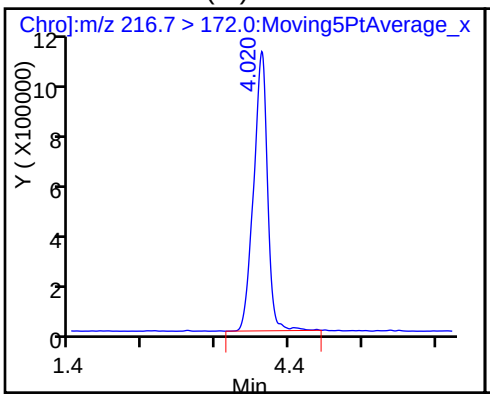
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 95

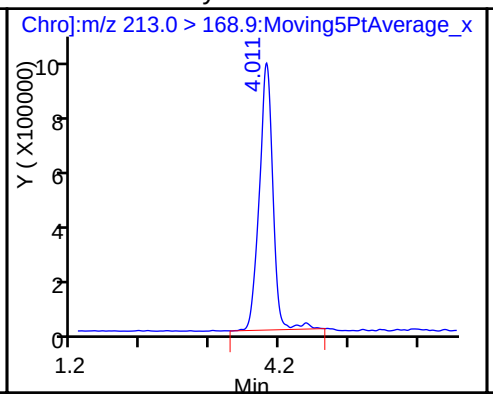
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

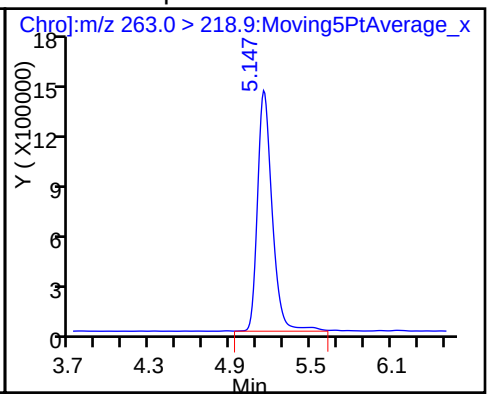
* 1 13C4 PFBA (IS)



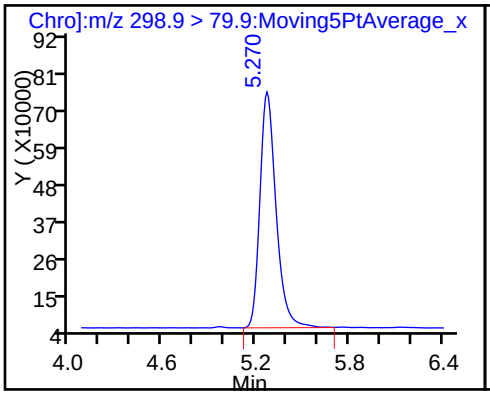
2 Perfluorobutyric acid



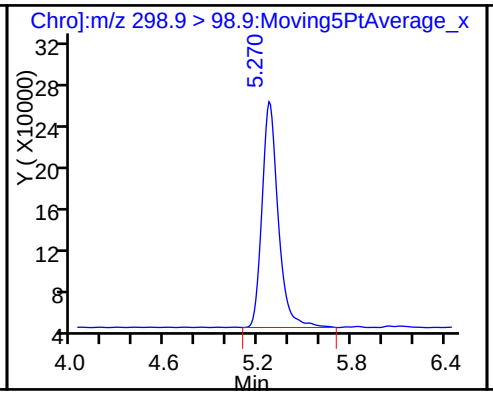
3 Perfluoropentanoic acid



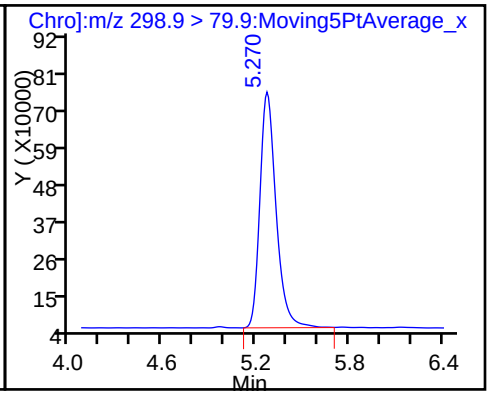
4 Perfluorobutane Sulfonate



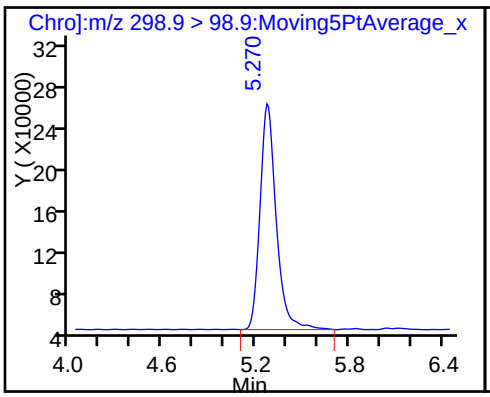
4 Perfluorobutane Sulfonate



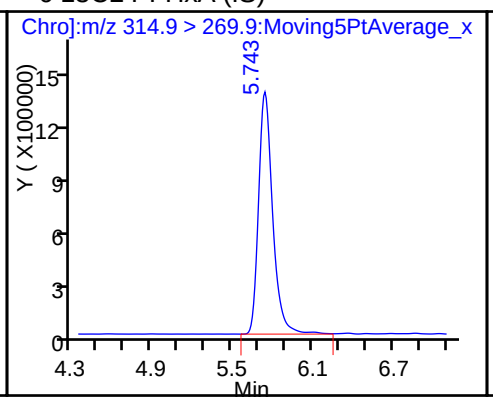
5 Perfluorobutanesulfonic acid



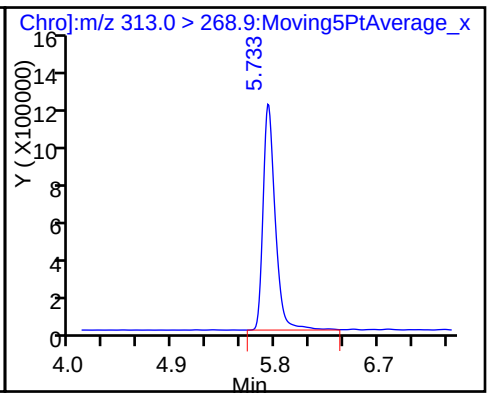
5 Perfluorobutanesulfonic acid



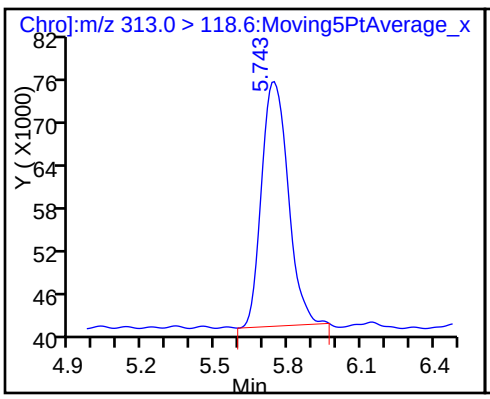
* 6 13C2 PFHxA (IS)



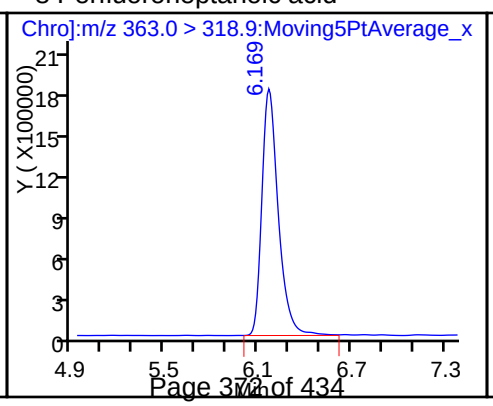
7 Perfluorohexanoic acid



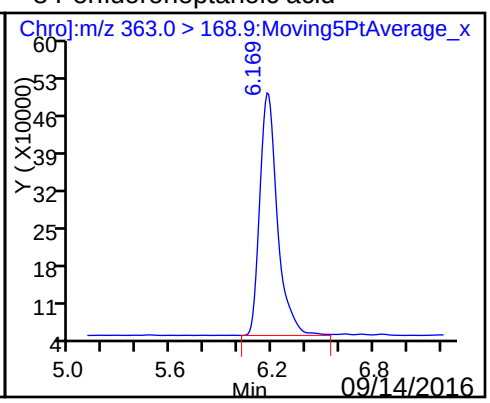
7 Perfluorohexanoic acid



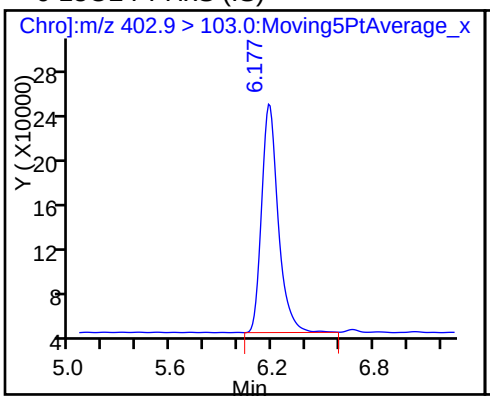
8 Perfluoroheptanoic acid



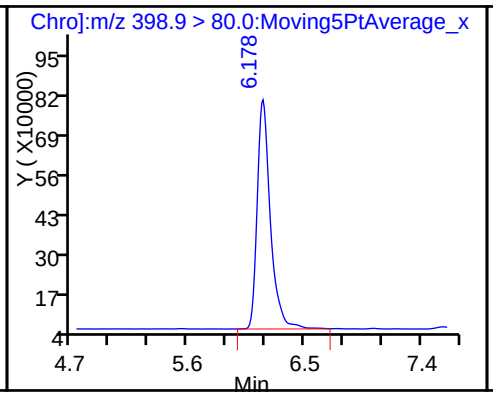
8 Perfluoroheptanoic acid



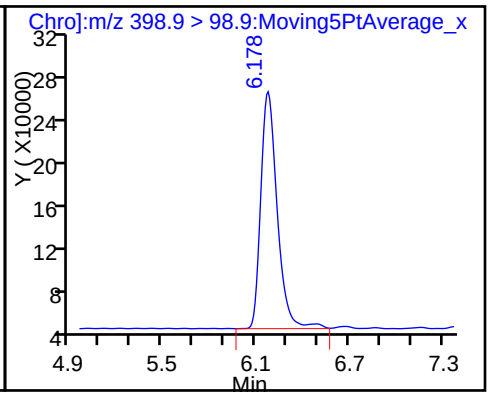
* 9 18O2 PFHxS (IS)



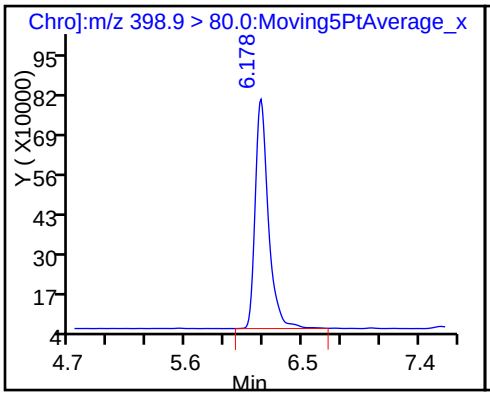
10 Perfluorohexane Sulfonate



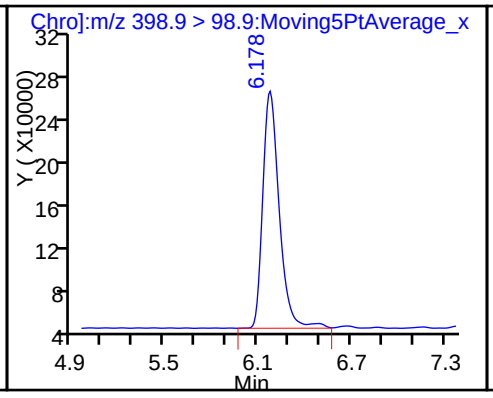
10 Perfluorohexane Sulfonate



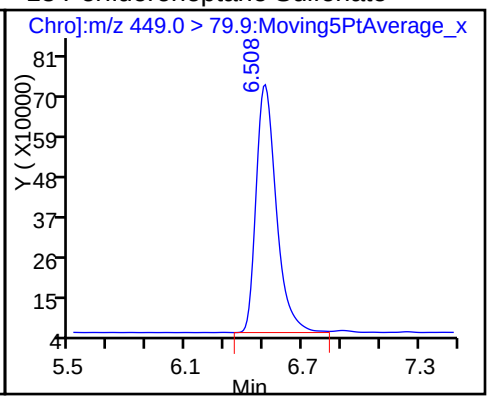
11 Perfluorohexanesulfonic acid



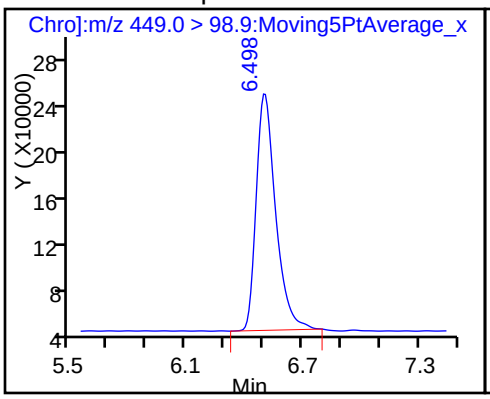
11 Perfluorohexanesulfonic acid



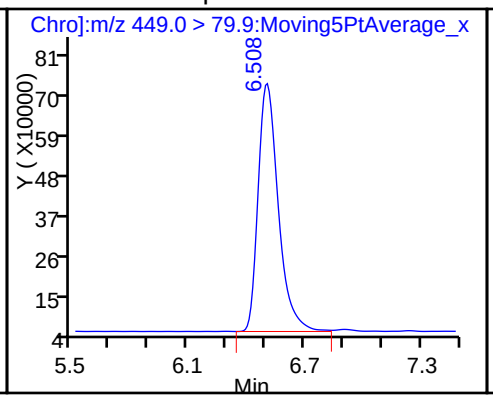
13 Perfluoroheptane Sulfonate



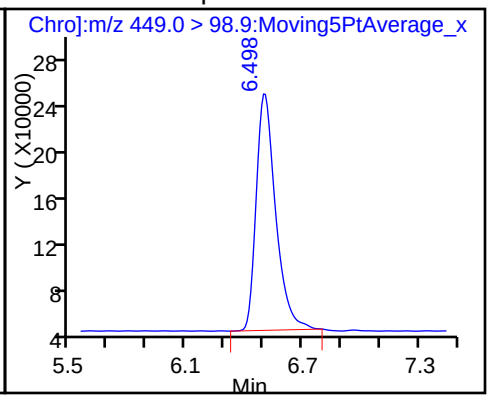
13 Perfluoroheptane Sulfonate



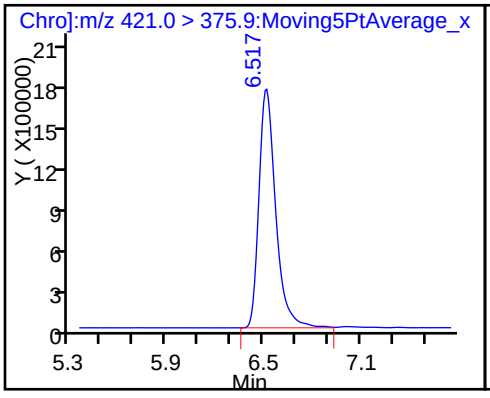
12 Perfluoroheptanesulfonic Acid



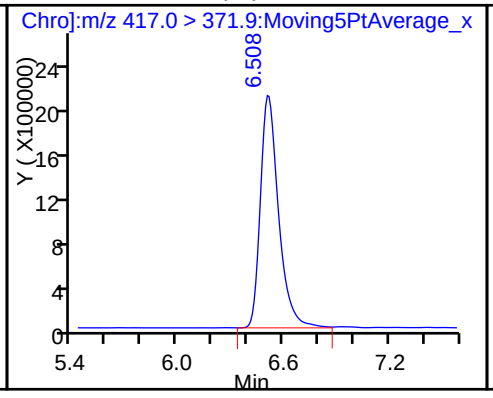
12 Perfluoroheptanesulfonic Acid



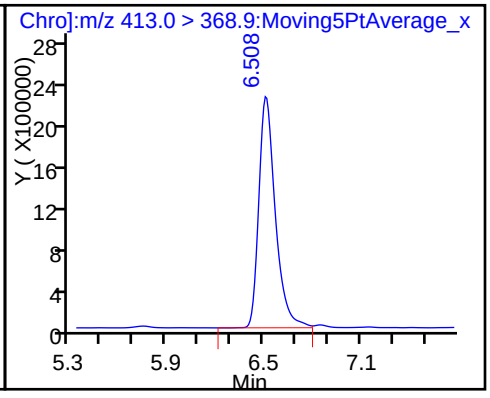
$ 14 13C8 PFOA



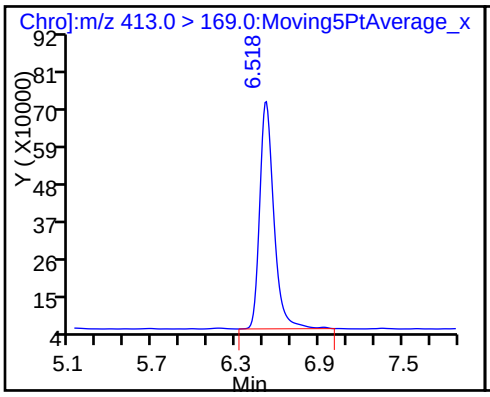
* 15 13C4 PFOA (IS)



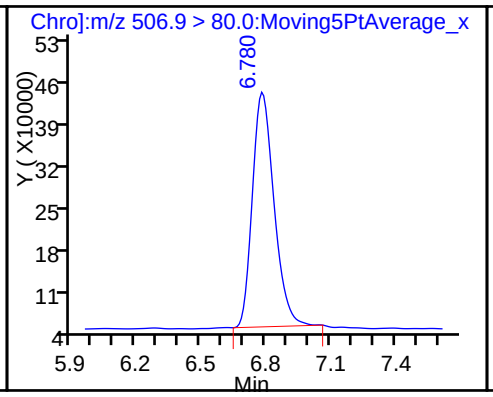
16 Perfluorooctanoic acid



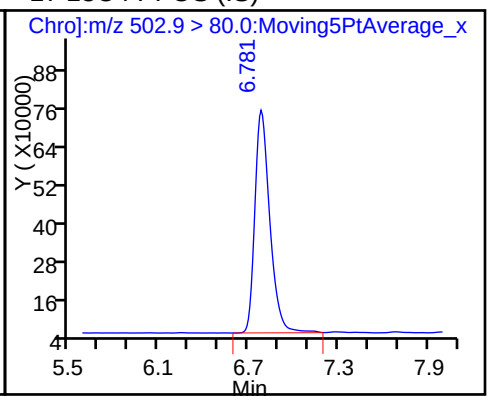
16 Perfluorooctanoic acid



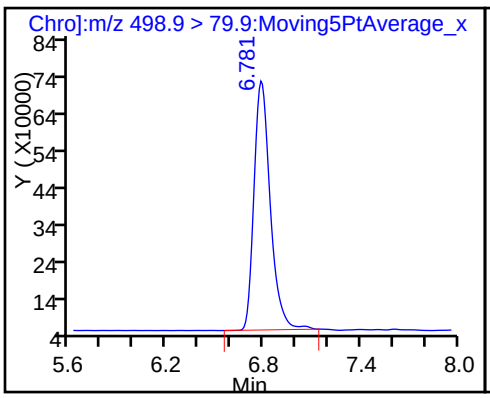
$ 18 13C8 PFOS



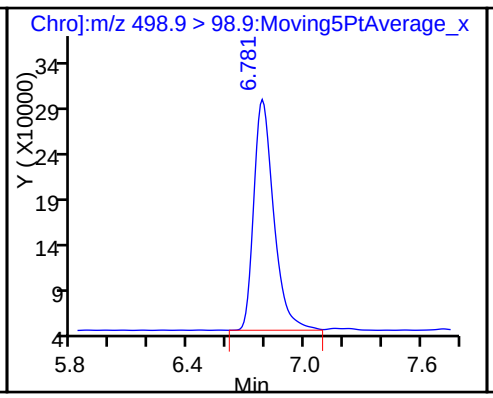
* 17 13C4 PFOS (IS)



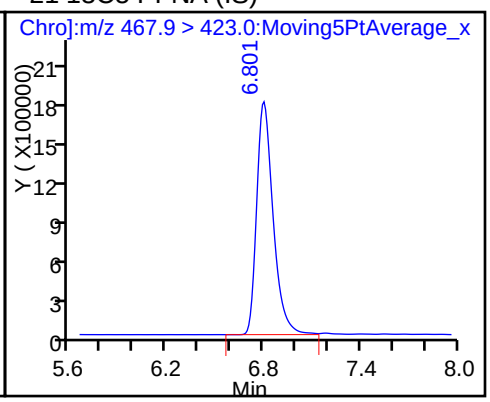
19 Perfluorooctane sulfonic acid



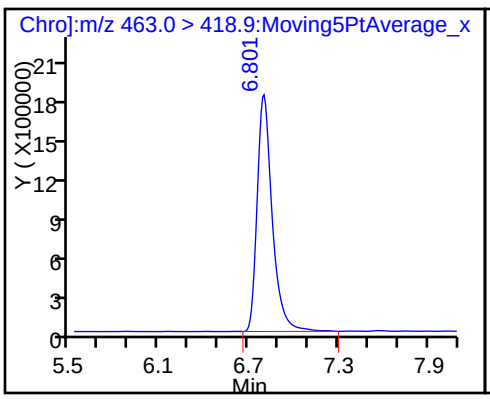
19 Perfluorooctane sulfonic acid



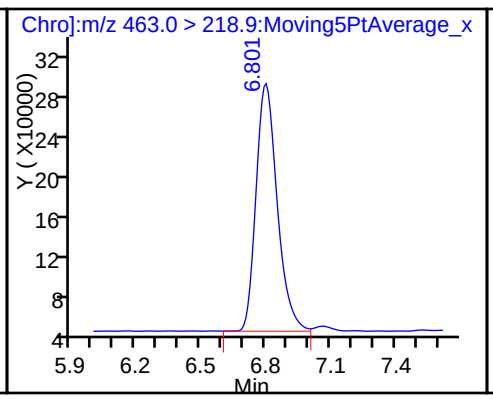
* 21 13C5 PFNA (IS)



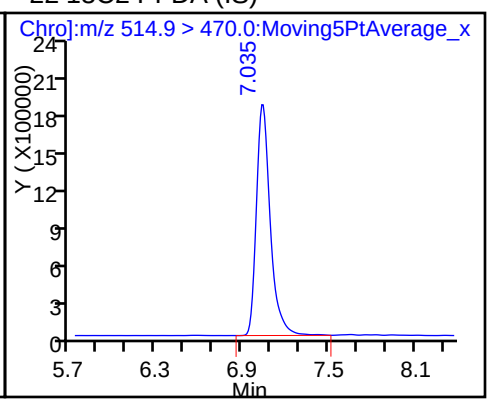
20 Perfluorononanoic acid



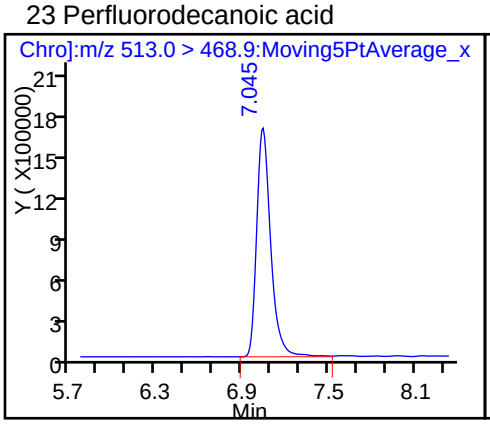
20 Perfluorononanoic acid



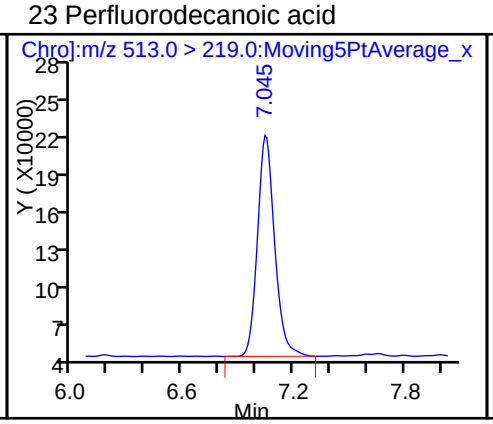
* 22 13C2 PFDA (IS)



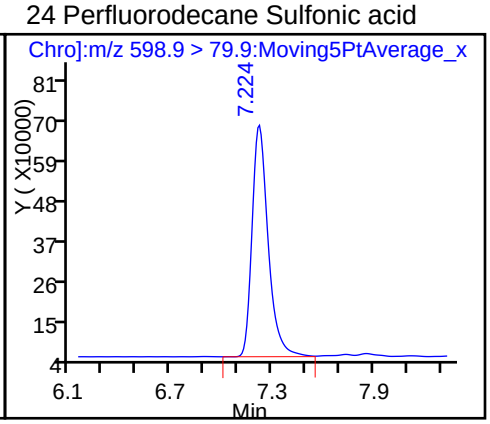
23 Perfluorodecanoic acid



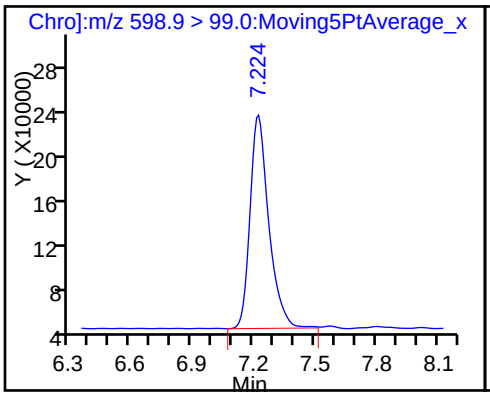
23 Perfluorodecanoic acid



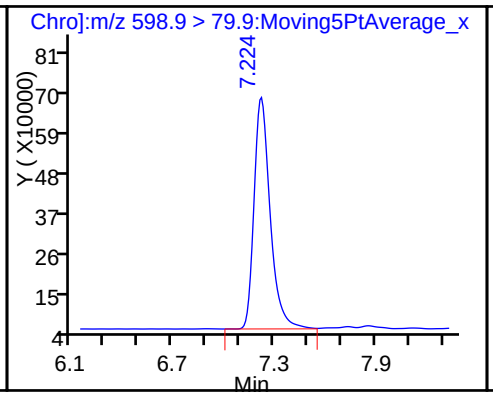
24 Perfluorodecane Sulfonic acid



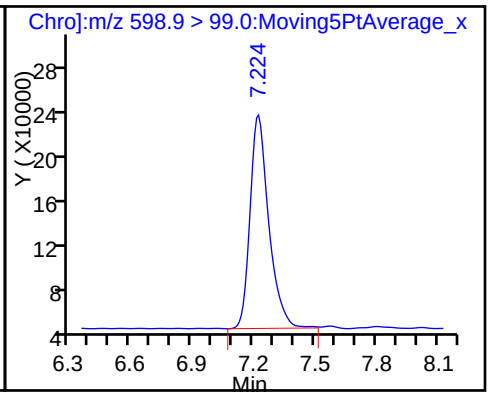
24 Perfluorodecane Sulfonic acid



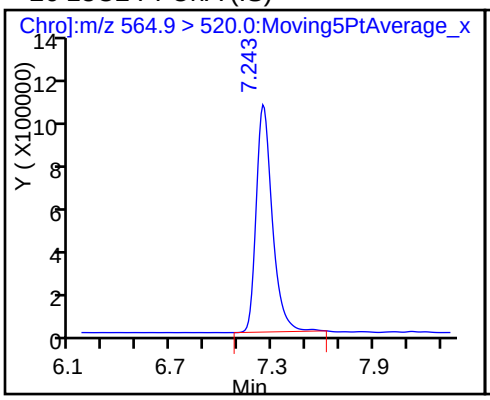
25 Perfluorodecane Sulfonate



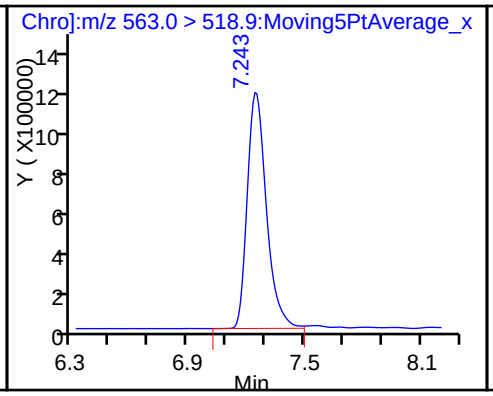
25 Perfluorodecane Sulfonate



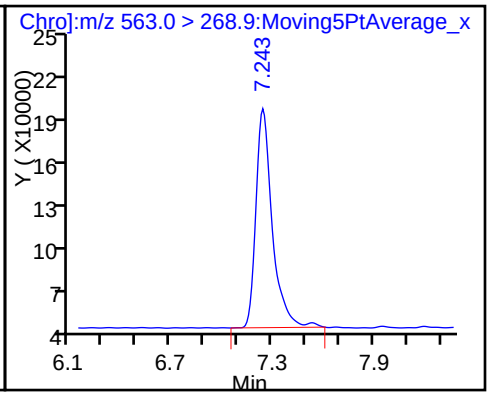
* 26 13C2 PFUnA (IS)



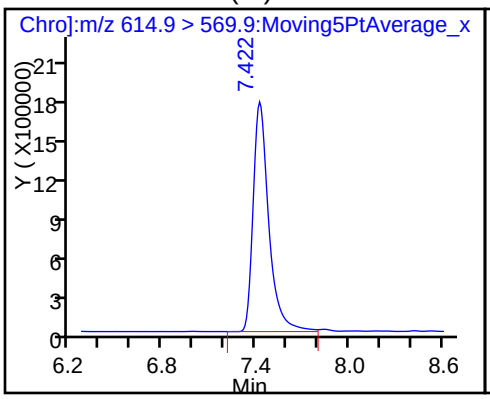
27 Perfluoroundecanoic acid



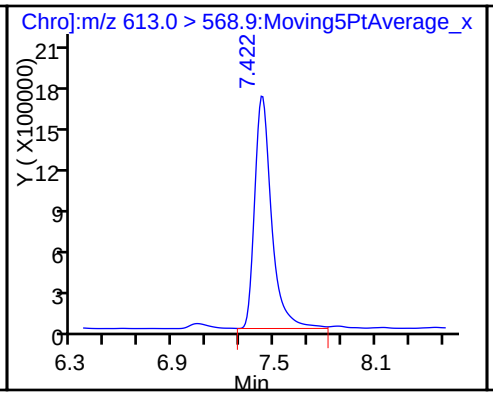
27 Perfluoroundecanoic acid



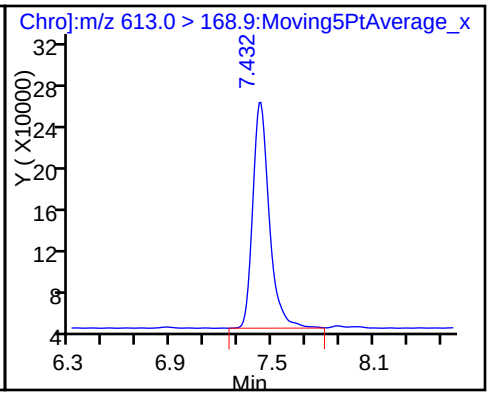
* 28 13C2 PFDoA (IS)



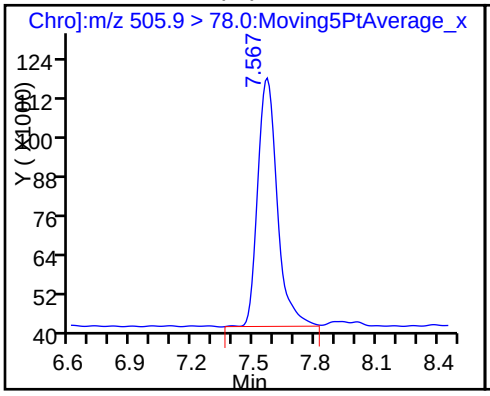
29 Perfluorododecanoic acid



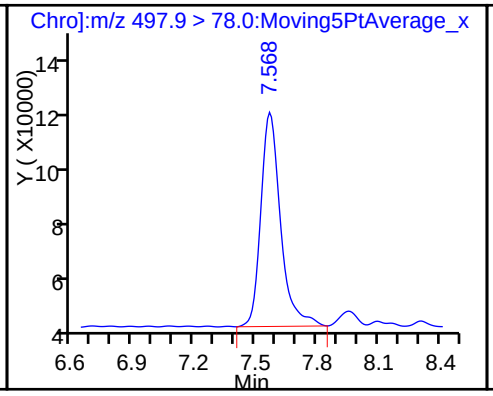
29 Perfluorododecanoic acid



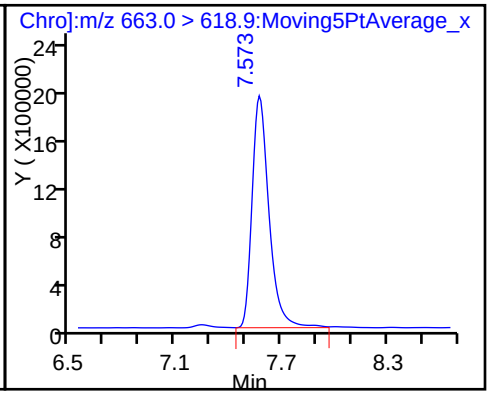
* 31 13C8 FOSA (IS)



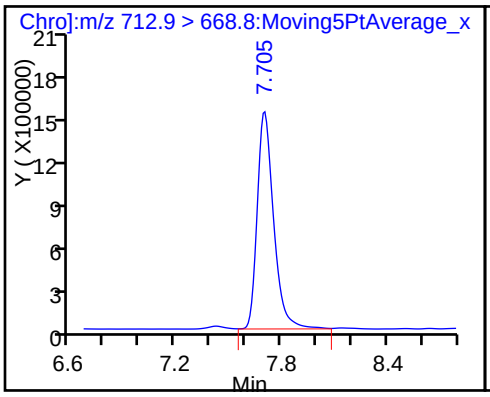
32 Perfluorooctane Sulfonamide



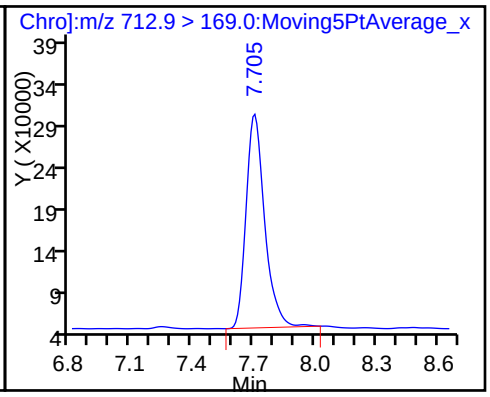
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-340544/3-A

Matrix: Water | Lab File ID: PC516I02018.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/01/2016 19:29

Sample wt/vol: 250(mL) | Date Analyzed: 09/02/2016 13:46

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340829 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.148		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.193		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.155		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.178		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.172		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.176		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	125		60-155
STL01054	13C8 PFOS	102		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02018.d
Lims ID: LCSD 280-340544/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 02-Sep-2016 13:46:43 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 280-340544/3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:24 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:27:09

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.124	4.314	-0.190		18835182	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.124	4.314	-0.190	1.000	16774376	9.24			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.204	5.346	-0.142	0.899	12696541	9.44			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.327	5.459	-0.132	0.857	6034687	7.38			R
298.9 > 98.9	5.327	5.459	-0.132	0.857	1745834		3.46(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.327	5.459	-0.132	0.857	6034687	7.38			
298.9 > 98.9	5.327	5.459	-0.132	0.857	1745834		3.46(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.790	5.923	-0.133		12327966	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.790	5.923	-0.133	1.000	9418158	8.60			
313.0 > 118.6	5.800	5.923	-0.123	1.002	319658		29.46(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.215	6.348	-0.133		1754705	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.215	6.348	-0.133	1.000	5754719	7.76			
398.9 > 98.9	6.215	6.348	-0.133	1.000	1758382		3.27(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.215	6.348	-0.133	1.000	5754719	7.76			R
398.9 > 98.9	6.215	6.348	-0.133	1.000	1758382		3.27(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.216	6.349	-0.133	0.948	14185831	9.64			
363.0 > 168.9	6.206	6.349	-0.143	0.947	3466463		4.09(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.545	6.678	-0.133	0.960	5268727	7.62			
449.0 > 98.9	6.545	6.678	-0.133	0.960	1575423		3.34(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.545	6.678	-0.133	0.960	5268727	7.62			
449.0 > 98.9	6.545	6.678	-0.133	0.960	1575423		3.34(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.555	6.688	-0.133	1.000	14754872	12.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.556	6.688	-0.132		17526288	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.556	6.688	-0.132	1.000	15094481	8.79			
413.0 > 169.0	6.556	6.688	-0.132	1.000	4988663		3.03(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.818	6.960	-0.142	1.000	3449736	9.51			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.819	6.961	-0.142		6034649	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.819	6.951	-0.132	1.000	5534368	8.61			R
498.9 > 98.9	6.819	6.951	-0.132	1.000	2032301		2.72(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.838	6.971	-0.133		13389044	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.839	6.971	-0.132	1.000	12616815	8.91			
463.0 > 218.9	6.839	6.971	-0.132	1.000	1848800		6.82(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.073	7.206	-0.133		13616496	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.083	7.206	-0.123	1.001	11462059	8.87			
513.0 > 219.0	7.073	7.206	-0.133	1.000	1087884		10.54(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.252	7.385	-0.133	1.064	4671715	7.45			
598.9 > 99.0	7.262	7.385	-0.123	1.065	1409676		3.31(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.252	7.385	-0.133	1.064	4671715	7.45			
598.9 > 99.0	7.262	7.385	-0.123	1.065	1409676		3.31(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.404	-0.123		7169778	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.281	7.404	-0.123	1.000	8766409	9.40			R
563.0 > 268.9	7.281	7.404	-0.123	1.000	1057429		8.29(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.460	7.573	-0.113		13274300	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.460	7.574	-0.114	1.000	10669103	8.27			
613.0 > 168.9	7.451	7.574	-0.123	0.999	1319591		8.09(5.96-11.06)		
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.624	7.718	-0.094		675248	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.624	7.719	-0.095	1.000	480287	6.88			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.715	-0.113	1.019	11261953	6.69			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734	7.847	-0.113	1.037	7498705	5.79			
712.9 > 169.0	7.734	7.847	-0.113	1.037	1075716		6.97(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 06-Sep-2016 08:22:35 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02018.d

Injection Date: 02-Sep-2016 13:46:43 Instrument ID: LC_LCMS5

Lims ID: LCSD 280-340544/3-A

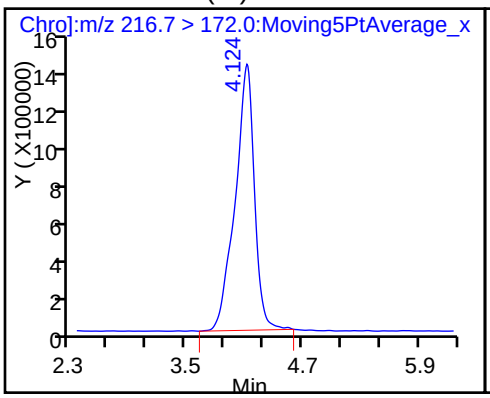
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6

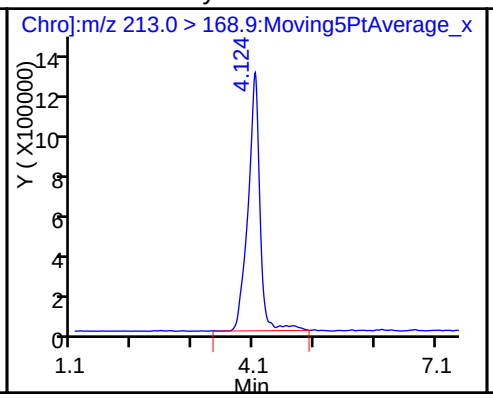
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

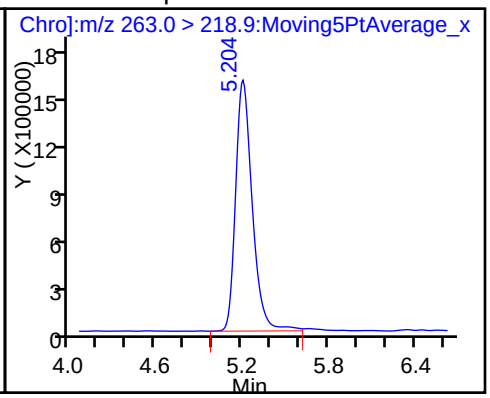
* 1 13C4 PFBA (IS)



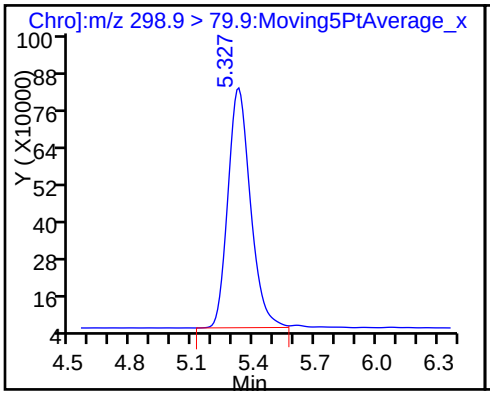
2 Perfluorobutyric acid



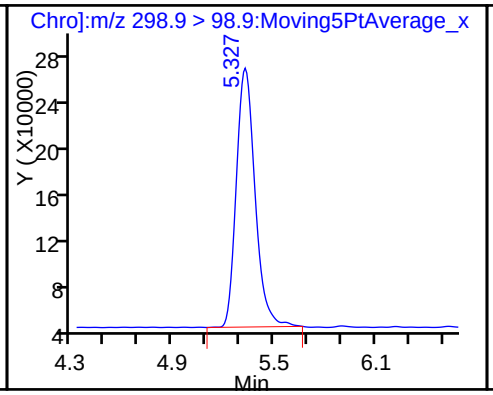
3 Perfluoropentanoic acid



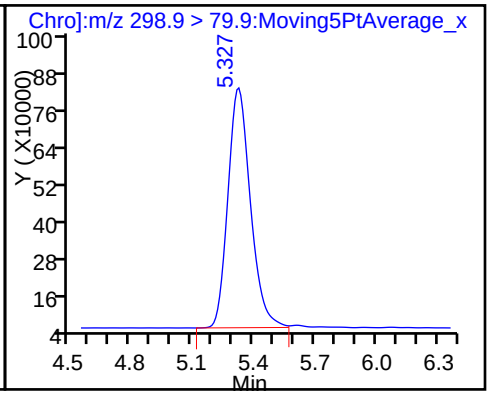
4 Perfluorobutane Sulfonate



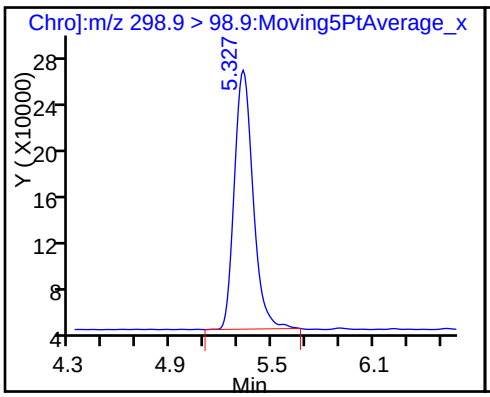
4 Perfluorobutane Sulfonate



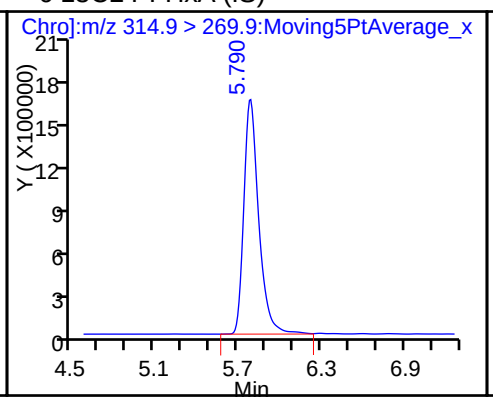
5 Perfluorobutanesulfonic acid



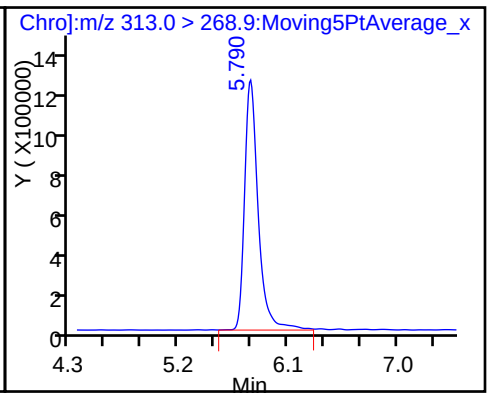
5 Perfluorobutanesulfonic acid



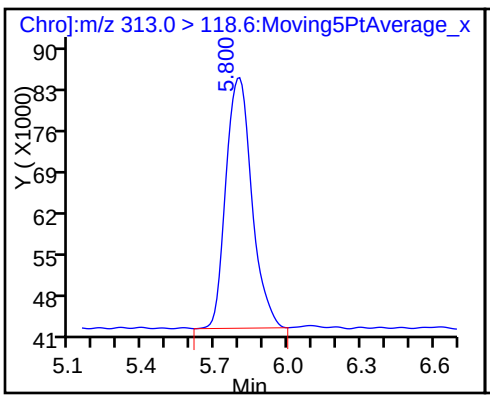
* 6 13C2 PFHxA (IS)



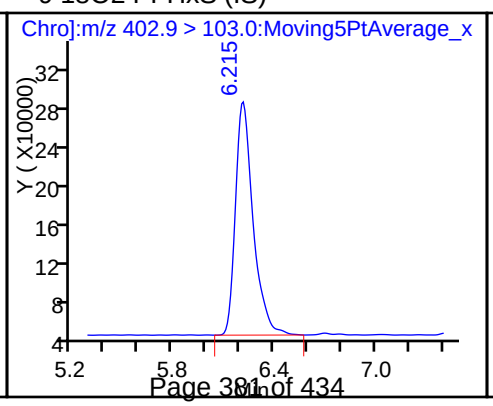
7 Perfluorohexanoic acid



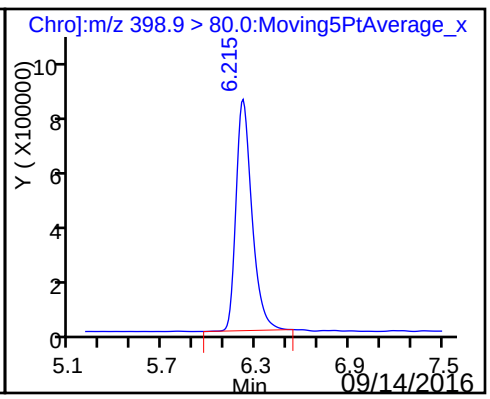
7 Perfluorohexanoic acid



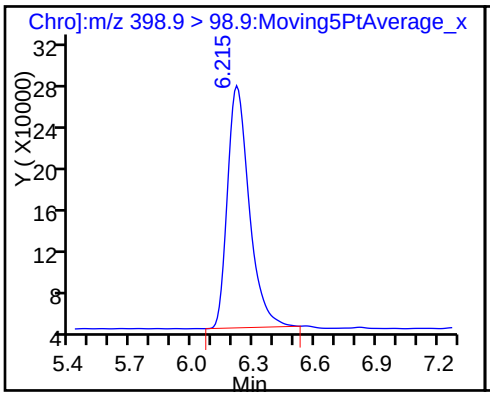
* 9 18O2 PFHxS (IS)



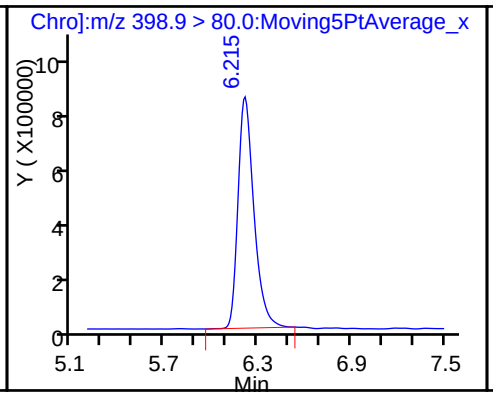
11 Perfluorohexanesulfonic acid



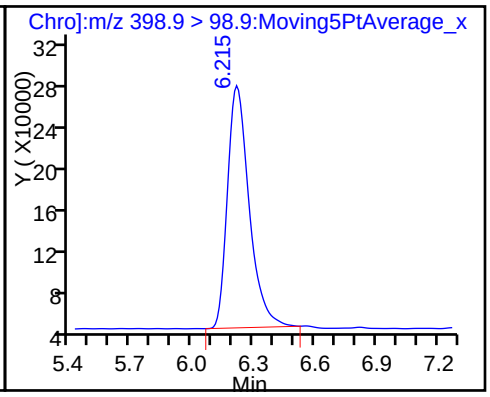
11 Perfluorohexanesulfonic acid



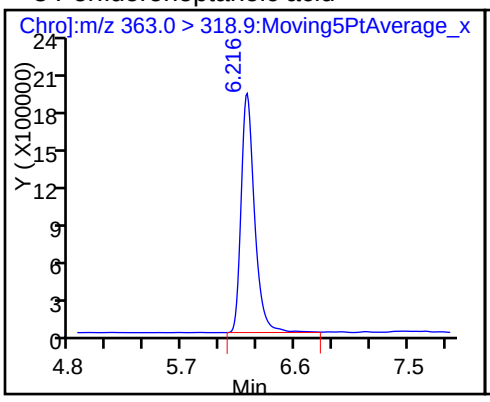
10 Perfluorohexane Sulfonate



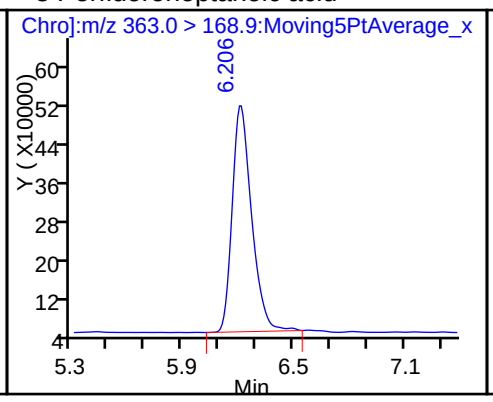
10 Perfluorohexane Sulfonate



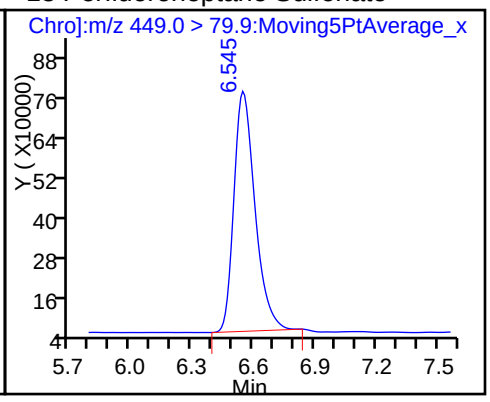
8 Perfluoroheptanoic acid



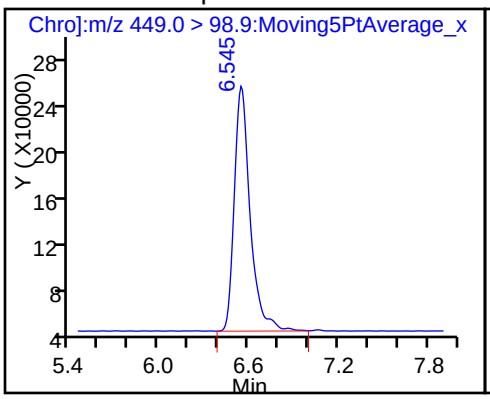
8 Perfluoroheptanoic acid



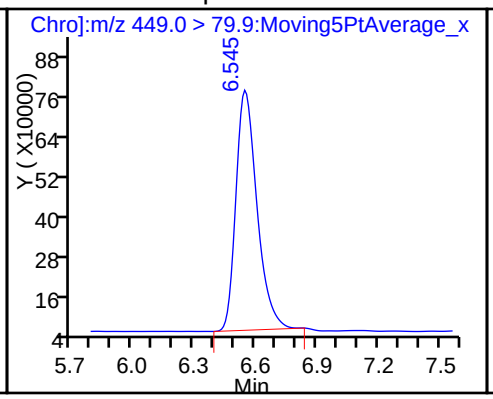
13 Perfluoroheptane Sulfonate



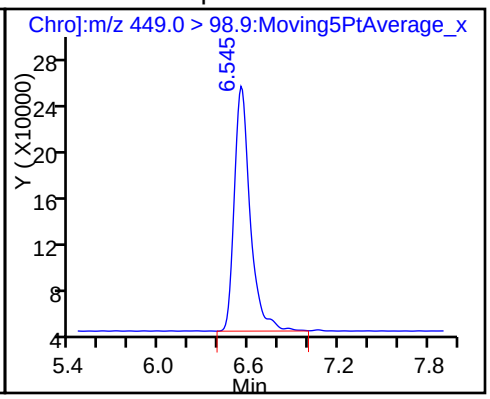
13 Perfluoroheptane Sulfonate



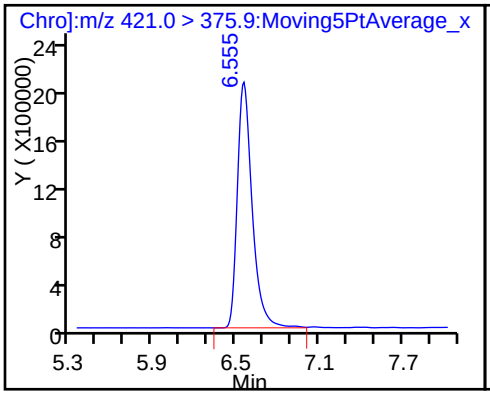
12 Perfluoroheptanesulfonic Acid



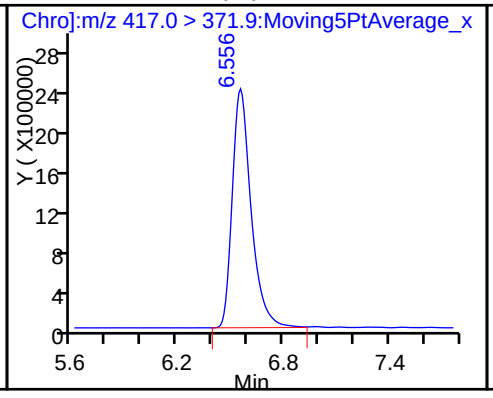
12 Perfluoroheptanesulfonic Acid



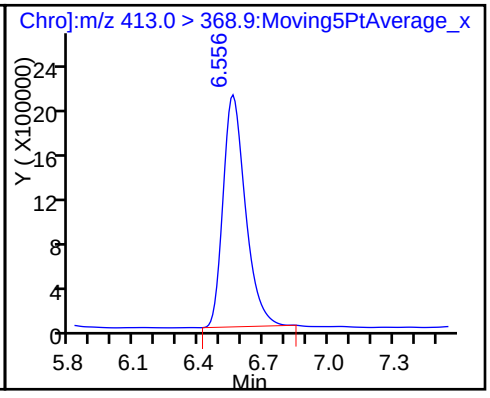
$ 14 13C8 PFOA



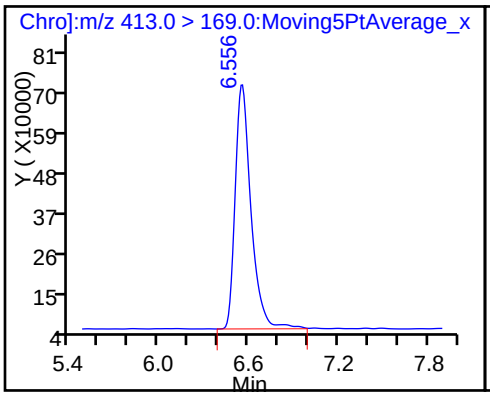
* 15 13C4 PFOA (IS)



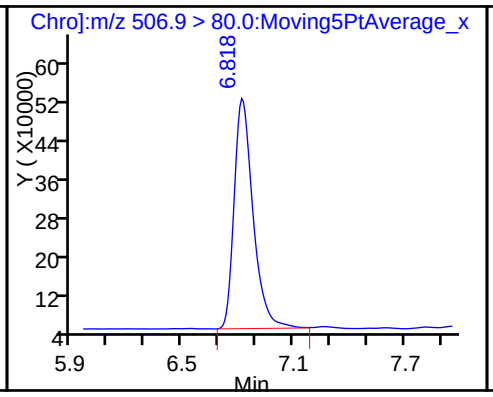
16 Perfluorooctanoic acid



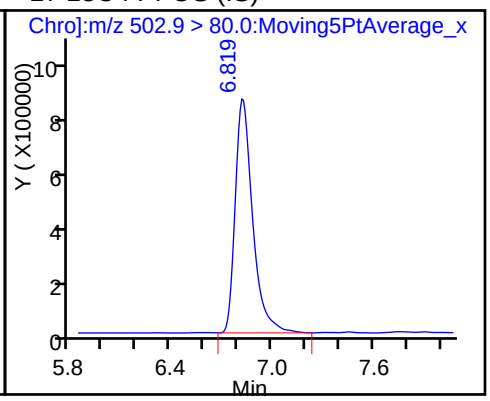
16 Perfluorooctanoic acid



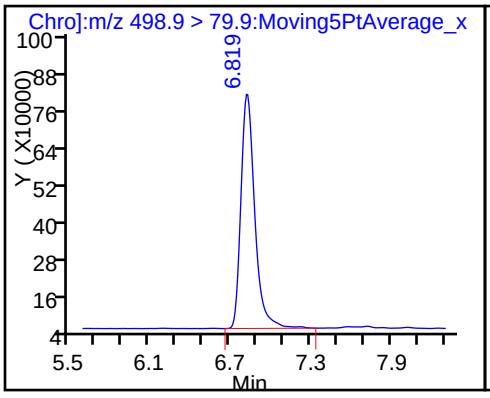
$ 18 13C8 PFOS



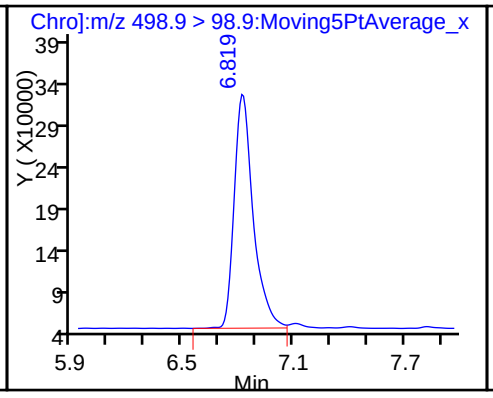
* 17 13C4 PFOS (IS)



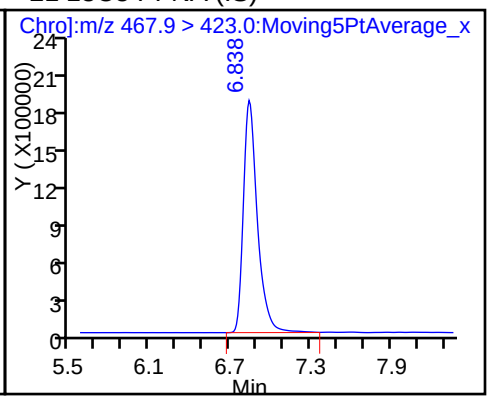
19 Perfluorooctane sulfonic acid



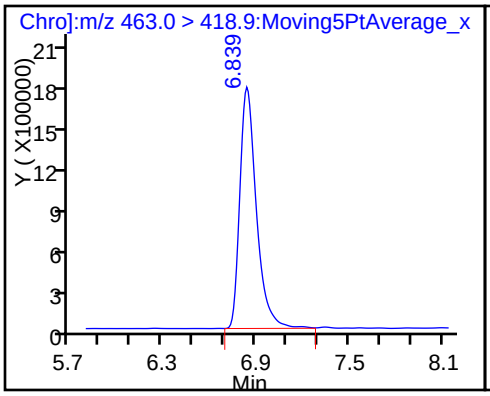
19 Perfluorooctane sulfonic acid



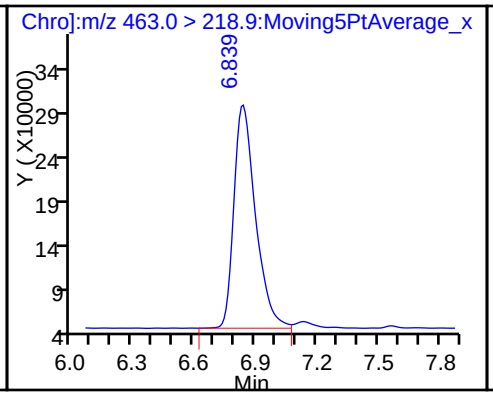
* 21 13C5 PFNA (IS)



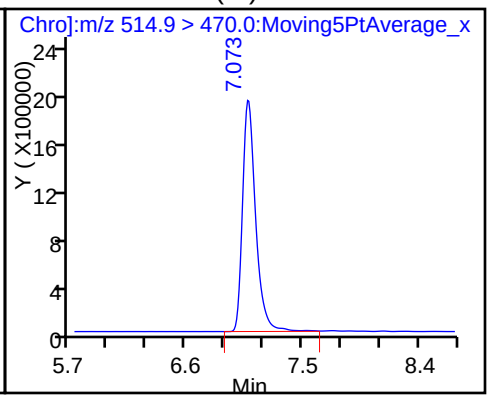
20 Perfluorononanoic acid



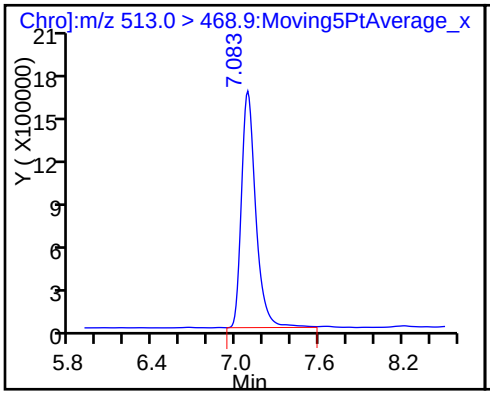
20 Perfluorononanoic acid



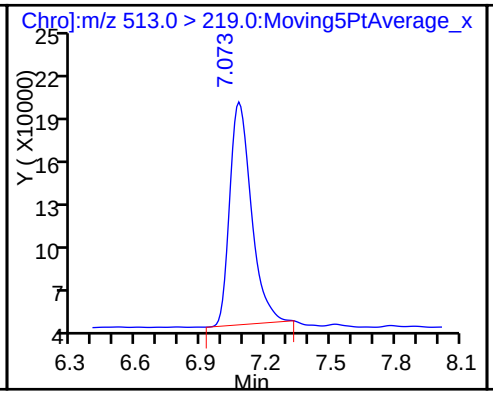
* 22 13C2 PFDA (IS)



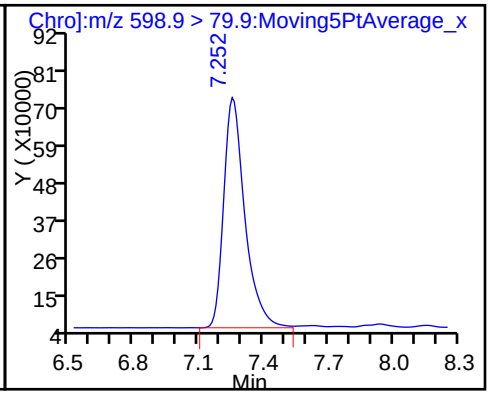
23 Perfluorodecanoic acid



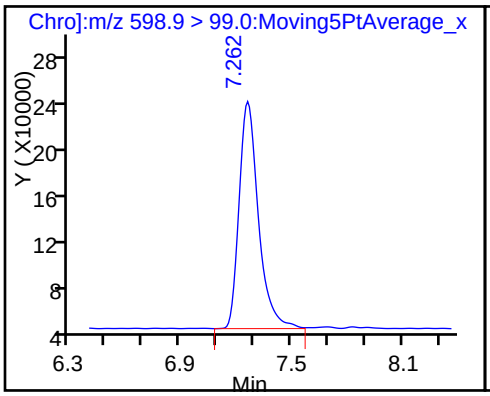
23 Perfluorodecanoic acid



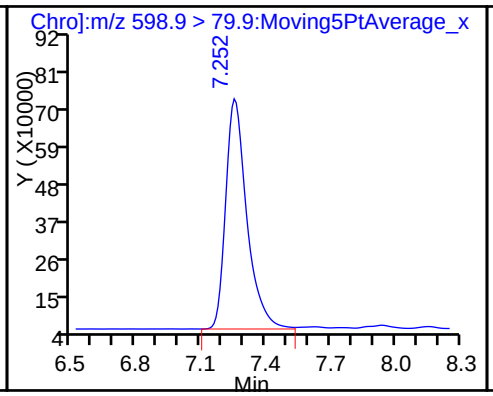
24 Perfluorodecane Sulfonic acid



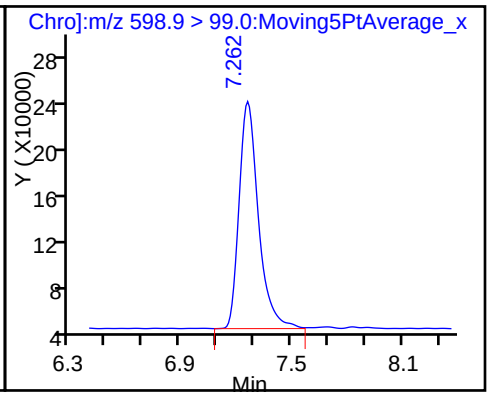
24 Perfluorodecane Sulfonic acid



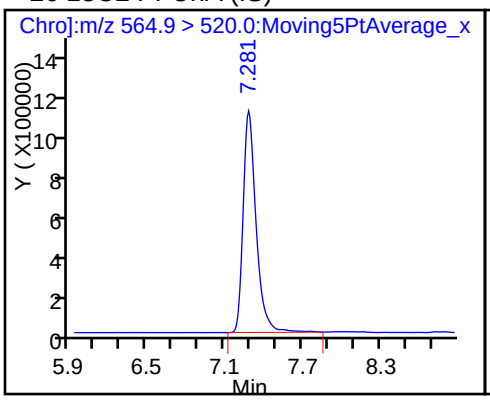
25 Perfluorodecane Sulfonate



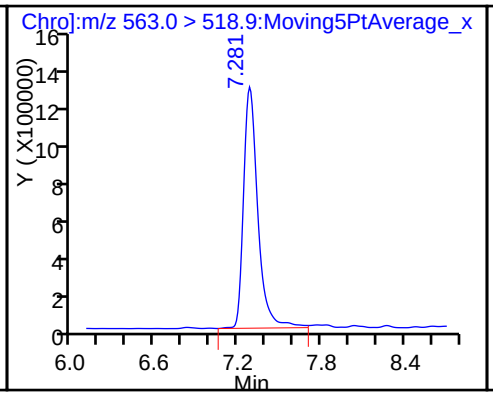
25 Perfluorodecane Sulfonate



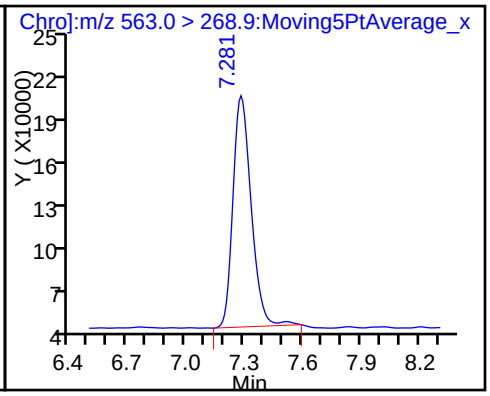
* 26 13C2 PFUnA (IS)



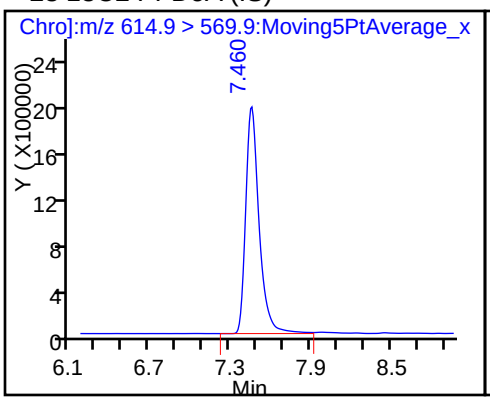
27 Perfluoroundecanoic acid



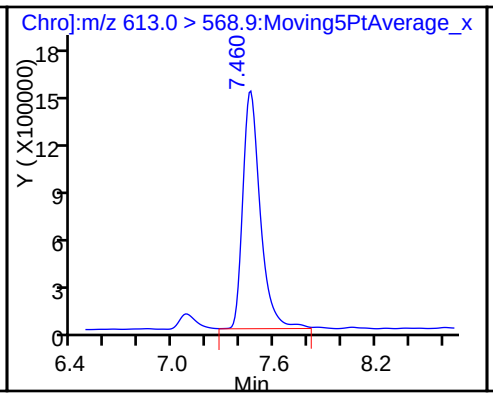
27 Perfluoroundecanoic acid



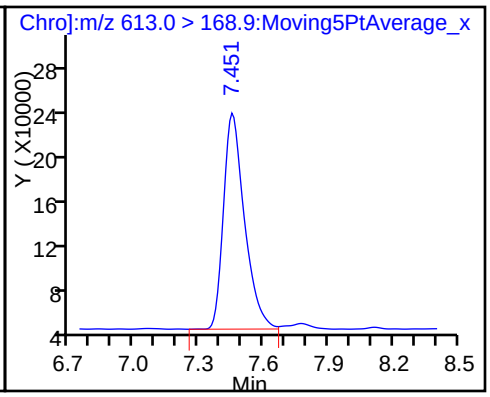
* 28 13C2 PFDoA (IS)



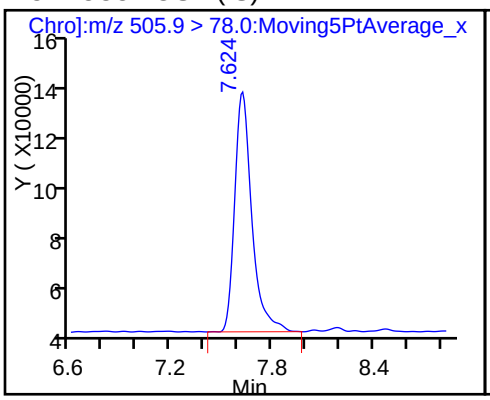
29 Perfluorododecanoic acid



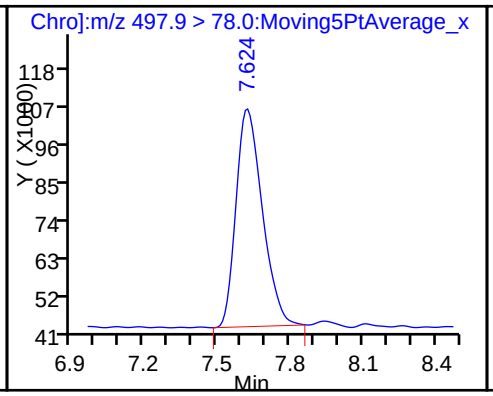
29 Perfluorododecanoic acid



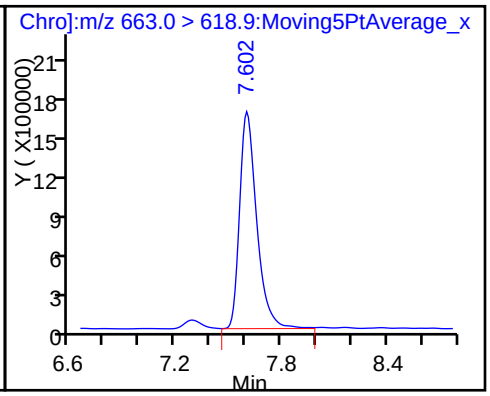
* 31 13C8 FOSA (IS)



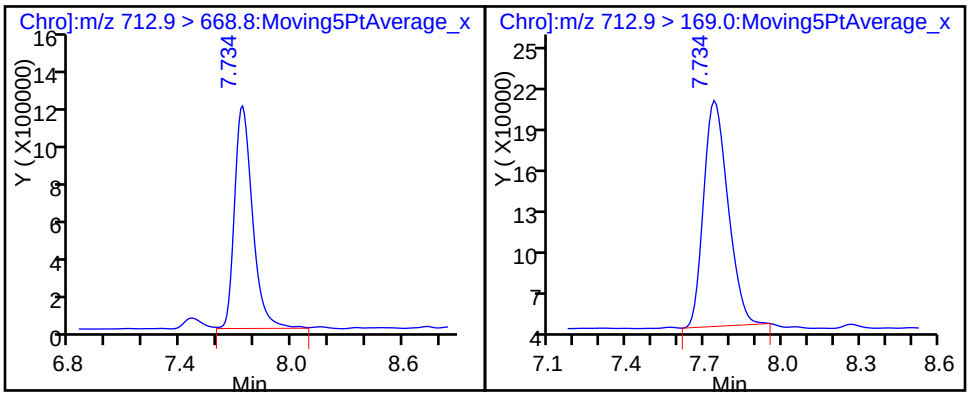
32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: | Lab Sample ID: DLCK 280-340408/14

Matrix: Water | Lab File ID: PC516I01027.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 09/01/2016 13:10

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340408 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.546		0.35	0.10
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.527		0.35	0.10
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.586		0.35	0.10
375-95-1	Perfluorononanoic acid (PFNA)	0.486		0.35	0.10
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.583		0.35	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.467		0.35	0.10

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	75		60-155
STL01054	13C8 PFOS	107		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01027.d
Lims ID: DLCK L2
Client ID:
Sample Type: DLCK
Inject. Date: 01-Sep-2016 13:10:46 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: DLCK L2, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:36 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:43:24

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.086	4.058	0.028		13030540	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.096	4.068	0.028	1.002	534115	0.4268			
3 Perfluoropentanoic acid									M
263.0 > 218.9	5.119	5.100	0.019	0.899	727211	0.6370			M
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.251	5.222	0.029	0.857	347424	0.5459			R
298.9 > 98.9	5.241	5.222	0.019	0.855	86598		4.01(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.251	5.232	0.019	0.857	347424	0.5459			
298.9 > 98.9	5.241	5.232	0.009	0.855	86598		4.01(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.695	5.686	0.009		9393393	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.686	0.0	0.998	550626	0.6148			
313.0 > 118.6	5.667	5.686	-0.019	0.995	23287		23.65(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.121	6.112	0.009	0.947	702863	0.5269			
363.0 > 168.9	6.121	6.112	0.009	0.947	184586		3.81(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.130	6.120	0.010		1348439	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.111	0.010	0.998	336454	0.5855			
398.9 > 98.9	6.130	6.111	0.019	1.000	87213		3.86(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.121	0.0	0.998	336454	0.5855			R
398.9 > 98.9	6.130	6.121	0.009	1.000	87213		3.86(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.451	0.0	0.957	298518	0.6135			
449.0 > 98.9	6.460	6.451	0.009	0.958	111460		2.68(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.451	0.0	0.957	298518	0.6135			
449.0 > 98.9	6.460	6.451	0.009	0.958	111460		2.68(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.461	0.0	1.000	635657	0.3744			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.461	0.0		15470974	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.471	6.461	0.010	1.002	830905	0.4674			
413.0 > 169.0	6.461	6.461	0.0	1.000	274219		3.03(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.743	6.733	0.010		4522509	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.743	6.724	0.019	1.000	247683	0.5825			R
498.9 > 98.9	6.734	6.724	0.010	0.999	81394		3.04(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	0.999	164005	0.5113			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.753	0.0		11919948	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.753	6.753	0.0	1.000	598040	0.4855			R
463.0 > 218.9	6.763	6.753	0.010	1.001	56474		10.59(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	6.997	0.0		10465958	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.998	6.998	0.0	1.000	511144	0.4891			R
513.0 > 219.0	7.007	6.998	0.009	1.001	62334		8.20(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.167	0.019	1.066	224083	0.4341			
598.9 > 99.0	7.186	7.167	0.019	1.066	61243		3.66(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.176	0.010	1.066	224083	0.4341			
598.9 > 99.0	7.186	7.176	0.010	1.066	61243		3.66(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.205	0.010		6264106	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.205	0.010	1.000	486616	0.5177			R
563.0 > 268.9	7.224	7.205	0.019	1.001	63010		7.72(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.384	0.0		14186021	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.384	7.384	0.0	1.000	673753	0.4888			
613.0 > 168.9	7.375	7.384	-0.009	0.999	94055		7.16(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.530	0.0	1.000	755304	0.4277			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.022	1007696	0.5143			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.529	0.0		16451357	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.677	0.0	1.040	809972	0.5423			
712.9 > 169.0	7.677	7.677	0.0	1.040	124711		6.49(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	25.00	Units: uL

Report Date: 02-Sep-2016 11:52:41 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01027.d

Injection Date: 01-Sep-2016 13:10:46 Instrument ID: LC_LCMS5

Lims ID: DLCK L2

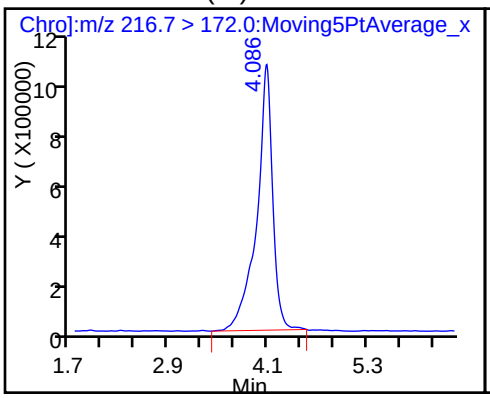
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 14

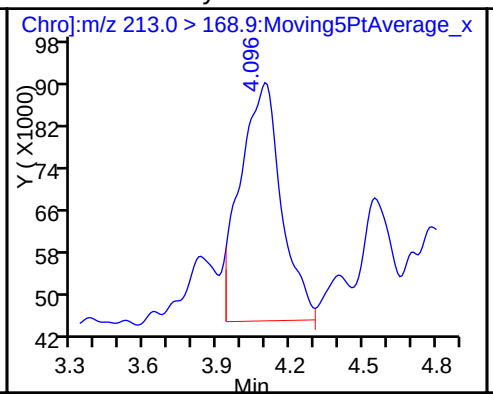
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

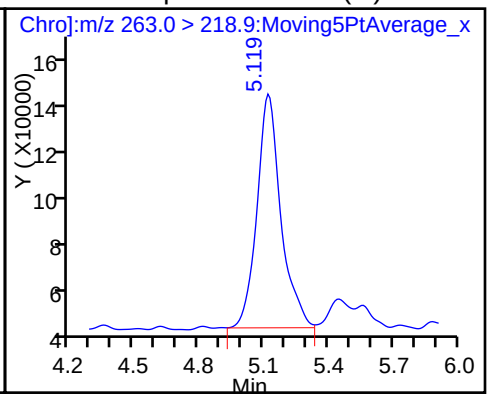
* 1 13C4 PFBA (IS)



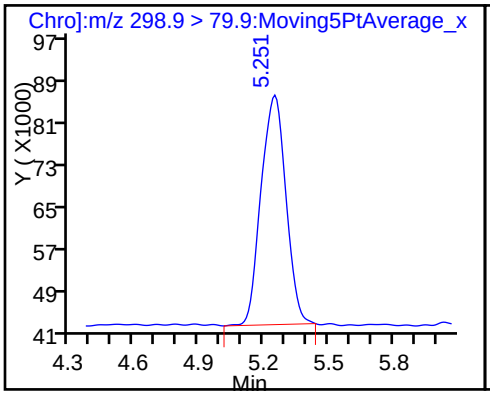
2 Perfluorobutyric acid



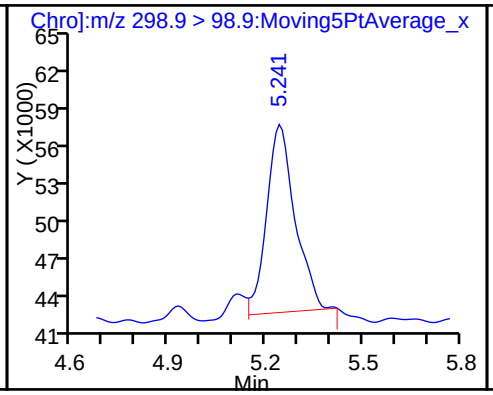
3 Perfluoropentanoic acid (M)



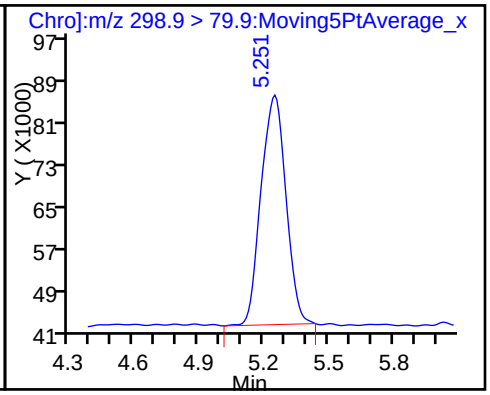
4 Perfluorobutane Sulfonate



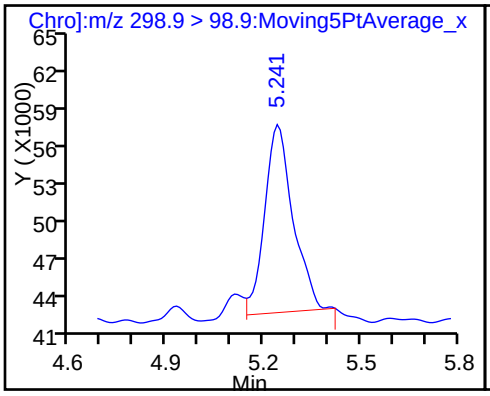
4 Perfluorobutane Sulfonate



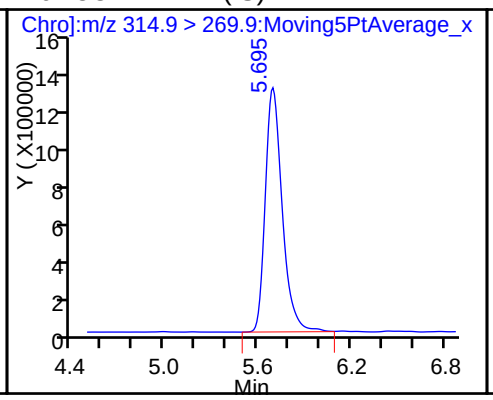
5 Perfluorobutanesulfonic acid



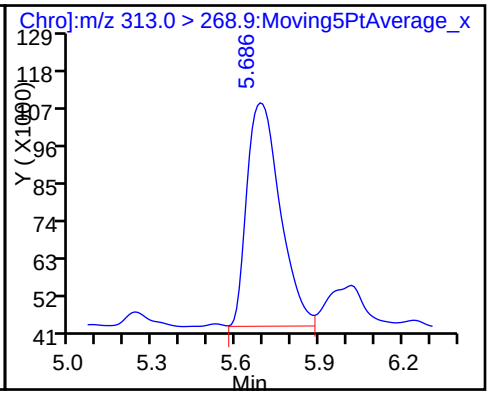
5 Perfluorobutanesulfonic acid



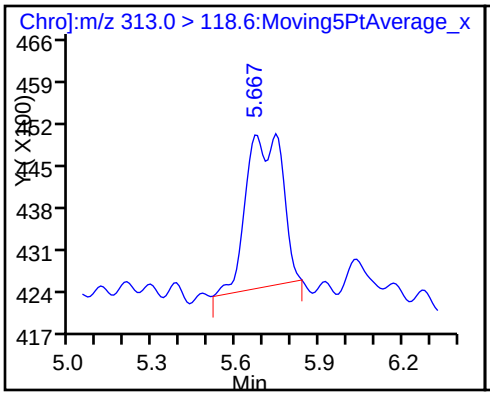
* 6 13C2 PFHxA (IS)



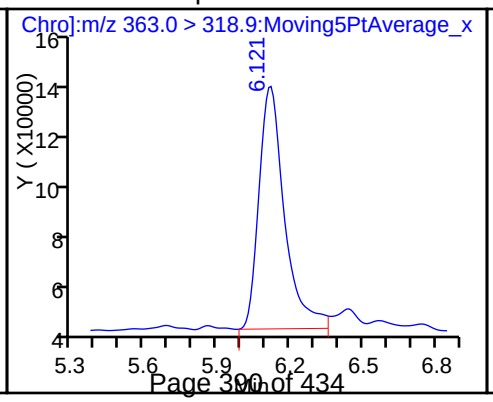
7 Perfluorohexanoic acid



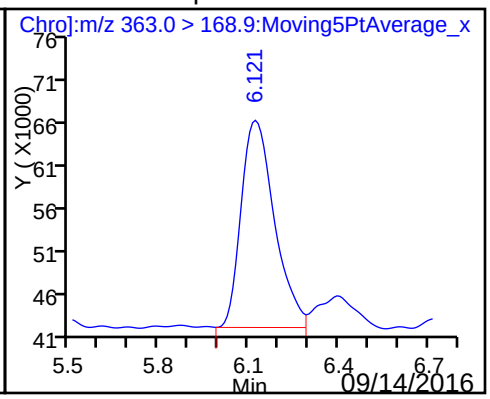
7 Perfluorohexanoic acid



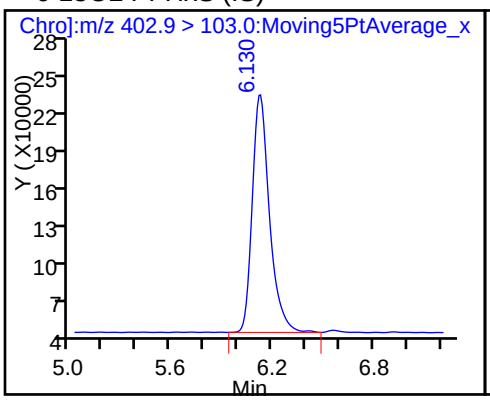
8 Perfluoroheptanoic acid



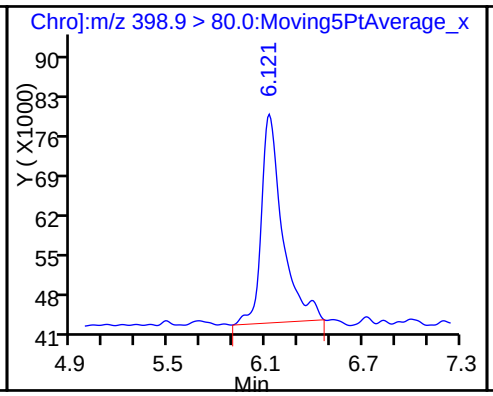
8 Perfluoroheptanoic acid



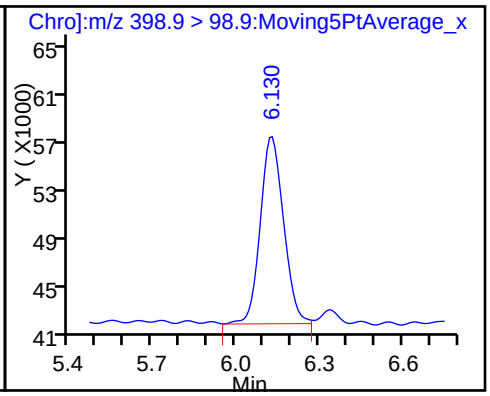
* 9 18O2 PFHxS (IS)



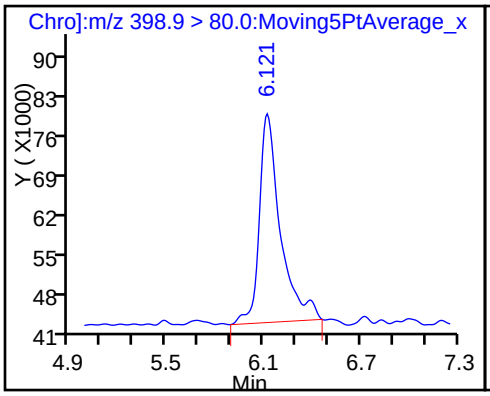
11 Perfluorohexanesulfonic acid



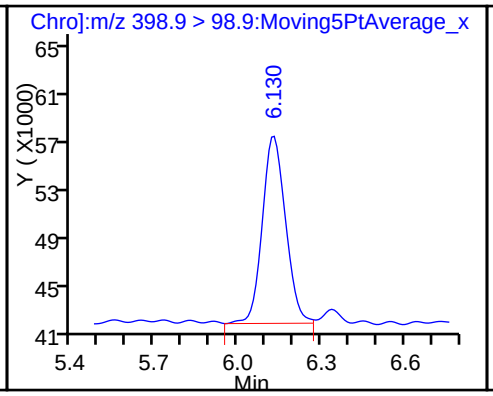
11 Perfluorohexanesulfonic acid



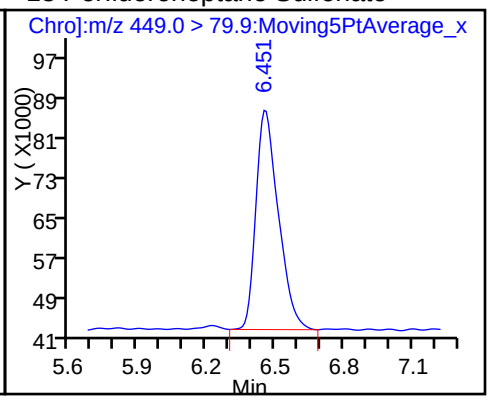
10 Perfluorohexane Sulfonate



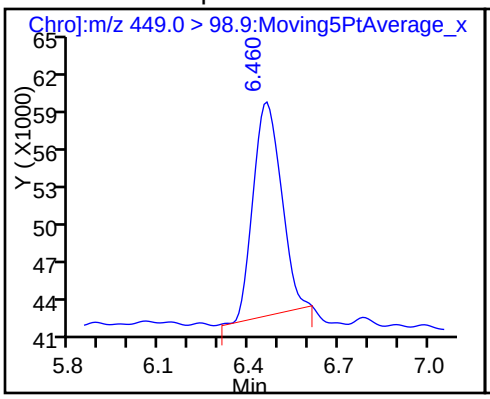
10 Perfluorohexane Sulfonate



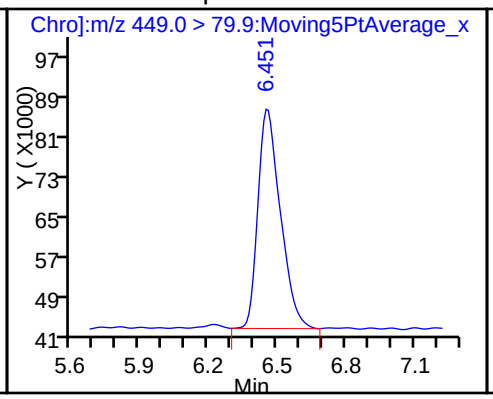
13 Perfluoroheptane Sulfonate



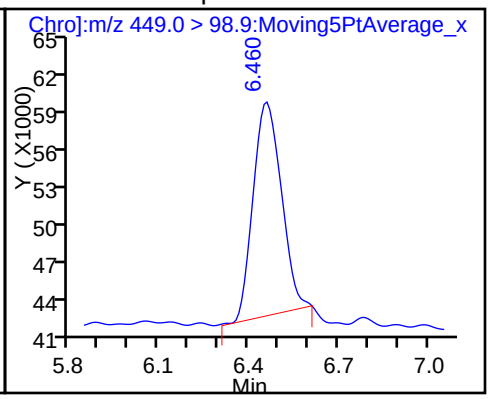
13 Perfluoroheptane Sulfonate



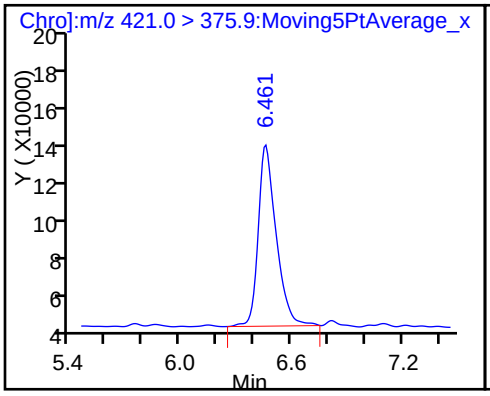
12 Perfluoroheptanesulfonic Acid



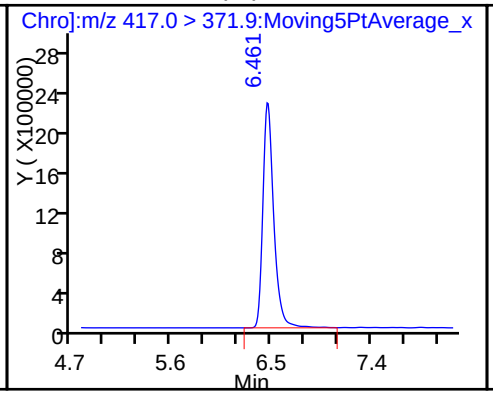
12 Perfluoroheptanesulfonic Acid



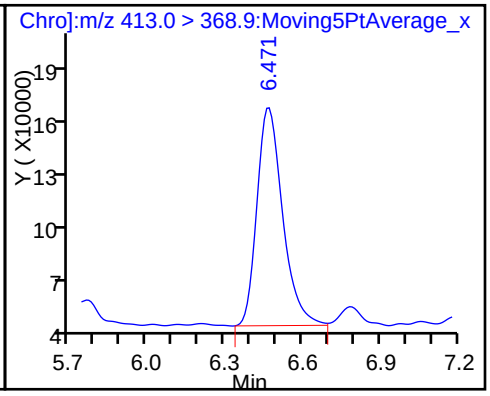
$ 14 13C8 PFOA



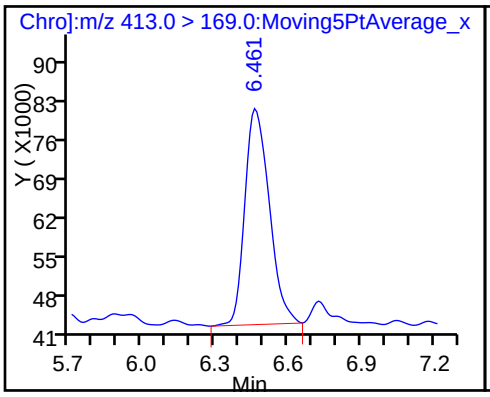
* 15 13C4 PFOA (IS)



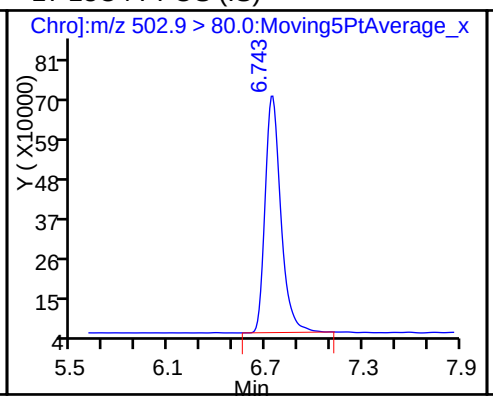
16 Perfluorooctanoic acid



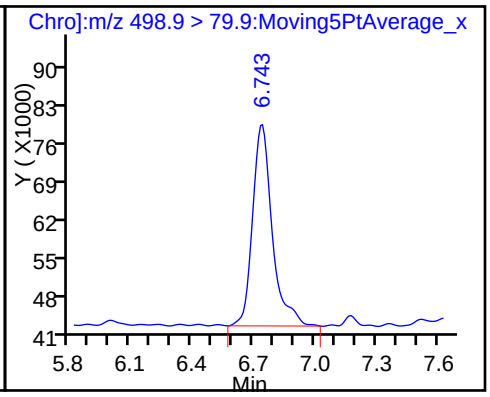
16 Perfluorooctanoic acid



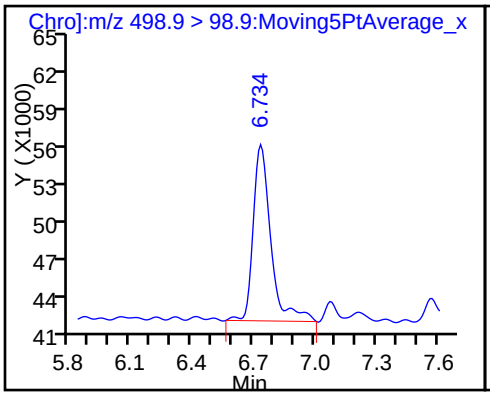
* 17 13C4 PFOS (IS)



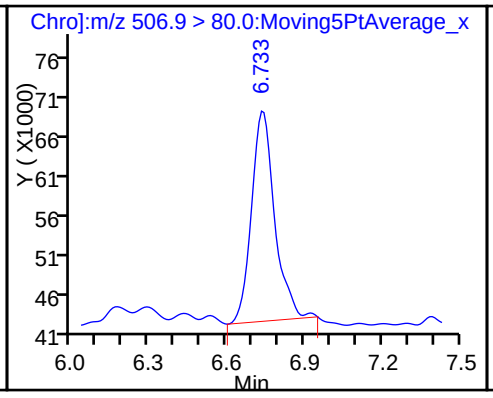
19 Perfluorooctane sulfonic acid



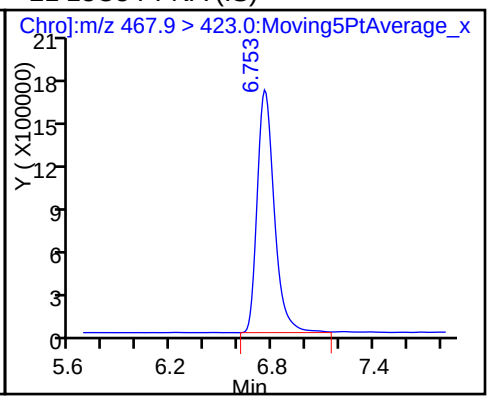
19 Perfluorooctane sulfonic acid



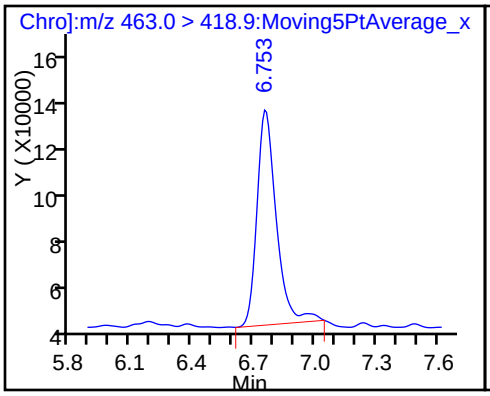
$ 18 13C8 PFOS



* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid



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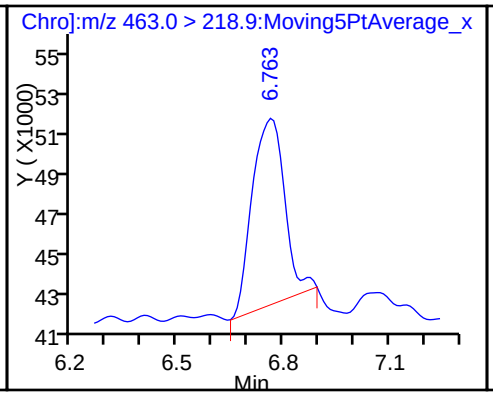
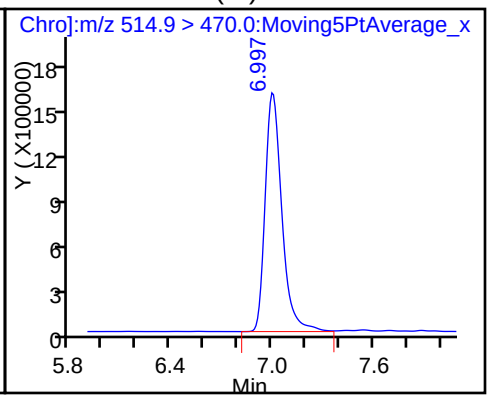
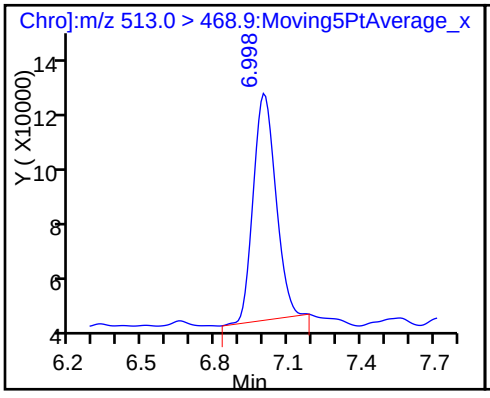


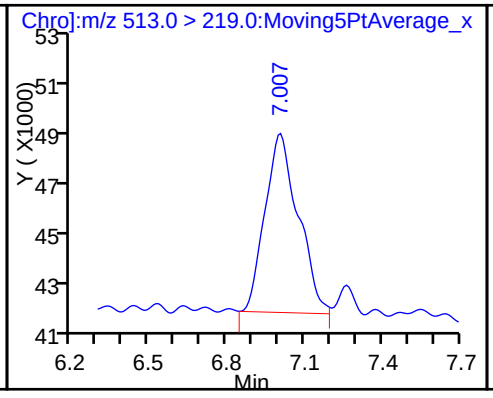
* 22 13C2 PFDA (IS)



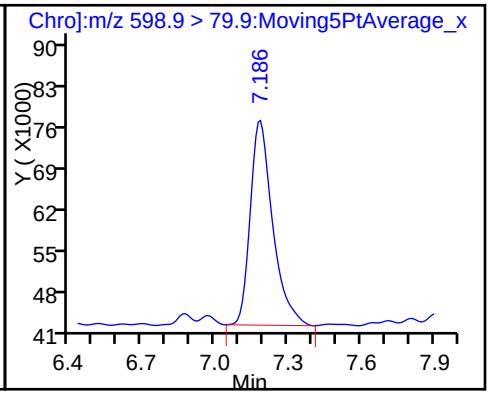
23 Perfluorodecanoic acid



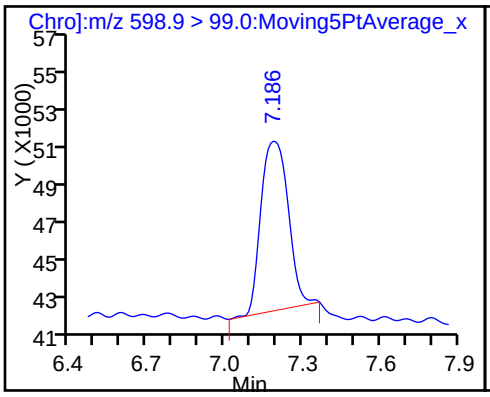
23 Perfluorodecanoic acid



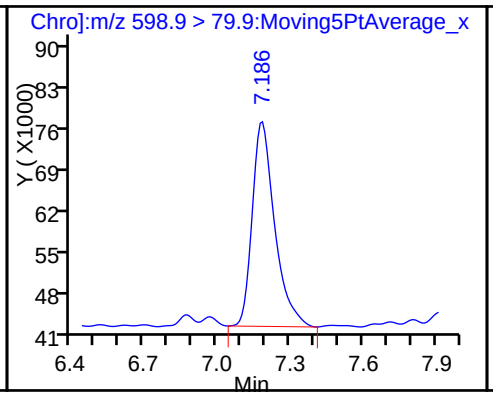
24 Perfluorodecane Sulfonic acid



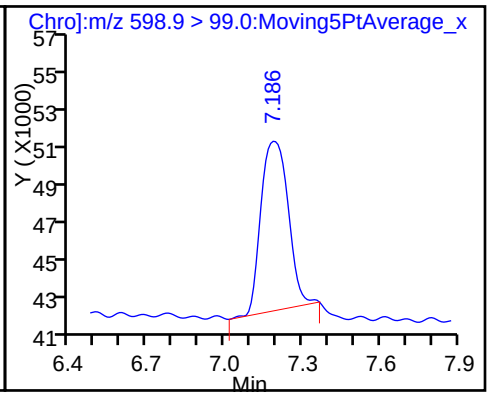
24 Perfluorodecane Sulfonic acid



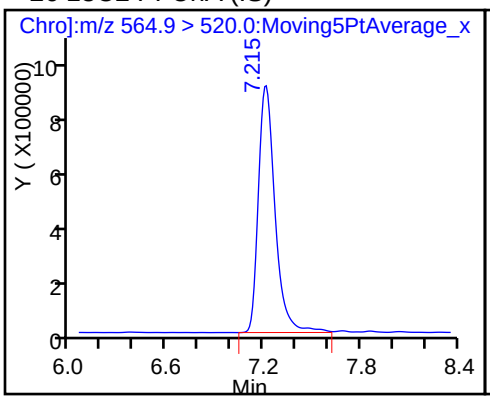
25 Perfluorodecane Sulfonate



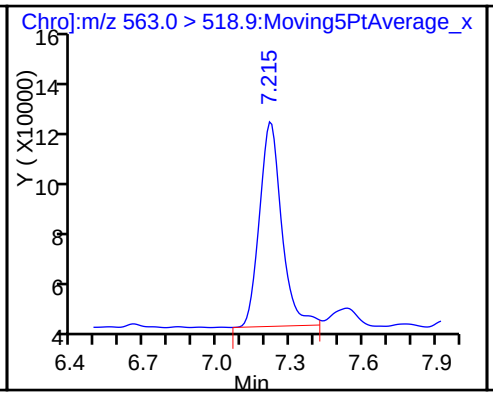
25 Perfluorodecane Sulfonate



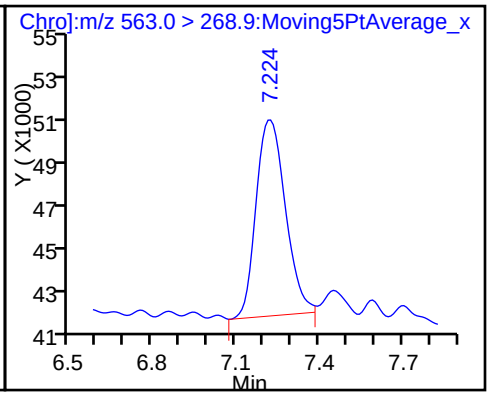
* 26 13C2 PFUnA (IS)



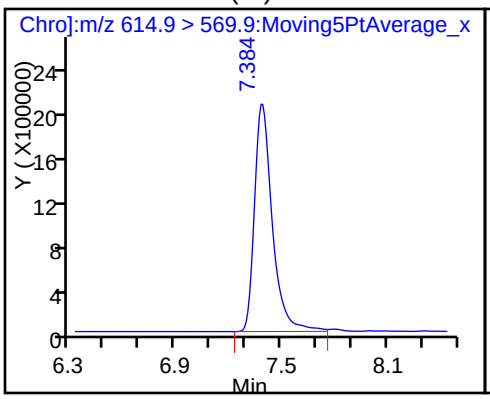
27 Perfluoroundecanoic acid



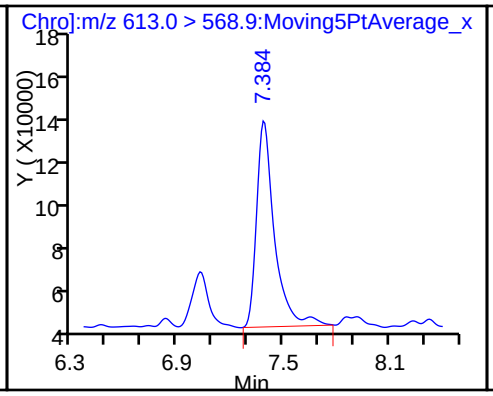
27 Perfluoroundecanoic acid



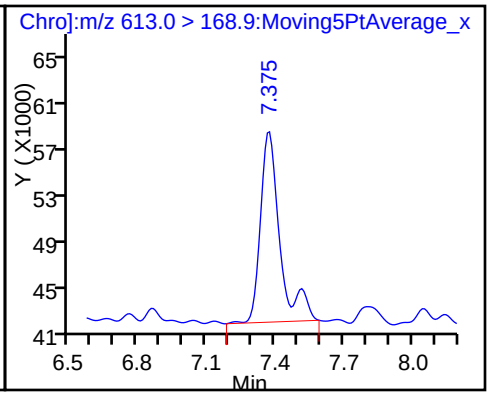
* 28 13C2 PFDoA (IS)



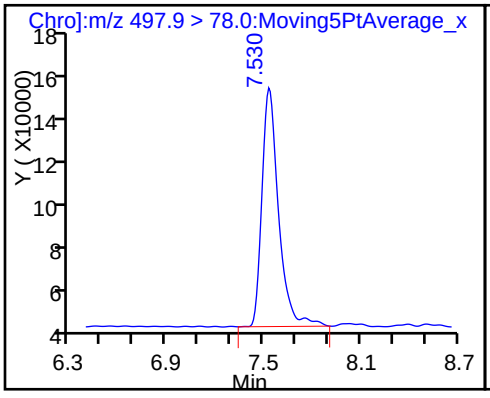
29 Perfluorododecanoic acid



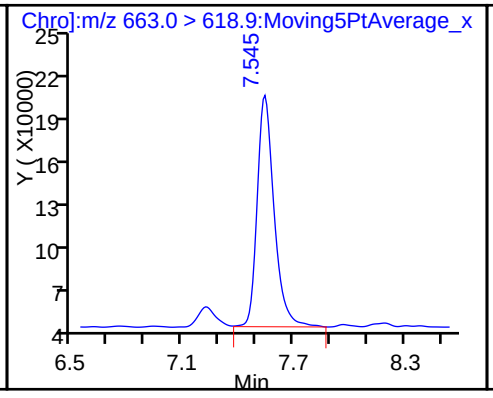
29 Perfluorododecanoic acid



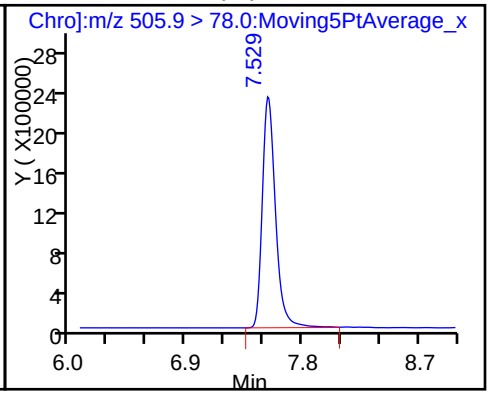
32 Perfluorooctane Sulfonamide



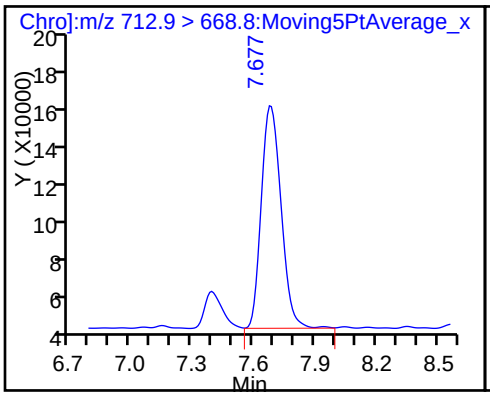
30 Perfluorotridecanoic acid



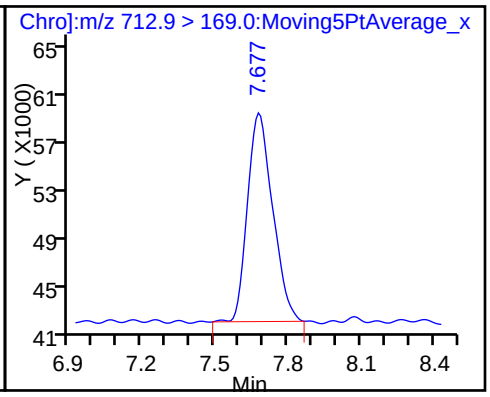
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: PFC-MW-DUP1 MS | Lab Sample ID: 280-87134-10 MS

Matrix: Solid | Lab File ID: PC516I01081.d

Analysis Method: DV-LC-0012 | Date Collected: 08/18/2016 09:00

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.00(g) | Date Analyzed: 09/02/2016 00:15

Con. Extract Vol.: 20.4(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 9.7 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	16.42		0.90	0.16
375-85-9	Perfluoroheptanoic acid (PFHpA)	21.70		0.90	0.14
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	19.51		0.90	0.32
375-95-1	Perfluorononanoic acid (PFNA)	20.76		0.90	0.25
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20.67		0.90	0.16
335-67-1	Perfluorooctanoic acid (PFOA)	22.08		0.90	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	111		57-153
STL01054	13C8 PFOS	103		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01081.d
Lims ID: 280-87134-A-10-E MS
Client ID:
Sample Type: MS
Inject. Date: 02-Sep-2016 00:15:45 ALS Bottle#: 0 Worklist Smp#: 68
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-10-E MS, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:20:40

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.276	-0.218		11459920	9.80			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.058	4.266	-0.208	1.000	10378653	9.21			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.138	5.308	-0.170	0.896	9153468	9.75			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.260	5.431	-0.171	0.853	3933012	7.27			R
298.9 > 98.9	5.270	5.431	-0.161	0.854	1001410		3.93(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.260	5.431	-0.171	0.853	3933012	7.27			
298.9 > 98.9	5.270	5.431	-0.161	0.854	1001410		3.93(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.733	5.904	-0.171		8439391	9.80			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.733	5.894	-0.161	1.000	7169516	9.38			
313.0 > 118.6	5.724	5.894	-0.170	0.998	191151		37.51(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.169	6.330	-0.161	0.946	10940301	9.61			
363.0 > 168.9	6.169	6.330	-0.161	0.946	2850734		3.84(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.168	6.338	-0.170		1138640	9.27			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.178	6.329	-0.151	1.002	4240018	8.64			R
398.9 > 98.9	6.178	6.329	-0.151	1.002	1385032		3.06(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.178	6.329	-0.151	1.002	4240018	8.64			
398.9 > 98.9	6.178	6.329	-0.151	1.002	1385032		3.06(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.508	6.659	-0.151	0.958	4055104	8.07			
449.0 > 98.9	6.508	6.659	-0.151	0.958	1201477		3.38(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.508	6.659	-0.151	0.958	4055104	8.07			
449.0 > 98.9	6.508	6.659	-0.151	0.958	1201477		3.38(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.669	-0.152	1.000	9938689	10.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.669	-0.151		13297369	9.80			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.518	6.669	-0.151	1.000	12986794	9.78			
413.0 > 169.0	6.518	6.669	-0.151	1.000	4257254		3.05(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.941	-0.151	1.000	2471118	9.38			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.942	-0.152		4296660	9.37			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.790	6.942	-0.152	1.000	4272831	9.15			R
498.9 > 98.9	6.790	6.942	-0.152	1.000	1562991		2.73(1.31-2.43)		
20 Perfluorononanoic acid									
463.0 > 418.9	6.810	6.952	-0.142	1.000	10657382	9.19			
463.0 > 218.9	6.810	6.952	-0.142	1.000	1518527		7.02(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.962	-0.152		10748731	9.80			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.206	-0.152		9901206	9.80			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.054	7.206	-0.152	1.000	9152842	9.55			R
513.0 > 219.0	7.064	7.206	-0.142	1.001	881957		10.38(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.243	7.375	-0.132	1.067	4825177	10.6			
598.9 > 99.0	7.243	7.375	-0.132	1.067	1433967		3.36(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.243	7.375	-0.132	1.067	4825177	10.6			
598.9 > 99.0	7.243	7.375	-0.132	1.067	1433967		3.36(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.414	-0.143		6222366	9.80			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.262	7.414	-0.152	0.999	8192780	9.93			R
563.0 > 268.9	7.262	7.414	-0.152	0.999	1000989		8.18(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.583	-0.133		14358670	9.80			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.451	7.583	-0.132	1.000	12862371	9.04			
613.0 > 168.9	7.451	7.583	-0.132	1.000	1678005		7.67(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.734	-0.132	1.020	17627081	9.51			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.672	-0.142	0.999	14073583	8.60			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.671	-0.133		15514340	9.80			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.743	7.857	-0.114	1.039	13372102	9.39			
712.9 > 169.0	7.734	7.857	-0.123	1.038	2074814		6.44(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Report Date: 02-Sep-2016 11:55:30 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01081.d

Injection Date: 02-Sep-2016 00:15:45 Instrument ID: LC_LCMS5

Lims ID: 280-87134-A-10-E MS

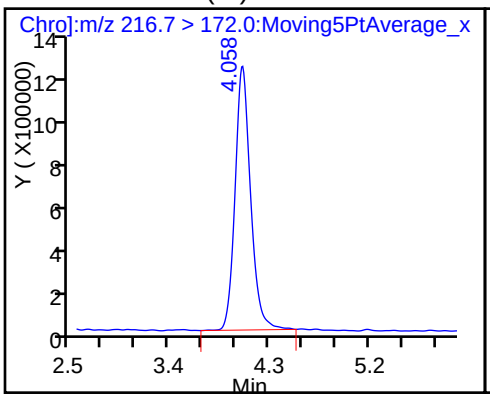
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 68

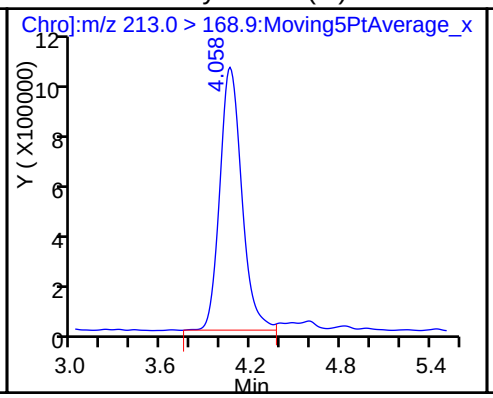
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

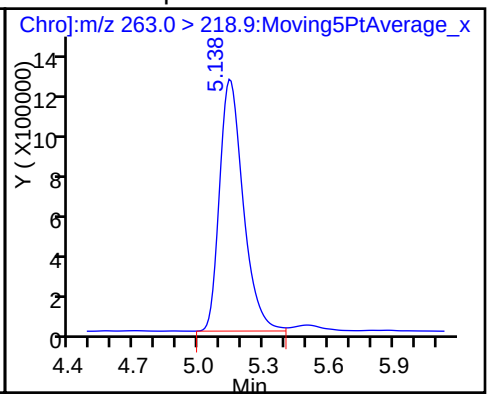
* 1 13C4 PFBA (IS)



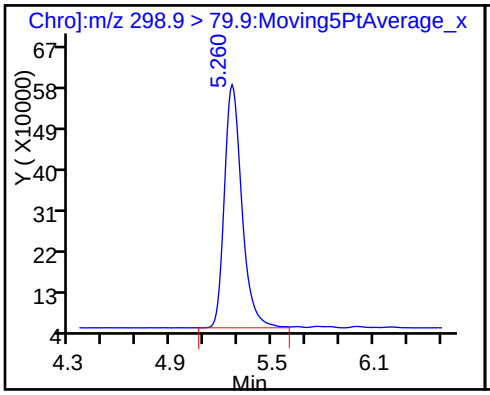
2 Perfluorobutyric acid (M)



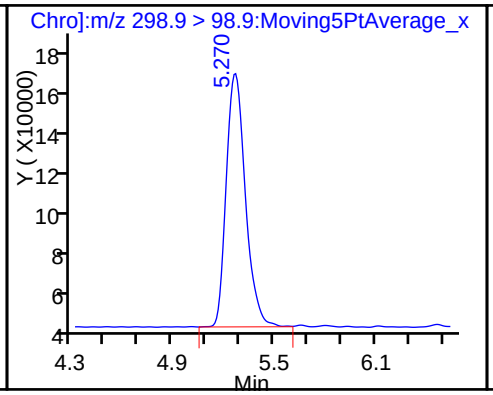
3 Perfluoropentanoic acid



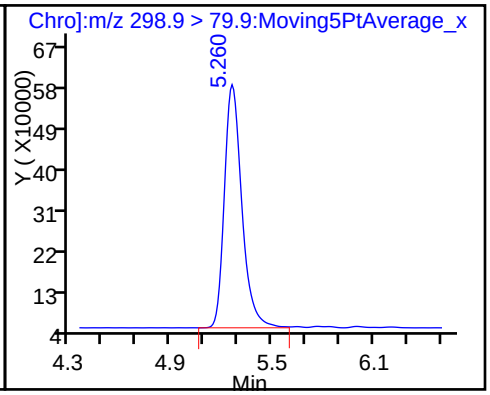
4 Perfluorobutane Sulfonate



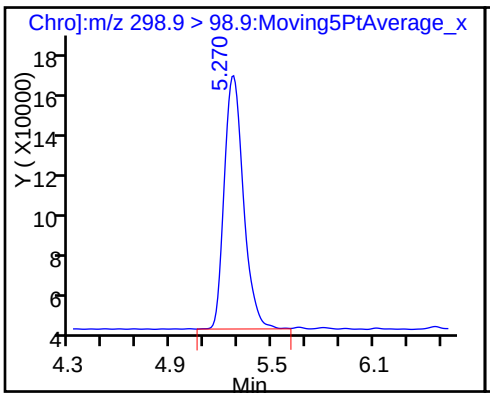
4 Perfluorobutane Sulfonate



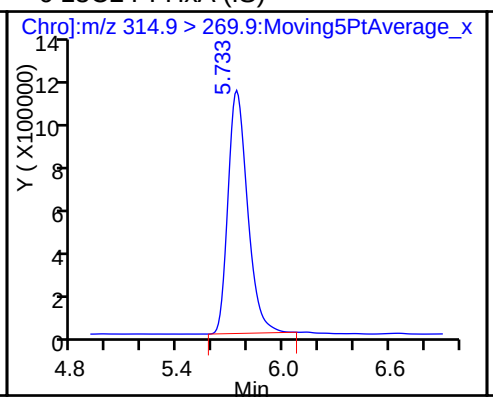
5 Perfluorobutanesulfonic acid



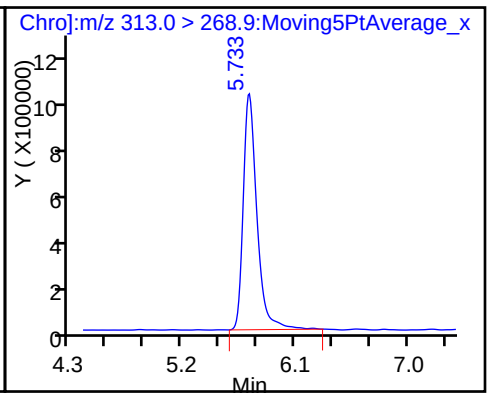
5 Perfluorobutanesulfonic acid



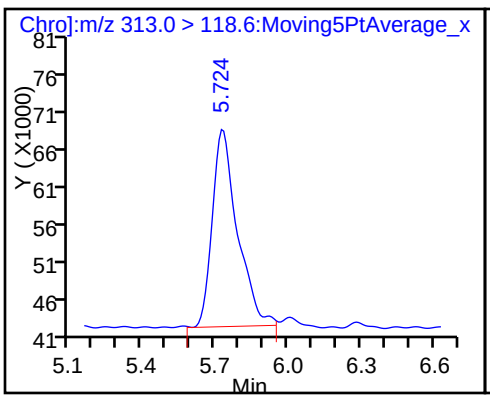
* 6 13C2 PFHxA (IS)



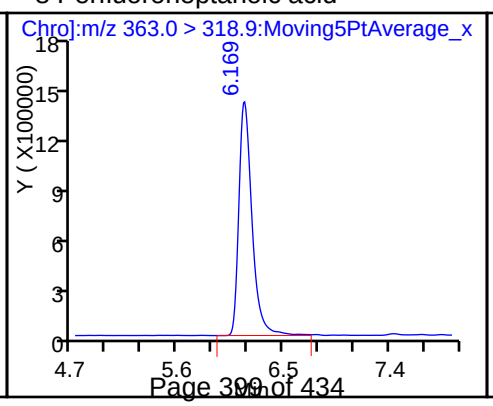
7 Perfluorohexanoic acid



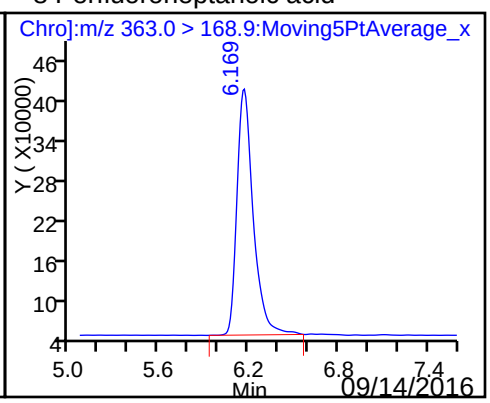
7 Perfluorohexanoic acid



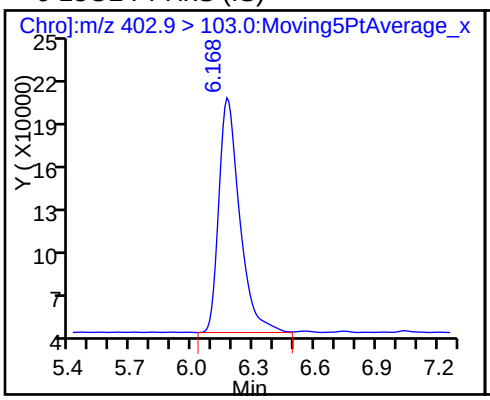
8 Perfluoroheptanoic acid



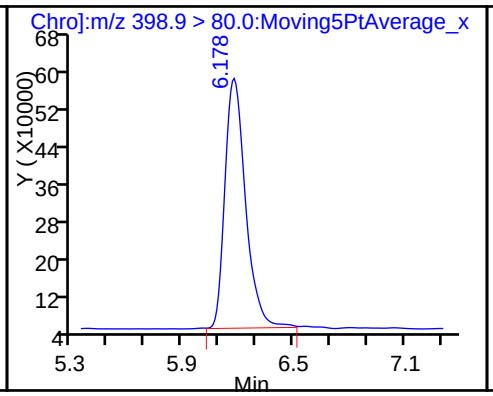
8 Perfluoroheptanoic acid



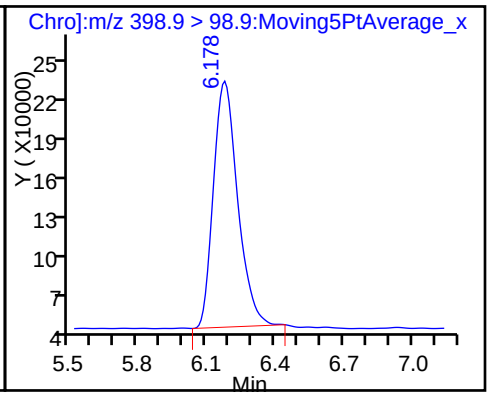
* 9 18O2 PFHxS (IS)



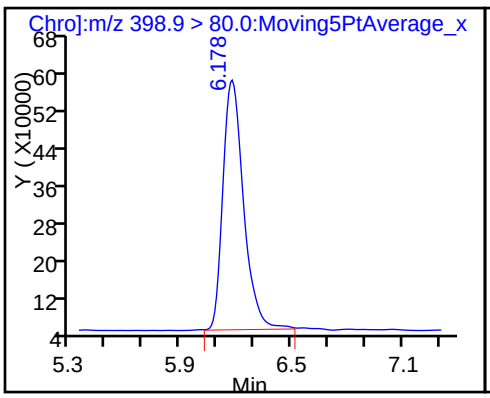
10 Perfluorohexane Sulfonate



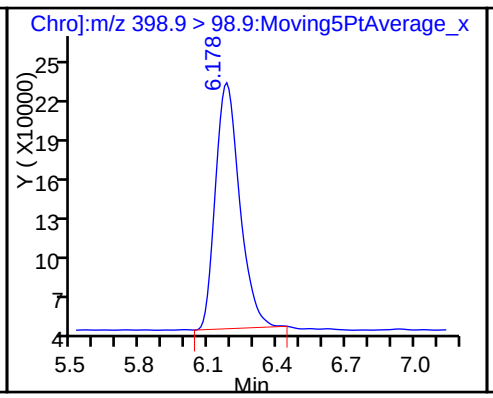
10 Perfluorohexane Sulfonate



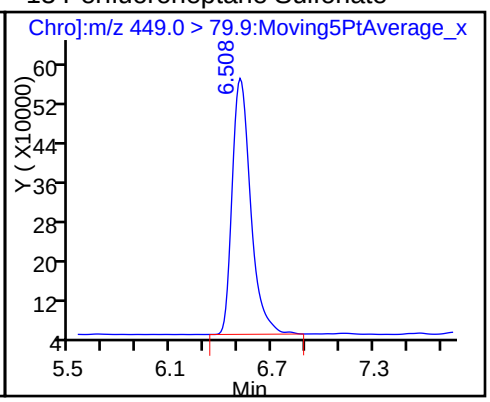
11 Perfluorohexanesulfonic acid



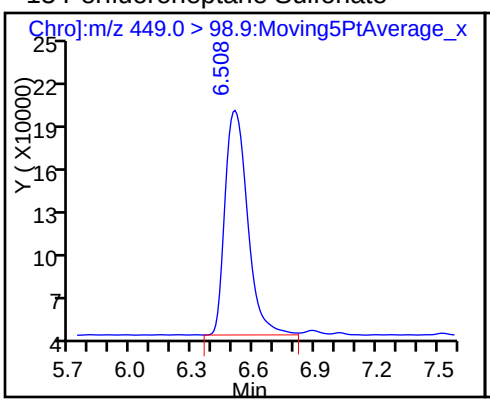
11 Perfluorohexanesulfonic acid



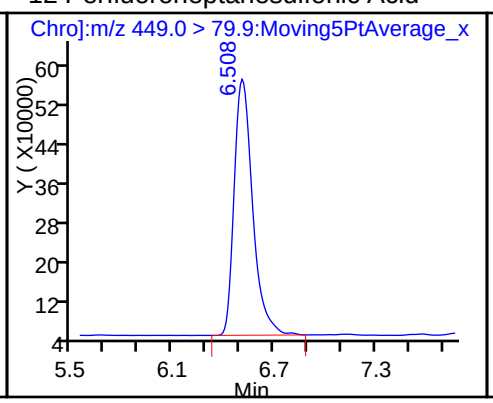
13 Perfluoroheptane Sulfonate



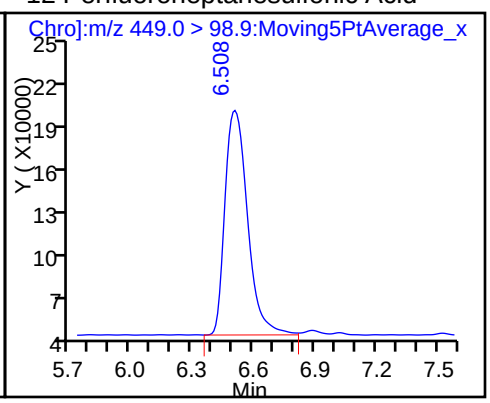
13 Perfluoroheptane Sulfonate



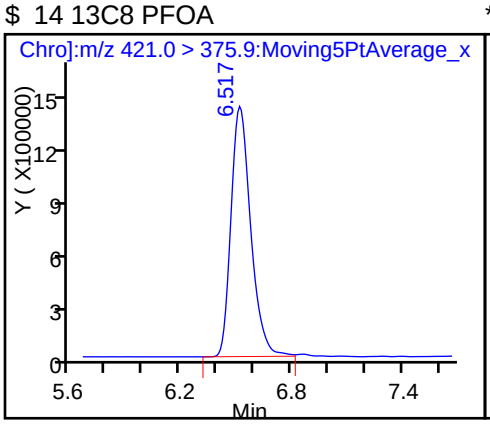
12 Perfluoroheptanesulfonic Acid



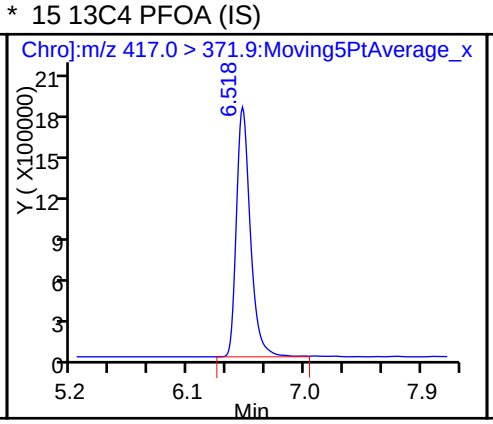
12 Perfluoroheptanesulfonic Acid



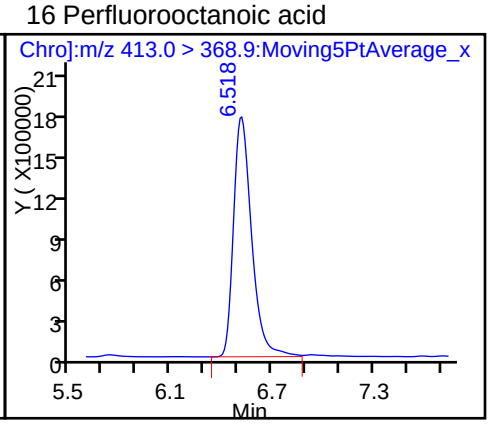
$ 14 13C8 PFOA



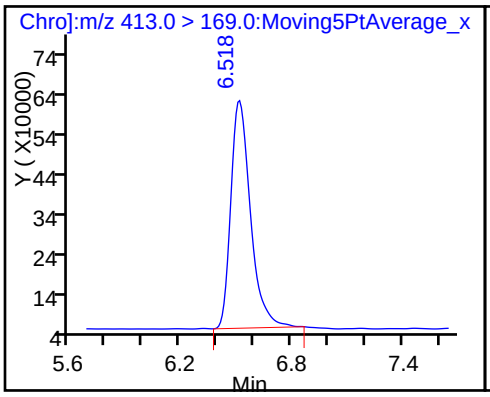
* 15 13C4 PFOA (IS)



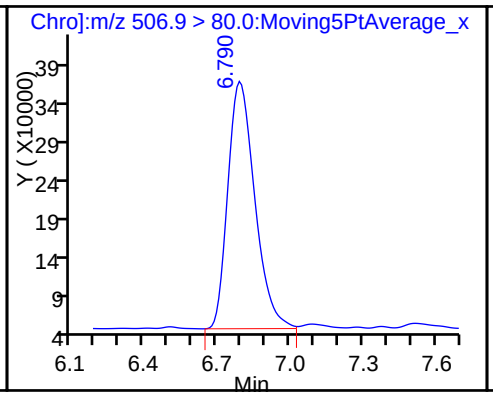
16 Perfluorooctanoic acid



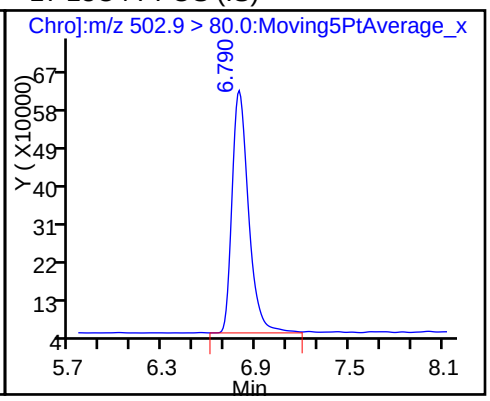
16 Perfluorooctanoic acid



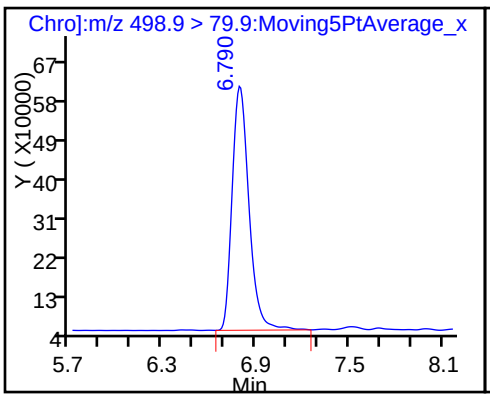
$ 18 13C8 PFOS



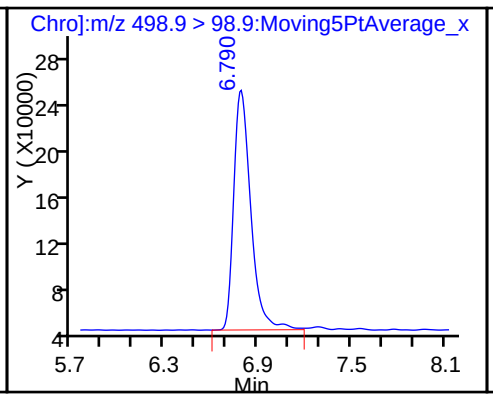
* 17 13C4 PFOS (IS)



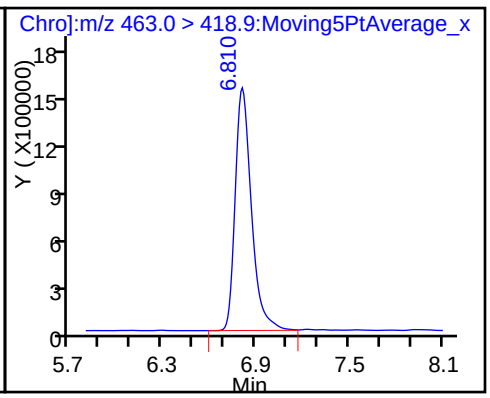
19 Perfluorooctane sulfonic acid



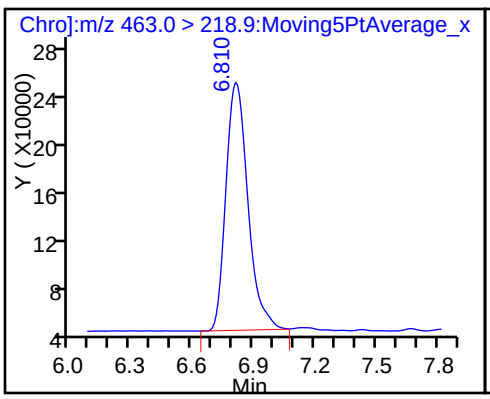
19 Perfluorooctane sulfonic acid



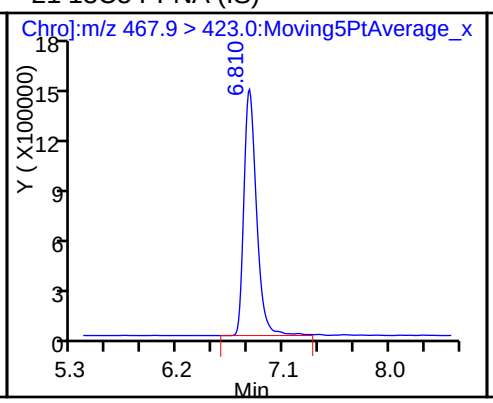
20 Perfluorononanoic acid



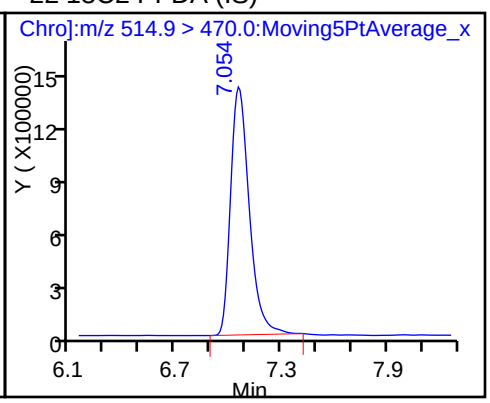
20 Perfluorononanoic acid



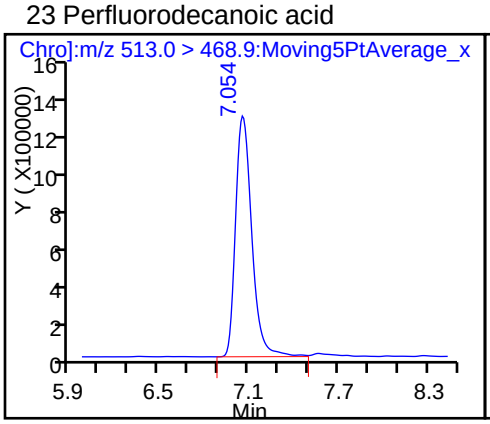
* 21 13C5 PFNA (IS)



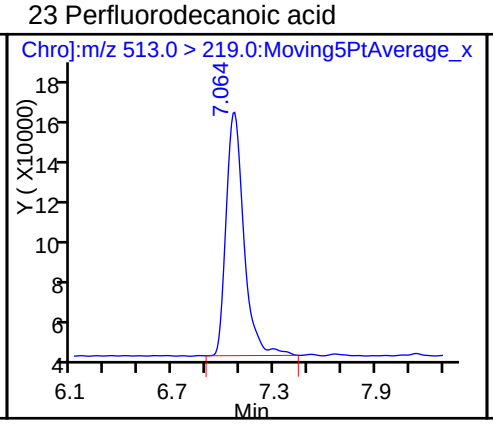
* 22 13C2 PFDA (IS)



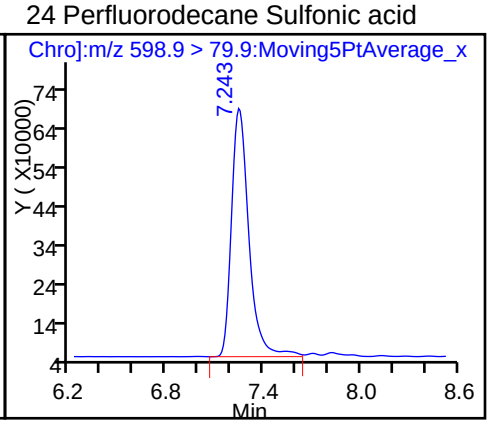
23 Perfluorodecanoic acid



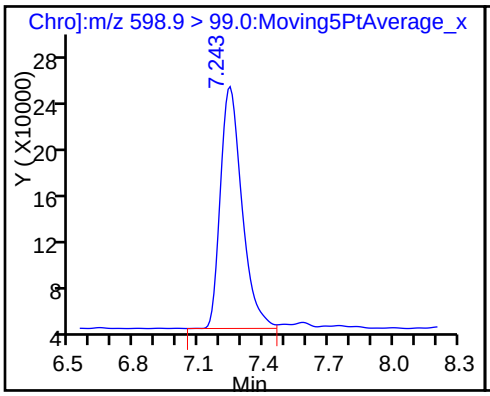
23 Perfluorodecanoic acid



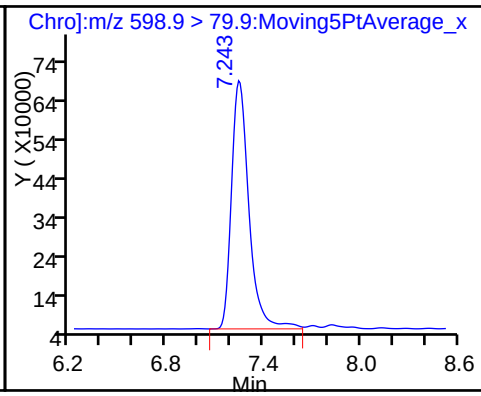
24 Perfluorodecane Sulfonic acid



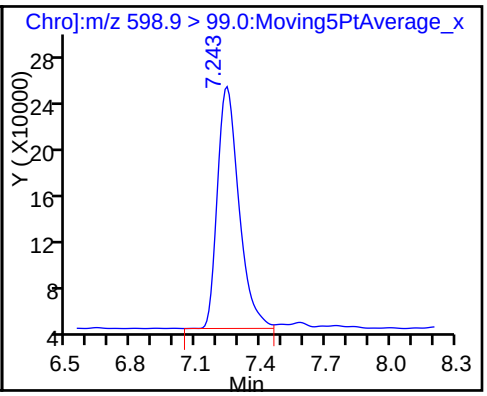
24 Perfluorodecane Sulfonic acid



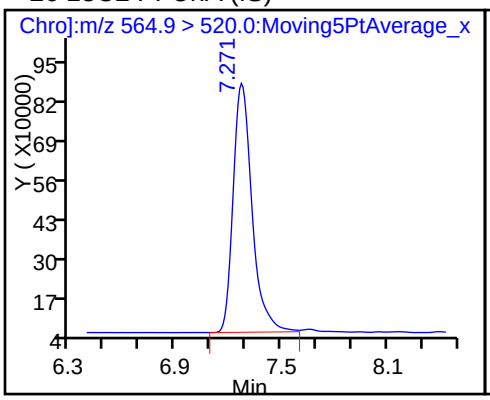
25 Perfluorodecane Sulfonate



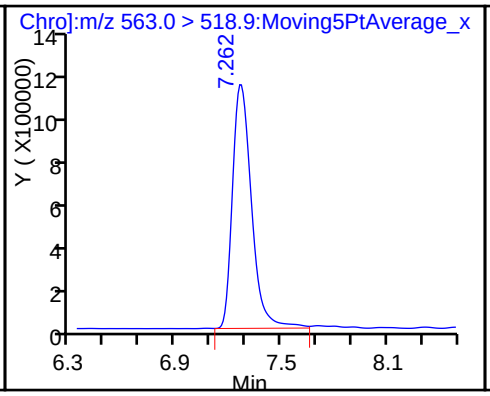
25 Perfluorodecane Sulfonate



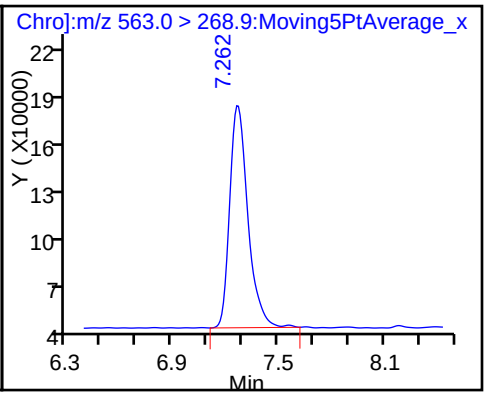
* 26 13C2 PFUnA (IS)



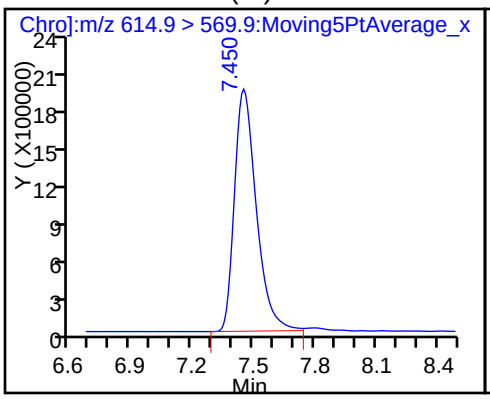
27 Perfluoroundecanoic acid



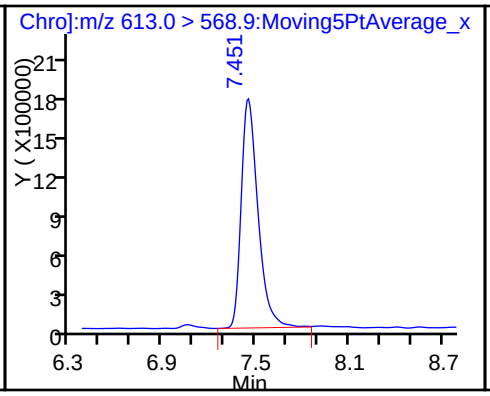
27 Perfluoroundecanoic acid



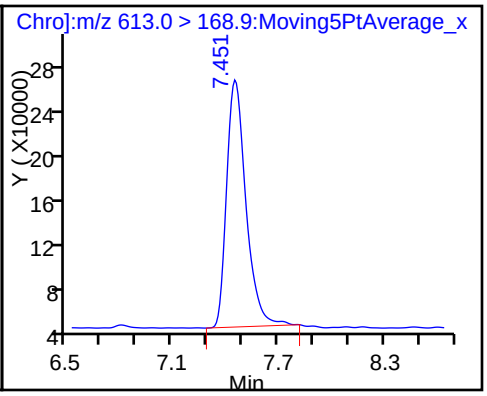
* 28 13C2 PFDoA (IS)



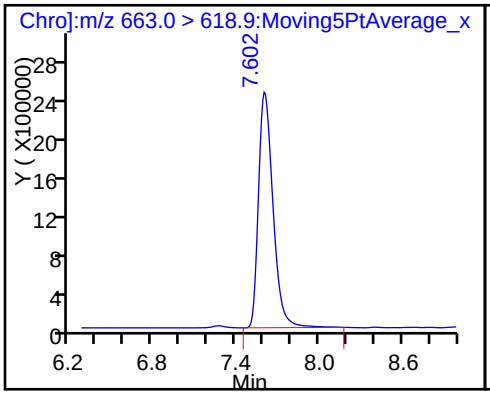
29 Perfluorododecanoic acid



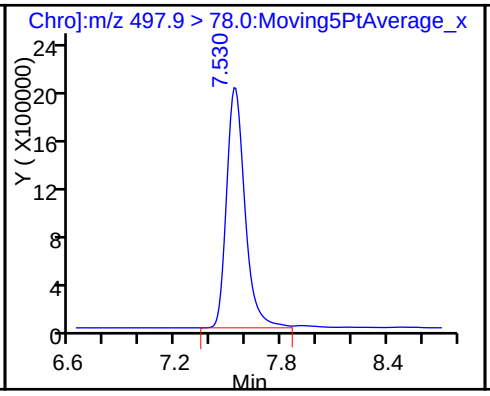
29 Perfluorododecanoic acid



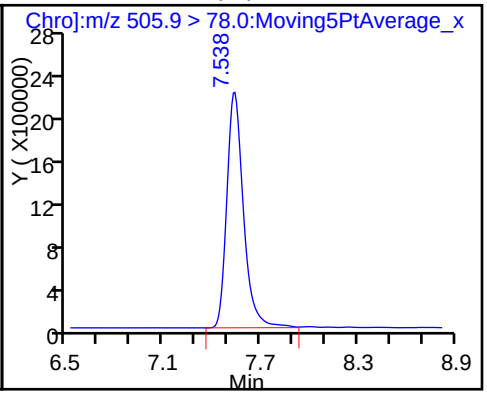
30 Perfluorotridecanoic acid



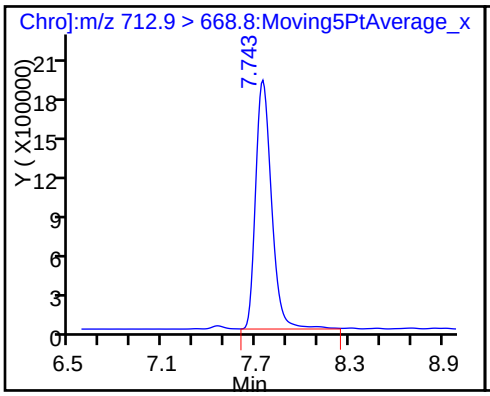
32 Perfluorooctane Sulfonamide



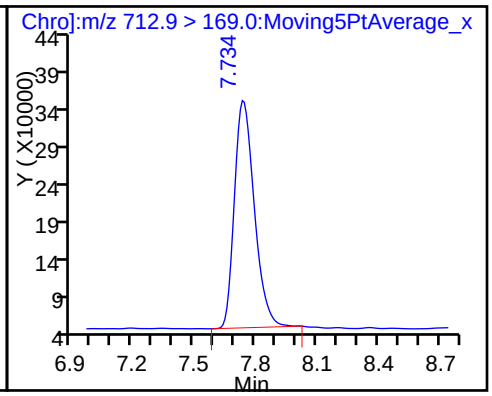
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87134-1

SDG No.:

Client Sample ID: PFC-MW-DUP1 MSD | Lab Sample ID: 280-87134-10 MSD

Matrix: Solid | Lab File ID: PC516I01082.d

Analysis Method: DV-LC-0012 | Date Collected: 08/18/2016 09:00

Extraction Method: PFC leach | Date Extracted: 08/25/2016 16:20

Sample wt/vol: 10.00(g) | Date Analyzed: 09/02/2016 00:28

Con. Extract Vol.: 20.4(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 9.7 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340412 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	16.87		0.90	0.16
375-85-9	Perfluoroheptanoic acid (PFHpA)	23.29		0.90	0.14
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	20.16		0.90	0.32
375-95-1	Perfluorononanoic acid (PFNA)	19.28		0.90	0.25
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21.80		0.90	0.16
335-67-1	Perfluorooctanoic acid (PFOA)	23.46		0.90	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	118		57-153
STL01054	13C8 PFOS	103		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01082.d
Lims ID: 280-87134-A-10-F MSD
Client ID:
Sample Type: MSD
Inject. Date: 02-Sep-2016 00:28:11 ALS Bottle#: 0 Worklist Smp#: 69
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87134-A-10-F MSD, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:55:04 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 11:21:00

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.067	4.276	-0.209		12068496	9.80			
2 Perfluorobutyric acid									
213.0 > 168.9	4.068	4.266	-0.198	1.000	10098100	8.51			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.147	5.308	-0.161	0.898	8922847	9.30			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.270	5.431	-0.161	0.853	4030378	7.47			R
298.9 > 98.9	5.260	5.431	-0.171	0.852	1189967		3.39(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.270	5.431	-0.161	0.853	4030378	7.47			
298.9 > 98.9	5.260	5.431	-0.171	0.852	1189967		3.39(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.733	5.904	-0.171		8621901	9.80			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.733	5.894	-0.161	1.000	6987539	8.94			
313.0 > 118.6	5.743	5.894	-0.151	1.002	183725		38.03(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.169	6.330	-0.161	0.946	11112904	10.3			
363.0 > 168.9	6.169	6.330	-0.161	0.946	2798838		3.97(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.177	6.338	-0.161		1135406	9.27			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.178	6.329	-0.151	1.000	4368833	8.92			R
398.9 > 98.9	6.178	6.329	-0.151	1.000	1389230		3.14(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.178	6.329	-0.151	1.000	4368833	8.92			
398.9 > 98.9	6.178	6.329	-0.151	1.000	1389230		3.14(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.508	6.659	-0.151	0.958	4064400	8.49			
449.0 > 98.9	6.508	6.659	-0.151	0.958	1075726		3.78(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.508	6.659	-0.151	0.958	4064400	8.49			
449.0 > 98.9	6.508	6.659	-0.151	0.958	1075726		3.78(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.669	-0.152	1.000	10013399	11.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.669	-0.151		12586074	9.80			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.518	6.669	-0.151	1.000	13050913	10.4			
413.0 > 169.0	6.518	6.669	-0.151	1.000	4098897		3.18(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.941	-0.151	1.000	2350090	9.36			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.942	-0.152		4094651	9.37			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.790	6.942	-0.152	1.000	4297111	9.65			R
498.9 > 98.9	6.790	6.942	-0.152	1.000	1634567		2.63(1.31-2.43)		
20 Perfluorononanoic acid									
463.0 > 418.9	6.810	6.952	-0.142	1.000	9880209	8.54			
463.0 > 218.9	6.810	6.952	-0.142	1.000	1529287		6.46(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.962	-0.152		10731068	9.80			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.206	-0.152		10433998	9.80			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.054	7.206	-0.152	1.000	9550717	9.45			R
513.0 > 219.0	7.064	7.206	-0.142	1.001	917688		10.41(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.243	7.375	-0.132	1.067	4341645	10.0			
598.9 > 99.0	7.243	7.375	-0.132	1.067	1545648		2.81(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.243	7.375	-0.132	1.067	4341645	10.0			
598.9 > 99.0	7.243	7.375	-0.132	1.067	1545648		2.81(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.414	-0.143		6255829	9.80			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.272	7.414	-0.142	1.000	7968141	9.60			R
563.0 > 268.9	7.262	7.414	-0.152	0.999	1018542		7.82(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.583	-0.133		14127530	9.80			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.451	7.583	-0.132	1.000	13181469	9.41			
613.0 > 168.9	7.460	7.583	-0.123	1.001	1728960		7.62(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.734	-0.132	1.020	17291215	9.48			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.672	-0.133	1.000	14251640	8.93			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.671	-0.133		15143841	9.80			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.743	7.857	-0.114	1.039	13796033	9.85			
712.9 > 169.0	7.734	7.857	-0.123	1.038	2073105		6.65(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Report Date: 02-Sep-2016 11:55:34 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01082.d

Injection Date: 02-Sep-2016 00:28:11 Instrument ID: LC_LCMS5

Lims ID: 280-87134-A-10-F MSD

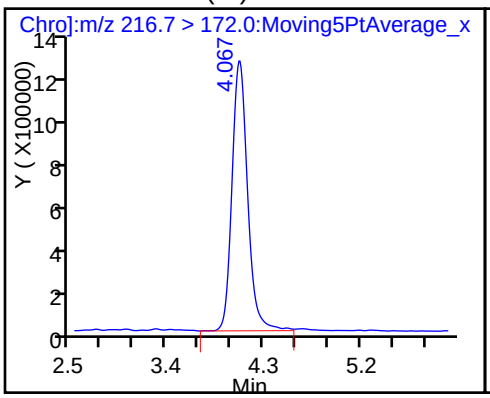
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 69

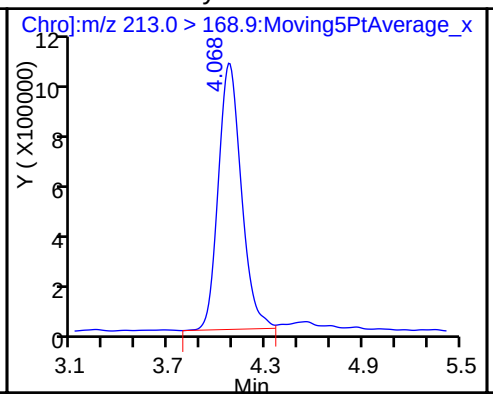
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

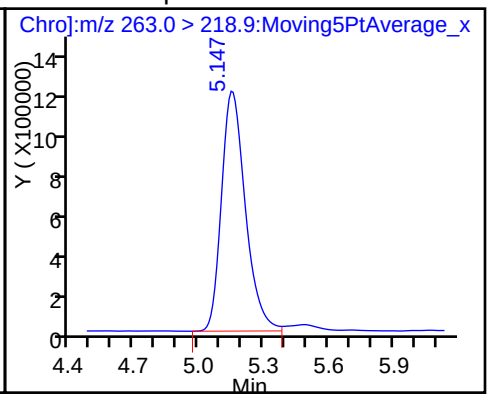
* 1 13C4 PFBA (IS)



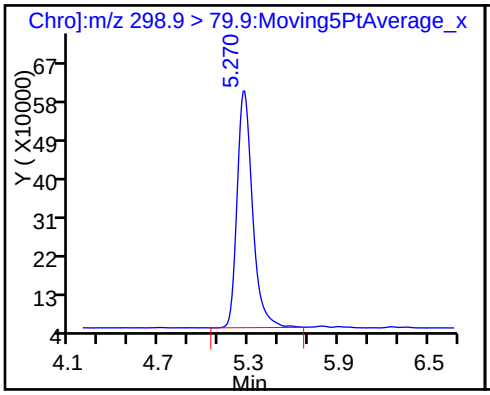
2 Perfluorobutyric acid



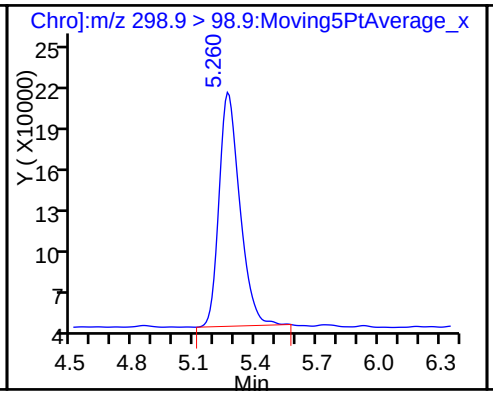
3 Perfluoropentanoic acid



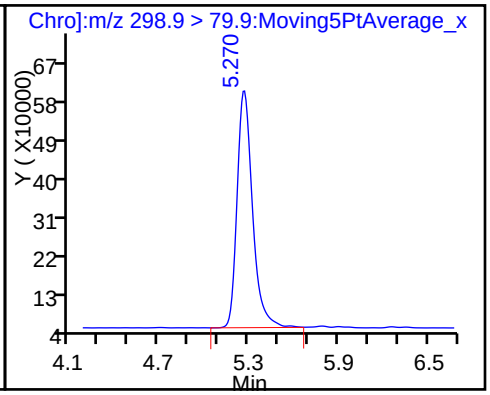
4 Perfluorobutane Sulfonate



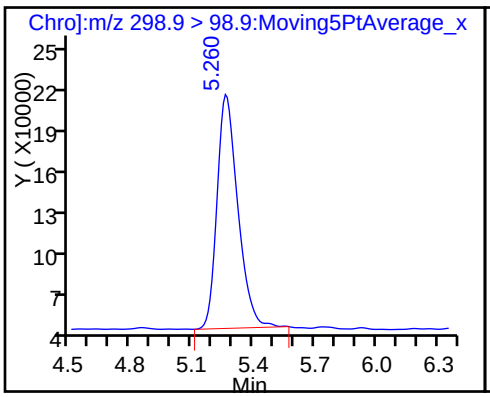
4 Perfluorobutane Sulfonate



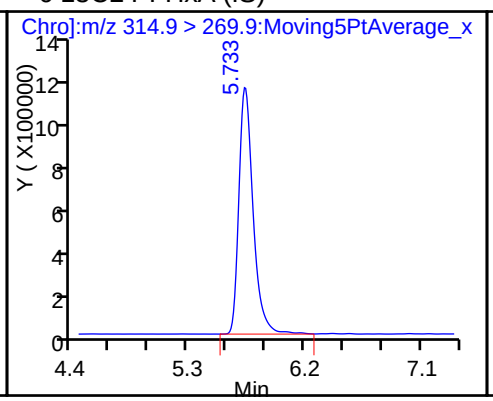
5 Perfluorobutanesulfonic acid



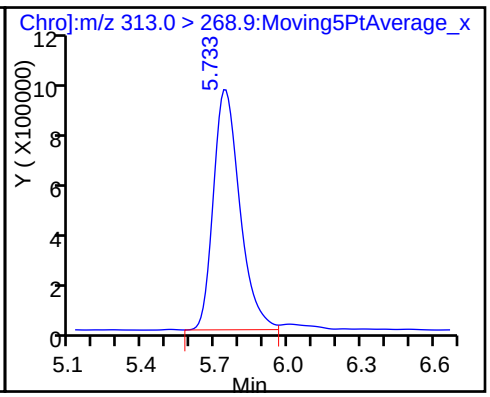
5 Perfluorobutanesulfonic acid



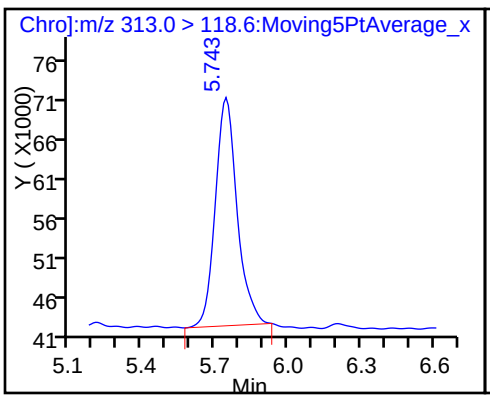
* 6 13C2 PFHxA (IS)



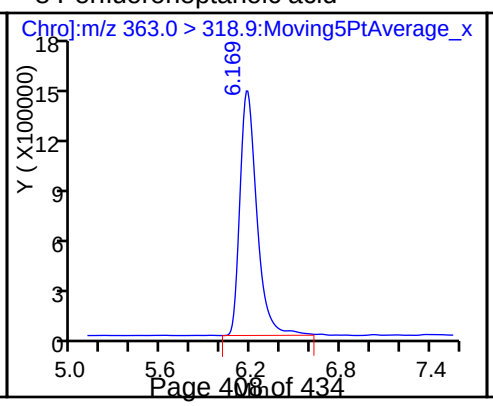
7 Perfluorohexanoic acid



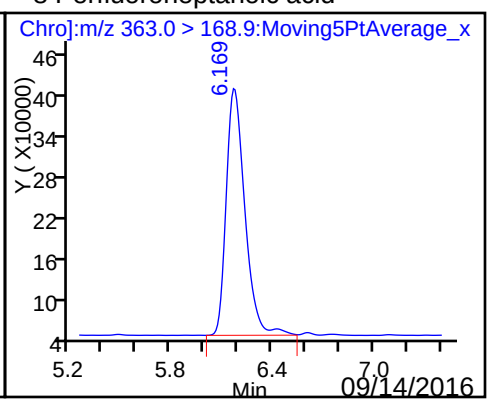
7 Perfluorohexanoic acid



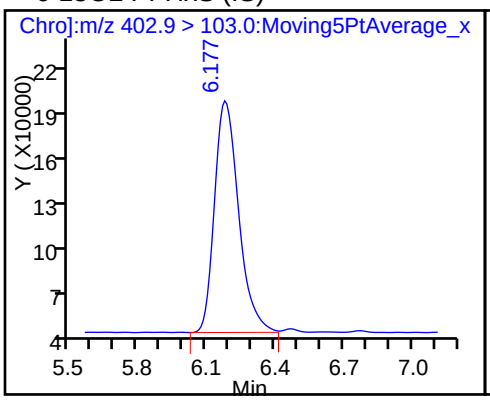
8 Perfluoroheptanoic acid



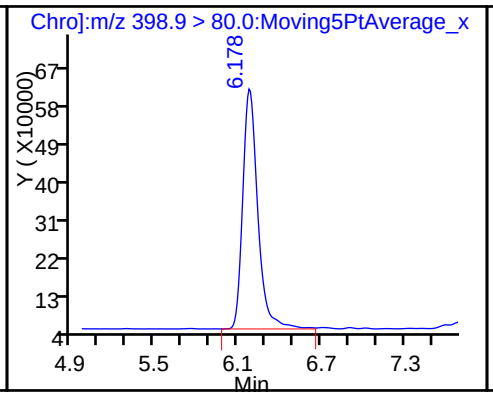
8 Perfluoroheptanoic acid



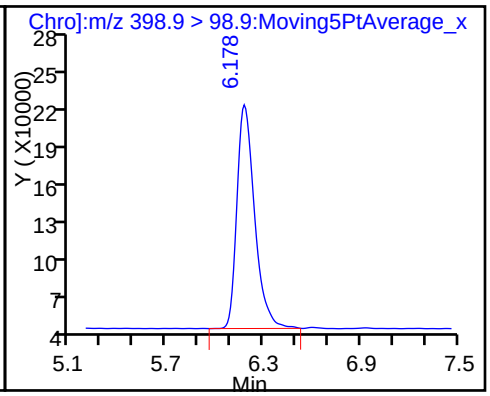
* 9 18O2 PFHxS (IS)



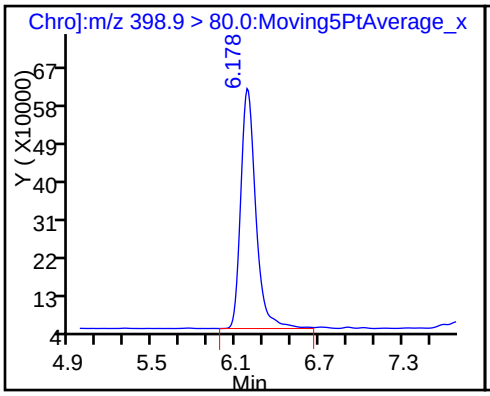
10 Perfluorohexane Sulfonate



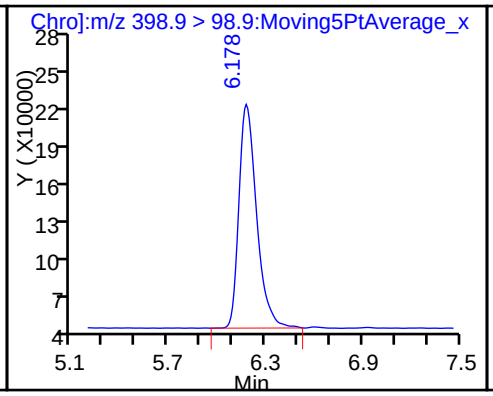
10 Perfluorohexane Sulfonate



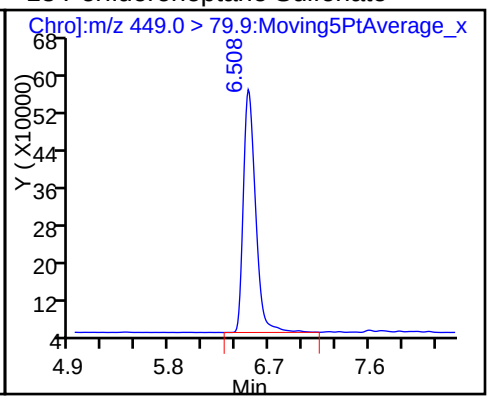
11 Perfluorohexanesulfonic acid



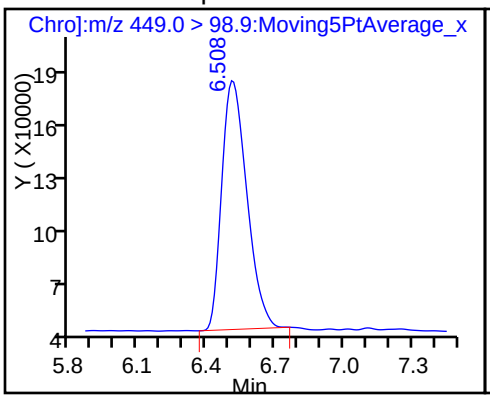
11 Perfluorohexanesulfonic acid



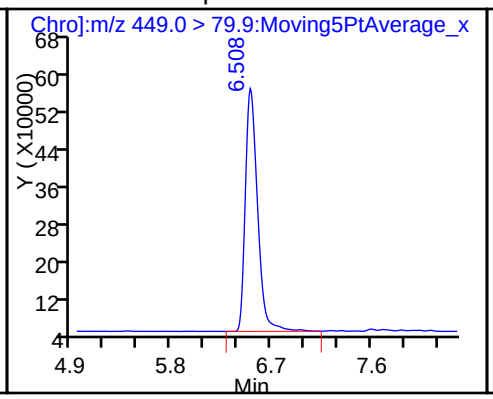
13 Perfluoroheptane Sulfonate



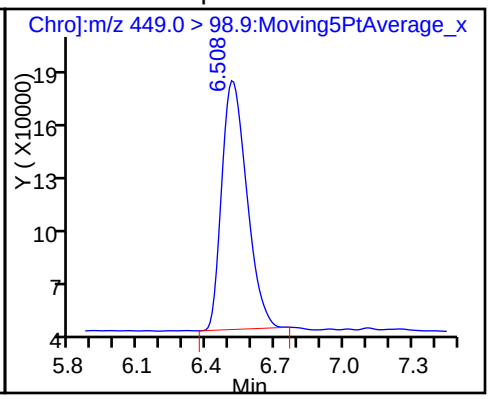
13 Perfluoroheptane Sulfonate



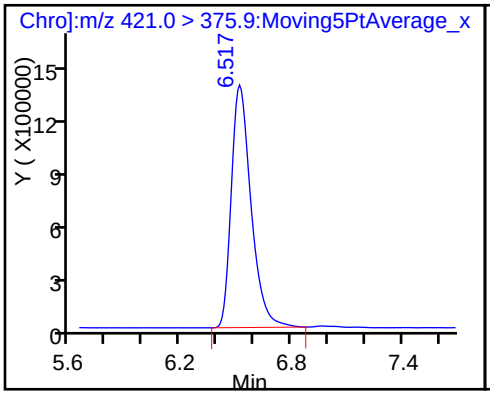
12 Perfluoroheptanesulfonic Acid



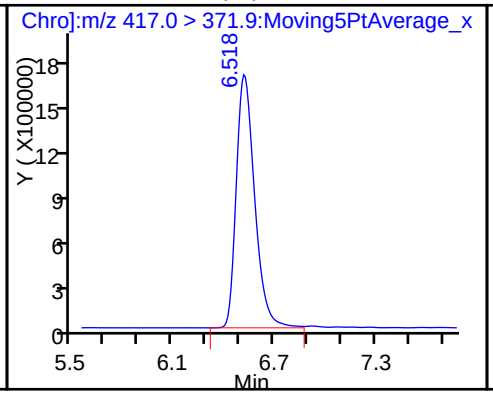
12 Perfluoroheptanesulfonic Acid



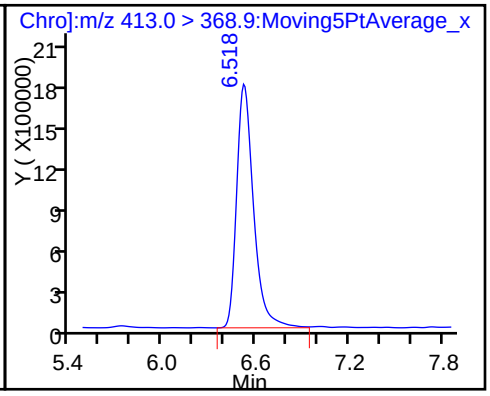
$ 14 13C8 PFOA



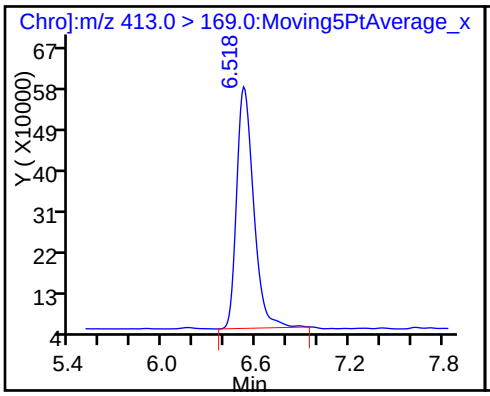
* 15 13C4 PFOA (IS)



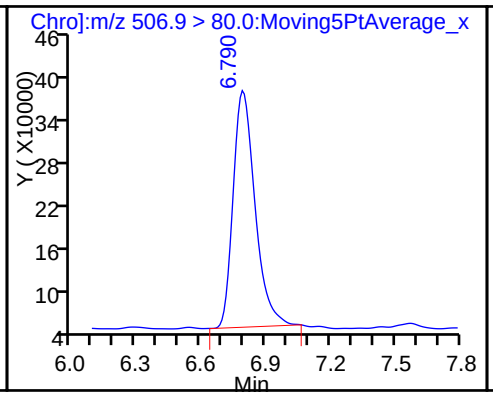
16 Perfluorooctanoic acid



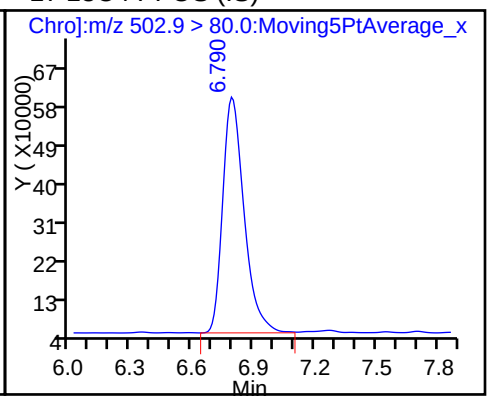
16 Perfluorooctanoic acid



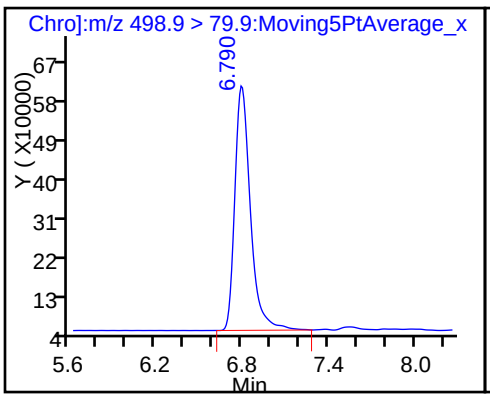
$ 18 13C8 PFOS



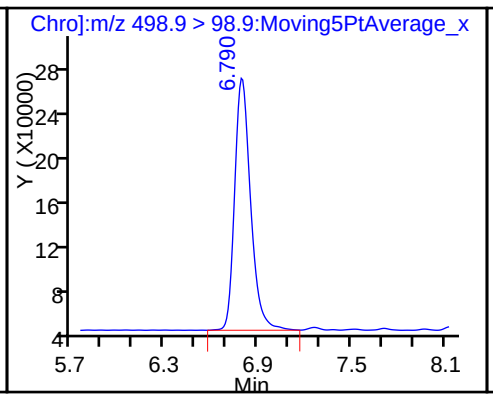
* 17 13C4 PFOS (IS)



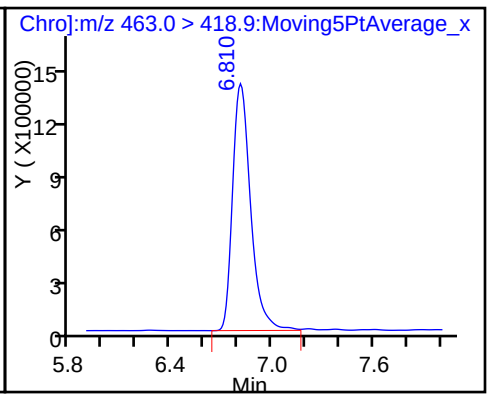
19 Perfluorooctane sulfonic acid



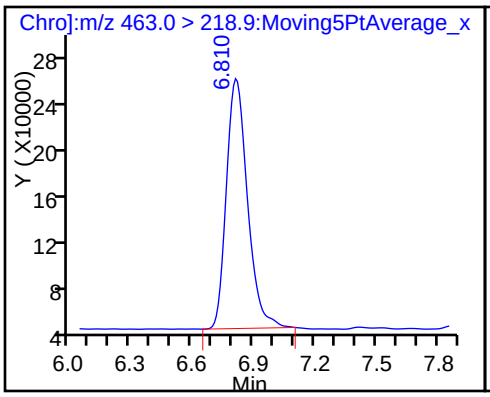
19 Perfluorooctane sulfonic acid



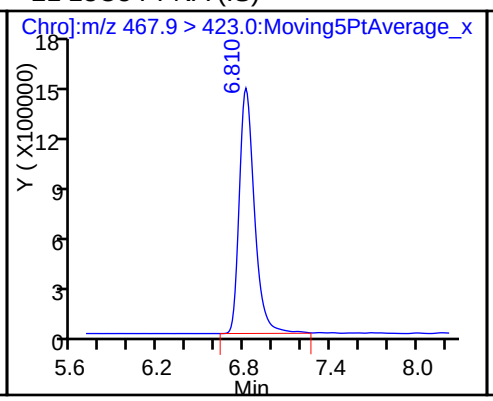
20 Perfluorononanoic acid



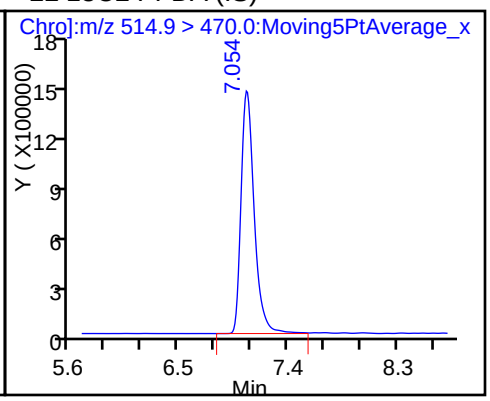
20 Perfluorononanoic acid



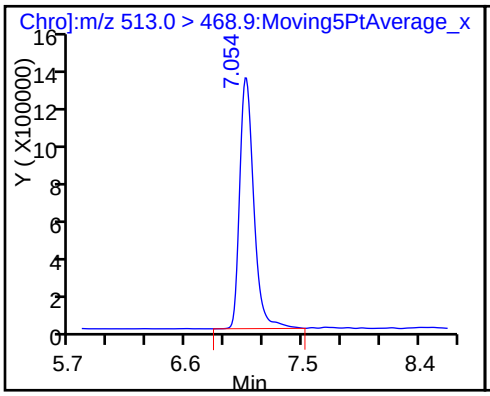
* 21 13C5 PFNA (IS)



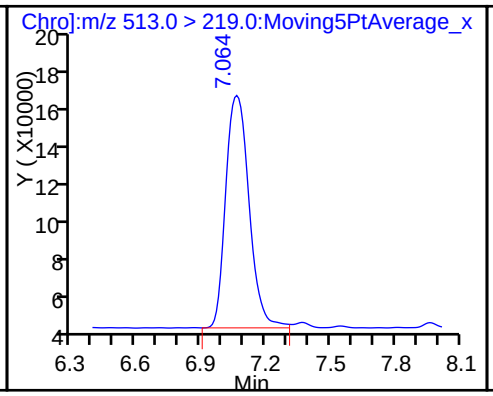
* 22 13C2 PFDA (IS)



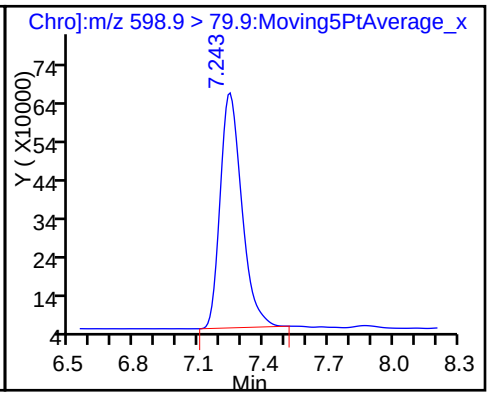
23 Perfluorodecanoic acid



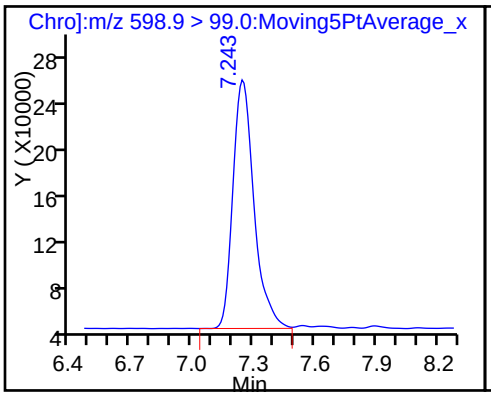
23 Perfluorodecanoic acid



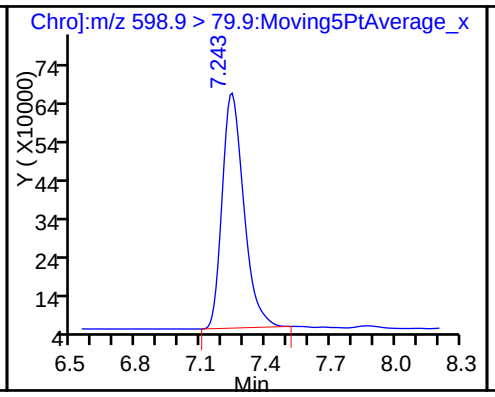
24 Perfluorodecane Sulfonic acid



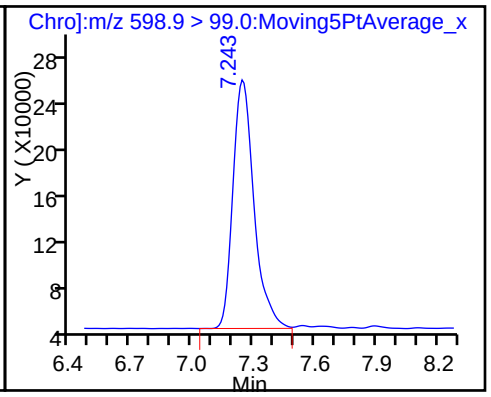
24 Perfluorodecane Sulfonic acid



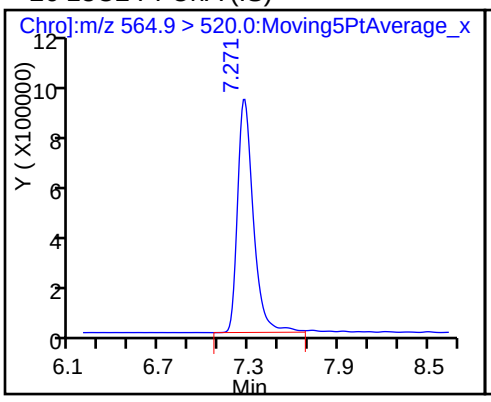
25 Perfluorodecane Sulfonate



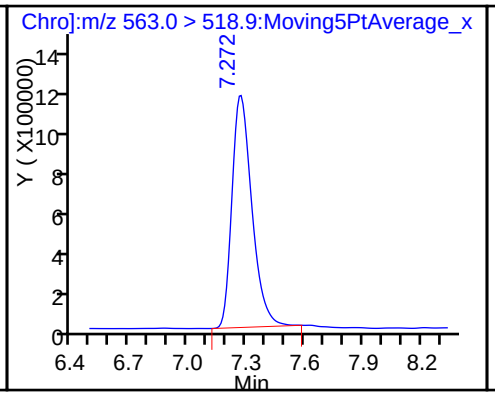
25 Perfluorodecane Sulfonate



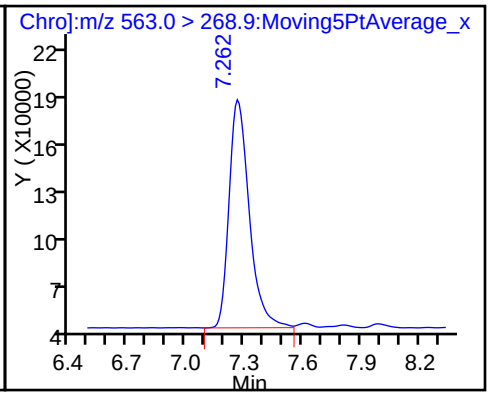
* 26 13C2 PFUnA (IS)



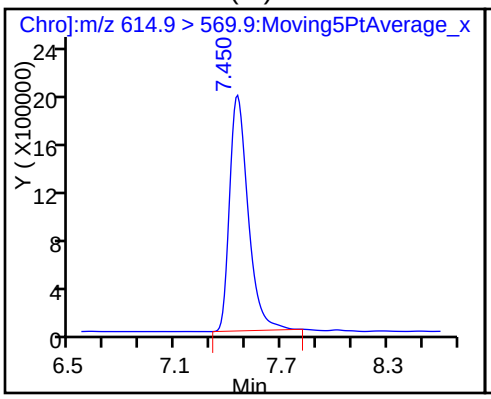
27 Perfluoroundecanoic acid



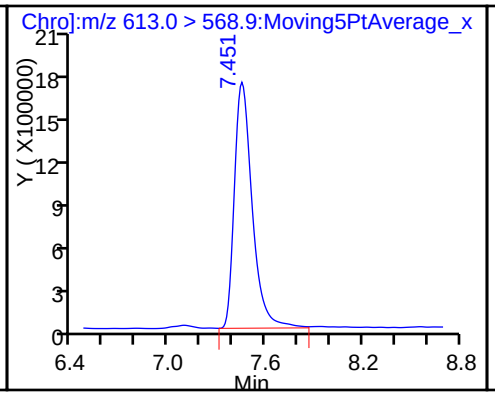
27 Perfluoroundecanoic acid



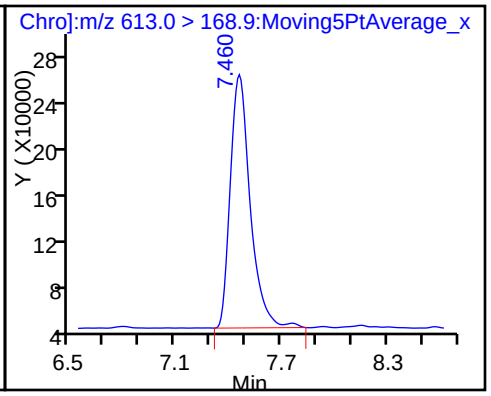
* 28 13C2 PFDoA (IS)



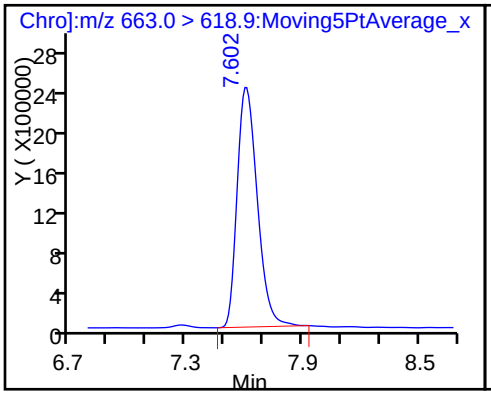
29 Perfluorododecanoic acid



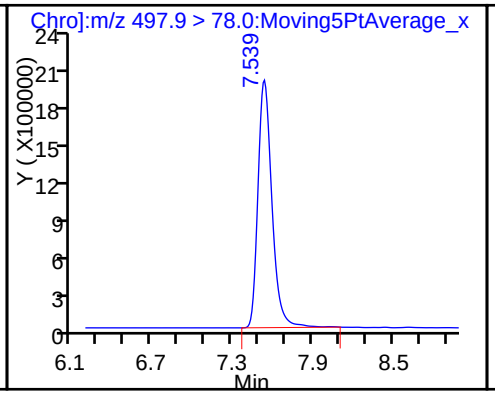
29 Perfluorododecanoic acid



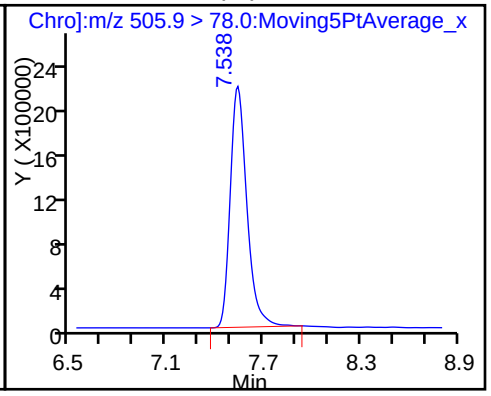
30 Perfluorotridecanoic acid



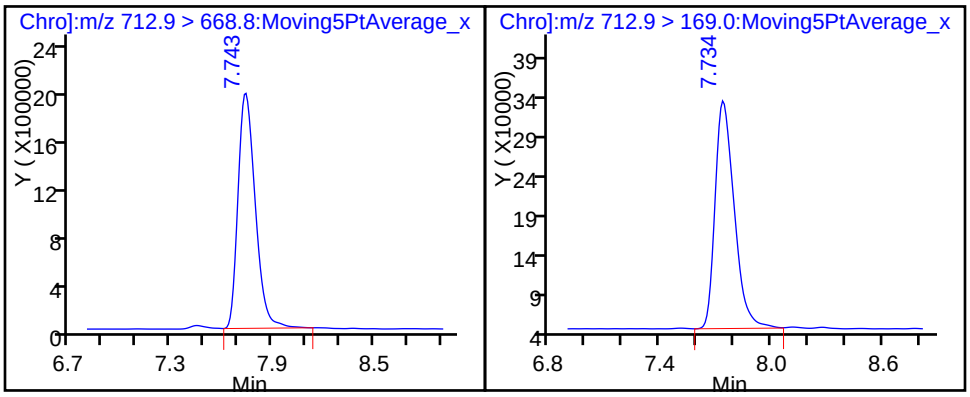
32 Perfluorooctane Sulfonamide



* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/01/2016 10:55

Analysis Batch Number: 340408 End Date: 09/01/2016 16:52

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD0002 280-340408/3 IC		09/01/2016 10:55	1	PC516I01016.d	Gemini-NX
STD0005 280-340408/4 IC		09/01/2016 11:07	1	PC516I01017.d	Gemini-NX
STD0010 280-340408/5 IC		09/01/2016 11:19	1	PC516I01018.d	Gemini-NX
STD0020 280-340408/6 ICISAV		09/01/2016 11:32	1	PC516I01019.d	Gemini-NX
STD0050 280-340408/7 IC		09/01/2016 11:44	1	PC516I01020.d	Gemini-NX
STD0100 280-340408/8 IC		09/01/2016 11:56	1	PC516I01021.d	Gemini-NX
STD0200 280-340408/9 IC		09/01/2016 12:09	1	PC516I01022.d	Gemini-NX
STD0500 280-340408/10 IC		09/01/2016 12:21	1	PC516I01023.d	Gemini-NX
STD1250 280-340408/11 IC		09/01/2016 12:33	1	PC516I01024.d	Gemini-NX
ICB 280-340408/12		09/01/2016 12:46	1	PC516I01025.d	Gemini-NX
ICV 280-340408/13		09/01/2016 12:58	1	PC516I01026.d	Gemini-NX
DLCK 280-340408/14		09/01/2016 13:10	1	PC516I01027.d	Gemini-NX
MB 280-339617/1-A		09/01/2016 13:23	1	PC516I01028.d	Gemini-NX
LCS 280-339617/2-A		09/01/2016 13:35	1	PC516I01029.d	Gemini-NX
LCSD 280-339617/3-A		09/01/2016 13:47	1	PC516I01030.d	Gemini-NX
ZZZZZ		09/01/2016 14:00	1		Gemini-NX
ZZZZZ		09/01/2016 14:12	1		Gemini-NX
ZZZZZ		09/01/2016 14:24	1		Gemini-NX
ZZZZZ		09/01/2016 14:37	1		Gemini-NX
ZZZZZ		09/01/2016 14:49	1		Gemini-NX
ZZZZZ		09/01/2016 15:01	1		Gemini-NX
ZZZZZ		09/01/2016 15:13	1		Gemini-NX
CCV 280-340408/25		09/01/2016 15:26	1	PC516I01038.d	Gemini-NX
ZZZZZ		09/01/2016 15:38	1		Gemini-NX
ZZZZZ		09/01/2016 15:50	1		Gemini-NX
ZZZZZ		09/01/2016 16:03	1		Gemini-NX
ZZZZZ		09/01/2016 16:15	1		Gemini-NX
ZZZZZ		09/01/2016 16:27	1		Gemini-NX
280-87134-3		09/01/2016 16:40	1	PC516I01044.d	Gemini-NX
CCV 280-340408/32		09/01/2016 16:52	1	PC516I01045.d	Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/01/2016 22:24

Analysis Batch Number: 340412 End Date: 09/02/2016 00:40

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-340412/59		09/01/2016 22:24	1	PC516I01072.d	Gemini-NX
MB 280-339633/1-A		09/01/2016 22:37	1	PC516I01073.d	Gemini-NX
LCS 280-339633/2-A		09/01/2016 22:49	1	PC516I01074.d	Gemini-NX
280-87134-1		09/01/2016 23:01	1	PC516I01075.d	Gemini-NX
280-87134-2		09/01/2016 23:14	1	PC516I01076.d	Gemini-NX
280-87134-6		09/01/2016 23:26	1	PC516I01077.d	Gemini-NX
280-87134-7		09/01/2016 23:38	1	PC516I01078.d	Gemini-NX
280-87134-8		09/01/2016 23:51	1	PC516I01079.d	Gemini-NX
280-87134-10		09/02/2016 00:03	1	PC516I01080.d	Gemini-NX
280-87134-10 MS		09/02/2016 00:15	1	PC516I01081.d	Gemini-NX
280-87134-10 MSD		09/02/2016 00:28	1	PC516I01082.d	Gemini-NX
CCV 280-340412/70		09/02/2016 00:40	1	PC516I01083.d	Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/02/2016 05:11

Analysis Batch Number: 340694 End Date: 09/02/2016 07:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-340694/92		09/02/2016 05:11	1	PC516I01105.d	Gemini-NX
MB 280-340007/1-A		09/02/2016 05:23	1	PC516I01106.d	Gemini-NX
LCS 280-340007/2-A		09/02/2016 05:36	1	PC516I01107.d	Gemini-NX
LCSD 280-340007/3-A		09/02/2016 05:48	1	PC516I01108.d	Gemini-NX
ZZZZZ		09/02/2016 06:00	1		Gemini-NX
ZZZZZ		09/02/2016 06:13	1		Gemini-NX
ZZZZZ		09/02/2016 06:25	1		Gemini-NX
CCV 280-340694/99		09/02/2016 06:37	1	PC516I01112.d	Gemini-NX
ZZZZZ		09/02/2016 06:50	1		Gemini-NX
ZZZZZ		09/02/2016 07:02	1		Gemini-NX
ZZZZZ		09/02/2016 07:14	1		Gemini-NX
280-87134-4		09/02/2016 07:27	1	PC516I01116.d	Gemini-NX
280-87134-5		09/02/2016 07:39	1	PC516I01117.d	Gemini-NX
CCV 280-340694/105		09/02/2016 07:51	1	PC516I01118.d	Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/02/2016 13:09

Analysis Batch Number: 340829 End Date: 09/02/2016 16:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-340829/3		09/02/2016 13:09	1	PC516I02015.d	Gemini-NX
MB 280-340544/1-A		09/02/2016 13:22	1	PC516I02016.d	Gemini-NX
LCS 280-340544/2-A		09/02/2016 13:34	1	PC516I02017.d	Gemini-NX
LCSD 280-340544/3-A		09/02/2016 13:46	1	PC516I02018.d	Gemini-NX
ZZZZZ		09/02/2016 13:59	1		Gemini-NX
ZZZZZ		09/02/2016 14:11	1		Gemini-NX
280-87134-9		09/02/2016 14:23	1	PC516I02021.d	Gemini-NX
CCV 280-340829/10		09/02/2016 14:36	1	PC516I02022.d	Gemini-NX
ZZZZZ		09/02/2016 14:48	1		Gemini-NX
ZZZZZ		09/02/2016 15:00	1		Gemini-NX
ZZZZZ		09/02/2016 15:13	1		Gemini-NX
ZZZZZ		09/02/2016 15:25	1		Gemini-NX
ZZZZZ		09/02/2016 15:37	1		Gemini-NX
ZZZZZ		09/02/2016 15:50	1		Gemini-NX
CCV 280-340829/17		09/02/2016 16:02	1		Gemini-NX

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Batch Number: 339617 Batch Start Date: 08/25/16 20:40 Batch Analyst: Choi, Yu J

Batch Method: 3535 Batch End Date: 08/26/16 00:19

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00084	PFC_Surr&IS 00024
MB 280-339617/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-339617/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-339617/3		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-87134-A-3	MW-FB1	3535, DV-LC-0012	T	276.5 g	28.4 g	248.1 mL	5 mL		0.1 mL

Batch Notes	
Acid ID	2% Formic Aci_00097/98
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewed by: CDC
First End time	8.25.16 2250
H2O ID	HPLC_Water_00663
Pipette ID	O, SPE-1
Reagent ID	10% Ammonium Hydroxide
Reagent Lot Number	10%_NH4OH_00076
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Phenomenex Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	8.25.16 2125

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Batch Number: 339633 Batch Start Date: 08/25/16 16:20 Batch Analyst: Cokley, Cheyana D

Batch Method: PFC leach Batch End Date: 08/26/16 20:31

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	CalcMsg	PFC-LCS 00084	PFC_Surr&IS 00024	AnalysisComment
MB 280-339633/1		PFC leach, DV-LC-0012		10.00 g	20 mL	CALC NOT SET TO RUN		0.4 mL	qc prepped on same day: share with 339601
LCS 280-339633/2		PFC leach, DV-LC-0012		10.00 g	20.4 mL	CALC NOT SET TO RUN	0.4 mL	0.4 mL	qc prepped on same day: share with 339601
280-87134-A-1	SB-PFC-MW1-0.5	PFC leach, DV-LC-0012	T	10.00 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87134-A-2	SB-PFC-MW2-0.5	PFC leach, DV-LC-0012	T	10.00 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87134-A-6	SB-PFC-MW1-16.0	PFC leach, DV-LC-0012	T	10.34 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87134-A-7	SB-PFC-MW1-56.0	PFC leach, DV-LC-0012	T	10.07 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87134-A-8	SB-PFC-MW1-3.0	PFC leach, DV-LC-0012	T	10.00 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87134-A-10	PFC-MW-DUP1	PFC leach, DV-LC-0012	T	10.42 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87134-A-10 MS	PFC-MW-DUP1	PFC leach, DV-LC-0012	T	10.00 g	20.4 mL	CALC NOT SET TO RUN	0.4 mL	0.4 mL	
280-87134-A-10 MSD	PFC-MW-DUP1	PFC leach, DV-LC-0012	T	10.00 g	20.4 mL	CALC NOT SET TO RUN	0.4 mL	0.4 mL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Batch Number: 339633 Batch Start Date: 08/25/16 16:20 Batch Analyst: Cokley, Cheyana D

Batch Method: PFC leach Batch End Date: 08/26/16 20:31

Batch Notes	
Analyst	cokleyc Pip:K Reviewer:
Balance ID	24750525
Batch Comment	Filtered by: cdc
HCl Concentration	2.4N
Lot # of hydrochloric acid	2.4_M_HCI_00004
HCl Pipette ID	K
MeOH Pipette #	Grad Cyl.
Methanol ID	HPLC_MeOH_00002
NaOH Concentration	0.67N
NaOH Lot #	0.67N_NaOH_00010
NaOH pipette ID	Grad. Cyl.
Nominal Amount Used	10 g
Ottawa Sand ID	156690
PVDF Filter ID	7006441
Perform Calculation (0=No, 1=Yes)	0
SOP Number	DV-OP-0019
Tumble End Time	1730
Tumble End Date	8.26.16
Tumble Start Time	1730
Tumble Start Date	8.25.16

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Batch Number: 340007 Batch Start Date: 08/29/16 19:57 Batch Analyst: Choi, Yu J

Batch Method: 3535 Batch End Date: 08/29/16 22:42

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00084	PFC_Surr&IS 00024
MB 280-340007/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-340007/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-340007/3		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-87134-A-4	MW-WB1	3535, DV-LC-0012	T			246.6 mL	5 mL		0.1 mL
280-87134-A-5	MW-FB2	3535, DV-LC-0012	T	279.3 g	28.3 g	251 mL	5 mL		0.1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 280-340007/1		3535, DV-LC-0012							
LCS 280-340007/2		3535, DV-LC-0012							
LCSD 280-340007/3		3535, DV-LC-0012							
280-87134-A-4	MW-WB1	3535, DV-LC-0012	T	Decant					
280-87134-A-5	MW-FB2	3535, DV-LC-0012	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Batch Number: 340007 Batch Start Date: 08/29/16 19:57 Batch Analyst: Choi, Yu J

Batch Method: 3535 Batch End Date: 08/29/16 22:42

Batch Notes	
Acid ID	2% Formic Aci_00098
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewed by: KI
First End time	8.29.16 2140
H2O ID	HPLC_Water_00664/667
Pipette ID	M, SPE-1
Reagent ID	10% Ammonium Hydroxide
Reagent Lot Number	10%_NH4OH_00076
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Phenomenex Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	8.29.16 2040

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Batch Number: 340544 Batch Start Date: 09/01/16 19:29 Batch Analyst: Choi, Yu J

Batch Method: 3535 Batch End Date: 09/01/16 22:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00084	PFC_Surr&IS 00024
MB 280-340544/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-340544/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-340544/3		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-87134-A-9	MW-FB3	3535, DV-LC-0012	T	269.8 g	27.9 g	241.9 mL	5 mL		0.1 mL

Batch Notes	
Acid ID	2% Formic Aci_00098
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewed by: CDC
First End time	9.1.16 2157
H2O ID	HPLC_Water_00668
Pipette ID	O, SPE-1
Reagent ID	10% Ammonium Hydroxide
Reagent Lot Number	10%_NH4OH_00077
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Phenomenex Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	9.1.16 2009

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-87134-1

SDG No.:

Project: Stewart International Airport (PFAS)

Client Sample ID	Lab Sample ID
SB-PFC-MW1-0.5	280-87134-1
SB-PFC-MW2-0.5	280-87134-2
SB-PFC-MW1-16.0	280-87134-6
SB-PFC-MW1-56.0	280-87134-7
SB-PFC-MW1-3.0	280-87134-8
PFC-MW-DUP1	280-87134-10

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-87134-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: Moisture RL Date: 11/01/2009 00:00

Analyte	Wavelength/ Mass	RL (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: NOEQUIP Method: Moisture

Start Date: 08/24/2016 09:30 End Date: 08/24/2016 09:30

Lab Sample ID	D / F	Type	Time	Analytes																				
				% Sol	Moist																			
ZZZZZZ			09:30																					
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280-87130-A-14 DU	1	T	09:30	X	X																			
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280-87134-1	1	T	09:30	X	X																			
280-87134-2	1	T	09:30	X	X																			
280-87134-6	1	T	09:30	X	X																			
280-87134-7	1	T	09:30	X	X																			
280-87134-8	1	T	09:30	X	X																			
280-87134-10	1	T	09:30	X	X																			
ZZZZZZ			09:30																					
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ZZZZZZ			09:30																					

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: NOEQUIP Method: Moisture

Start Date: 08/24/2016 09:30 End Date: 08/24/2016 09:30

Lab Sample ID	D / F	Type	Time	Analytes																				
				% Sol	Moist																			
ZZZZZZ			09:30	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Instrument ID: NOEQUIP Method: Moisture

Start Date: 08/24/2016 09:30 End Date: 08/24/2016 09:30

Lab Sample ID	D / F	Type	Time	Analytes																				
				% Sol	Moist																			
ZZZZZZ			09:30																					
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Prep Types

T = Total/NA

Gravimetric-Solids Data Review Checklist

LIMS Batch Number: 339291		Instrument ID: BAL
Analyst/1st Reviewer/Date: 08/26/16	Method: Moisture	QC Type (circle): Standard LCSD DOD Q4 DoD Q5 QAPP_____ Other_____
Method (circle): 2540B 2540C 2540D 160.4 1664A 1664B 9071 D5057 D1429 D2216		
Matrix (circle): Water (Solid) Waste		

Review Items	Yes	No	NA	2nd rev	If No, why is data reportable?
A. Balance, Oven and DI water Checks					
Was the balance calibration verified before and after processing samples and noted in the "Balance Calibration Log" for the date(s) the samples were processed?	✓			✓	
Was the daily conductivity check of the deionized water recorded in the "Conductivity Logbook"?			✓	✓	
Temps. within the required temperature of the method: % Moisture: 100°C ± 5°C % Vol. 103°C - 105°C % Solids, TS, TSS, TVSS, VSS 103°C - 105°C TDS 180°C ± 2°C %Vol, TVSS, VSS 550°C ± 50°C Other:	✓			✓	
B. Method Requirements	✓			✓	
QC Batch contains no greater than 20 samples?	✓			✓	
If sample is visibly oily, was this noted on the benchsheet?	✓			✓	
Was final residue weight within minimum/maximum requirements?	✓			✓	
Were the initial and final drying dates and times recorded on the benchsheet/TALS and were all samples dried for at least one hour?	✓			✓	
C. Preparation/ Matrix QC					
Matrix Duplicate (RPD ± 5 %) (If > 5 %, determine corrective per SOP.) The RPD limit of 5% applies to TSS, TDS and TS, 20% RPD for all others			✓	✓	
Method blank < ½ RL or all reported samples > 10 X RL? - **(HEM, SGT HEM, and TDS the MB <RL)**			✓	✓	
LCS/LCSD run for batch and within QC limits?			✓	✓	
D. Preparation/ Matrix QC					
TDS/Conductivity ratio or historical data checked?	✓			✓	
For % Moisture, was the Final Dried Weight < the Initial Pan Weight or is the result greater than 100%?	✓			✓	
Were sample analyses done within holding time? **If no, create HTV NCM. NCM#**	✓			✓	
Were special client requirements met?	✓			✓	
Were data that were manually transcribed from instrument printouts into TALS verified 100% including dilution factors, significant figures and units?	✓			✓	
Do the prep and analysis dates in TALS reflect the actual dates?	✓			✓	
STD/True Value information is updated and included?	✓			✓	

Review Items	NA	Yes	No	2nd rev	If No, why is data reportable?
F. Data and TALS review					
1. Raw Data					
a. Unused data is clearly identified with reason not used		✓		✓	
b. All cross outs are initialed and dated		✓		✓	
c. Raw data includes the method, date, and analyst initials/signature		✓		✓	
2. TALS Samples Tab					
a. LIMS Sample IDs / Containers are correct		✓		✓	
b. Method and matrix are correct		✓		✓	
c. Date and time match raw data		✓		✓	
d. Dilutions are correct		✓		✓	
e. Correct suffix (DU, MS, MSD) designated (where applicable)		✓		✓	
3. TALS Worksheet Tab is complete and correct (Initial Amount, Final Amount, pH, etc.)		✓		✓	
4. TALS Reagent Tab is complete and correct and properly associated with QC samples. Confirm that reagent amounts are correct. If reagents are new verify that the correct COA has been attached to the source standard		✓		✓	
5. TALS QC Links Tab is correct		✓		✓	
6. TALS Sample Results Tab					
a. All unused data are marked Rejected or Accepted		✓		✓	
b. Set status for samples based on QC and sample results info (i.e., set to primary analysis with passing QC or reject samples without passing QC or samples that are over-range.)		✓		✓	
c. Any data that has a qualifier is commented on with appropriate action taken		✓		✓	
7. TALS Batch Information Screen documentation is complete		✓		✓	
8. Historical Data Checker: Check historical data. Print charts for outliers. Take corrective action as is appropriate		✓		✓	
9. TALS Status set to appropriate review level		✓		✓	
E. Final Report and NCMs (2nd level review only)					
1. Were all job/project requirements met?				✓	
2. Results for samples and QC correct on final report?				✓	
3. Are all necessary scanned documents in TALS?				✓	
4. NCMs reviewed for applicability, correct references to batches, grammar/typographical errors?				✓	

Comments: _____

3/28/16

2nd Reviewer: _____ **Review Date:** 3/28/16

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87134-1

SDG No.:

Batch Number: 339291 Batch Start Date: 08/24/16 09:29 Batch Analyst: Uge, Ikem E

Batch Method: Moisture Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
280-87130-A-14 DU		Moisture	T	22	1.30 g	16.02 g	14.07 g		
280-87134-A-1	SB-PFC-MW1-0.5	Moisture	T	32	1.29 g	16.53 g	14.20 g		
280-87134-A-2	SB-PFC-MW2-0.5	Moisture	T	33	1.29 g	15.84 g	14.57 g		
280-87134-A-6	SB-PFC-MW1-16.0	Moisture	T	34	1.30 g	17.19 g	15.78 g		
280-87134-A-7	SB-PFC-MW1-56.0	Moisture	T	35	1.30 g	16.23 g	14.55 g		
280-87134-A-8	SB-PFC-MW1-3.0	Moisture	T	36	1.30 g	16.95 g	15.67 g		
280-87134-A-10	PFC-MW-DUP1	Moisture	T	37	1.29 g	16.16 g	14.72 g		

Batch Notes	
Balance ID	H31422
Date and Time Samples in Desiccator	08/26/16 1000 tray 1-2
Date and Time Samples out of Desiccator	08/26/16 1630 tray 1-2
Date samples were placed in the oven	08/24/16 tray 1-3
Oven Temp In	103 Degrees C
Time samples were place in the oven	1131
Date samples were removed from oven	08/26/16 tray 1-2
Oven Temp Out	119 Degrees C
Time Samples were removed from oven	1000
Oven ID	3
Thermometer ID	227-694
Uncorrected In Temperature	103 Celsius
Uncorrected Out Temperature	119 Celsius

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Melissa LaMacchia	Samplers Name (Printed): John Ifkovits / Matt Keaveney	Site/Project Identification: Stewart Int Airport (PFAS)
Company: HDR	P. O. #: 32pp8244	State (Location of site): NJ: ☐ NY: ☒ Other:
		Regulatory Program: NYSDEC DKQP: ☐
Address: 1 International Blvd 10th floor	Analysis Turnaround Time: Standard ☒	
City: Mahwah State: NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone: 201.335.9300 Fax:		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:

Sample Identification	Date	Time	Matrix	No. of Cont.	PFC-10A-PFAS (ULMA list)	Sample Numbers
SB-PFC-MW1-0.5	8/15/16	1345	Soil	1	X	
SB-PFC-MW2-0.5	↓	1422	Soil	1	X	
MW-FB1	↓	1438	Aq	1	X	
MW-WB1	8/16/16	1000	Aq	1	X	
MW-FB2	↓	1005	Aq	1	X	
SB-PFC-MW1-16.0	↓	1047	Soil	1	X	
SB-PFC-MW1-56.0	8/18/16	1157	Soil	1	X	
SB-PFC-MW1-3.0	↓	1205	Soil	1	X	
MW-FB3	↓	1210	Aq	1	X	
PFC-MW-DUP1	↓	0900	Soil	1	X	

Preservation Used: (1 = ICE), 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____

Soil:	1	
Water:	1	

Special Instructions: Lab contact: Suppan Nagpar NYSDEC cat B

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) John Ifkovits	HDR	8/19/16 16:30	1)	TAD 8/19/16 0930
Relinquished by 2)	Company	Date / Time	Received by 2)	Company
Relinquished by 3)	Company	Date / Time	Received by 3)	Company
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0715)

Massachusetts (M-NJ312), North Carolina (No. 578)

4.4+0.0 IR#5 Transferred by DW 8/19/16

280-87134 Chain of Custody

09/14/2016

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-87134-1

Login Number: 87134
List Number: 1
Creator: White, Denise E

List Source: TestAmerica Denver

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

ANALYTICAL REPORT

Job Number: 280-87416-1

Job Description: Stewart International Airport (PFAS)

For:
HDR Inc
1 International Blvd, 10th Floor
Mahwah, NJ 07495

Attention: Ms. Melissa LaMacchia

Approved for release.
Shalini Williams
Project Management Assistant II
11/2/2016 9:05 AM

Designee for
Sapna Nayyar, Project Manager I
777 New Durham Road, Edison, NJ, 08817
sapna.nayyar@testamericainc.com
11/02/2016
Revision: 1

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CASE NARRATIVE

Client: HDR Inc

Project: Stewart International Airport (PFAS)

Report Number: 280-87416-1

Revision- 1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

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

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

RECEIPT

The samples were received on 8/26/2016 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.5º C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

Revised Report

Ghost writer was missed in the original report. Revised report 11/2/2016

PERFLUORINATED HYDROCARBONS (PFC)

Samples MW-FB4 (280-87416-3), MW-FB5 (280-87416-8) and MW-FB6 (280-87416-10) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with DV-LC-0012. The samples were prepared on 09/01/2016, 09/07/2016 and 09/08/2016 and analyzed on 09/02/2016, 09/08/2016 and 09/10/2016.

Internal standard responses were outside of acceptance limits for the following sample: MW-FB4 (280-87416-3). The sample(s) shows evidence of matrix interference. PFC preparation batch 280-340544 and analytical batch 280-340829

Internal standard response was outside of acceptance limit for the following sample: SB-PFC-MW4-0.5 (280-87416-6). The sample shows evidence of matrix interference.preparation batch 280-339949 and analytical batch 280-340832 PFC

Several internal standards failed high in the QC and samples as well. The LCS/D also failed for some compounds, due to the IS failures. Please re-extract samples. THe LCS/D fails for Perfluorobutyric acid at 63%, limtis 70-130%; Perfluorooctane sulfonic acid at 69% in the LCS, limits 70-130% and Perfluorobutane Sulfonate in the LCSD at 69%, limits 70-134%. preparation batch 280-341407 and analytical batch 280-341622 PFC

Perfluorooctanesulfonic acid (PFOS) failed the recovery criteria low for LCS 280-341407/2-A. Perfluorobutane Sulfonate (PFBS) failed the recovery criteria low for LCSD 280-341407/3-A.

Refer to the QC report for details.

No other difficulties were encountered during the PFC analysis.

All other quality control parameters were within the acceptance limits.

PERCENT SOLIDS/PERCENT MOISTURE

Samples SB-PFC-MW3-0.5 (280-87416-1), SB-PFC-MW3-2.5 (280-87416-2), SB-PFC-MW3-21.0 (280-87416-4), SB-PFC-MW3-46.0 (280-87416-5), SB-PFC-MW4-0.5 (280-87416-6), SB-PFC-MW4-3.0 (280-87416-7) and SB-PFC-MW2-3.0 (280-87416-9) were analyzed for percent solids/percent moisture in accordance with EPA Method CLPISM01.2 (Exhibit D) Modified. The samples were analyzed on

08/31/2016.

No difficulties were encountered during the %solids/moisture analysis.

All quality control parameters were within the acceptance limits.

PERFLUORINATED HYDROCARBONS (PFC)

Samples SB-PFC-MW3-0.5 (280-87416-1), SB-PFC-MW3-2.5 (280-87416-2), SB-PFC-MW3-21.0 (280-87416-4), SB-PFC-MW3-46.0 (280-87416-5), SB-PFC-MW4-0.5 (280-87416-6), SB-PFC-MW4-3.0 (280-87416-7) and SB-PFC-MW2-3.0 (280-87416-9) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with DV-LC-0012. The samples were prepared on 08/29/2016 and analyzed on 09/02/2016 and 09/03/2016.

HPLC methanol was used instead of LCMS methanol because the company is no longer supplying LCMS methanol. Batch: 340544 Prep Method: 3535 Analytical Method: PFC
MW-FB4 (280-87416-3).

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with Batch: 340544 prep method: 3535 analytical method: PFC

HPLC methanol was used instead of LCMS methanol because the company is no longer supplying LCMS methanol. Batch: 340982 prep Method: 3535 Analytical Method: PFC
MW-FB5 (280-87416-8)

The following sample was prepared outside of preparation holding time due to immediate emergency circumstance : MW-FB5 (280-87416-8).

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch: 340982 prep method: 3535 analytical method: PFC

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 341407 PFC. .

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 280-341884.

No other difficulties were encountered during the PFC analysis.

All quality control parameters were within the acceptance limits.

Sample Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-87416-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-87416-1	SB-PFC-MW3-0.5	Solid	08/19/16 08:13	08/26/16 09:40
280-87416-2	SB-PFC-MW3-2.5	Solid	08/19/16 08:30	08/26/16 09:40
280-87416-3	MW-FB4	Water	08/19/16 08:46	08/26/16 09:40
280-87416-4	SB-PFC-MW3-21.0	Solid	08/19/16 10:38	08/26/16 09:40
280-87416-5	SB-PFC-MW3-46.0	Solid	08/19/16 12:08	08/26/16 09:40
280-87416-6	SB-PFC-MW4-0.5	Solid	08/24/16 08:20	08/26/16 09:40
280-87416-7	SB-PFC-MW4-3.0	Solid	08/24/16 08:45	08/26/16 09:40
280-87416-8	MW-FB5	Water	08/24/16 14:40	08/26/16 09:40
280-87416-9	SB-PFC-MW2-3.0	Solid	08/25/16 13:25	08/26/16 09:40
280-87416-10	MW-FB6	Water	08/25/16 17:05	08/26/16 09:40

Detection Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-87416-1

Client Sample ID: SB-PFC-MW3-0.5 — Lab Sample ID: 280-87416-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.26	J	0.82	0.12	ug/Kg	1	☼	DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.45	J	0.82	0.29	ug/Kg	1	☼	DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.62		0.82	0.14	ug/Kg	1	☼	DV-LC-0012	Total/NA

Client Sample ID: SB-PFC-MW3-2.5 — Lab Sample ID: 280-87416-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexane Sulfonate (PFHxS)	0.45	J	0.89	0.31	ug/Kg	1	☼	DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.02		0.89	0.16	ug/Kg	1	☼	DV-LC-0012	Total/NA

Client Sample ID: MW-FB4 — Lab Sample ID: 280-87416-3

No Detections.

Client Sample ID: SB-PFC-MW3-21.0 — Lab Sample ID: 280-87416-4

No Detections.

Client Sample ID: SB-PFC-MW3-46.0 — Lab Sample ID: 280-87416-5

No Detections.

Client Sample ID: SB-PFC-MW4-0.5 — Lab Sample ID: 280-87416-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.32	J	0.93	0.16	ug/Kg	1	☼	DV-LC-0012	Total/NA

Client Sample ID: SB-PFC-MW4-3.0 — Lab Sample ID: 280-87416-7

No Detections.

Client Sample ID: MW-FB5 — Lab Sample ID: 280-87416-8

No Detections.

Client Sample ID: SB-PFC-MW2-3.0 — Lab Sample ID: 280-87416-9

No Detections.

Client Sample ID: MW-FB6 — Lab Sample ID: 280-87416-10

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-87416-1

Method	Method Description	Protocol	Laboratory
DV-LC-0012	Perfluorinated Hydrocarbons	TAL-DEN	TAL DEN
Moisture	Percent Moisture	EPA	TAL DEN

Protocol References:

EPA = US Environmental Protection Agency

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Client Sample ID: SB-PFC-MW3-0.5

Lab Sample ID: 280-87416-1
Date Collected: 08/19/16 08:13
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 97.0

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.14	U	0.82	0.14	ug/Kg	☼	08/29/16 13:40	09/02/16 22:36	1
Perfluoroheptanoic acid (PFHpA)	**0.26**	**J**	0.82	0.12	ug/Kg	☼	08/29/16 13:40	09/02/16 22:36	1
Perfluorohexane Sulfonate (PFHxS)	**0.45**	**J**	0.82	0.29	ug/Kg	☼	08/29/16 13:40	09/02/16 22:36	1
Perfluorononanoic acid (PFNA)	0.23	U	0.82	0.23	ug/Kg	☼	08/29/16 13:40	09/02/16 22:36	1
Perfluorooctanesulfonic acid (PFOS)	**5.62**		0.82	0.14	ug/Kg	☼	08/29/16 13:40	09/02/16 22:36	1
Perfluorooctanoic acid (PFOA)	0.24	U	0.82	0.24	ug/Kg	☼	08/29/16 13:40	09/02/16 22:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*125*		*57 - 153*	*08/29/16 13:40*	*09/02/16 22:36*	*1*
13C8 PFOS	*104*		*70 - 130*	*08/29/16 13:40*	*09/02/16 22:36*	*1*

Client Sample ID: SB-PFC-MW3-2.5

Lab Sample ID: 280-87416-2
Date Collected: 08/19/16 08:30
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 90.1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.16	U	0.89	0.16	ug/Kg	☼	08/29/16 13:40	09/02/16 22:48	1
Perfluoroheptanoic acid (PFHpA)	0.13	U	0.89	0.13	ug/Kg	☼	08/29/16 13:40	09/02/16 22:48	1
Perfluorohexane Sulfonate (PFHxS)	**0.45**	**J**	0.89	0.31	ug/Kg	☼	08/29/16 13:40	09/02/16 22:48	1
Perfluorononanoic acid (PFNA)	0.24	U	0.89	0.24	ug/Kg	☼	08/29/16 13:40	09/02/16 22:48	1
Perfluorooctanesulfonic acid (PFOS)	**3.02**		0.89	0.16	ug/Kg	☼	08/29/16 13:40	09/02/16 22:48	1
Perfluorooctanoic acid (PFOA)	0.25	U	0.89	0.25	ug/Kg	☼	08/29/16 13:40	09/02/16 22:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*123*		*57 - 153*	*08/29/16 13:40*	*09/02/16 22:48*	*1*
13C8 PFOS	*103*		*70 - 130*	*08/29/16 13:40*	*09/02/16 22:48*	*1*

Client Sample ID: MW-FB4

Lab Sample ID: 280-87416-3
Date Collected: 08/19/16 08:46
Matrix: Water
Date Received: 08/26/16 09:40

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0083	U	0.020	0.0083	ug/L		09/01/16 19:29	09/02/16 15:13	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		09/01/16 19:29	09/02/16 15:13	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		09/01/16 19:29	09/02/16 15:13	1
Perfluorononanoic acid (PFNA)	0.018	U	0.040	0.018	ug/L		09/01/16 19:29	09/02/16 15:13	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		09/01/16 19:29	09/02/16 15:13	1
Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099	ug/L		09/01/16 19:29	09/02/16 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*122*		*60 - 155*	*09/01/16 19:29*	*09/02/16 15:13*	*1*
13C8 PFOS	*107*		*45 - 130*	*09/01/16 19:29*	*09/02/16 15:13*	*1*

Client Sample ID: SB-PFC-MW3-21.0

Lab Sample ID: 280-87416-4
Date Collected: 08/19/16 10:38
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 88.2

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.16	U	0.91	0.16	ug/Kg	☼	08/29/16 13:40	09/02/16 23:01	1
Perfluoroheptanoic acid (PFHpA)	0.14	U	0.91	0.14	ug/Kg	☼	08/29/16 13:40	09/02/16 23:01	1
Perfluorohexane Sulfonate (PFHxS)	0.32	U	0.91	0.32	ug/Kg	☼	08/29/16 13:40	09/02/16 23:01	1
Perfluorononanoic acid (PFNA)	0.25	U	0.91	0.25	ug/Kg	☼	08/29/16 13:40	09/02/16 23:01	1
Perfluorooctanesulfonic acid (PFOS)	0.16	U	0.91	0.16	ug/Kg	☼	08/29/16 13:40	09/02/16 23:01	1
Perfluorooctanoic acid (PFOA)	0.26	U	0.91	0.26	ug/Kg	☼	08/29/16 13:40	09/02/16 23:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*122*		*57 - 153*	*08/29/16 13:40*	*09/02/16 23:01*	*1*
13C8 PFOS	*103*		*70 - 130*	*08/29/16 13:40*	*09/02/16 23:01*	*1*

Client Sample ID: SB-PFC-MW3-46.0

Lab Sample ID: 280-87416-5
Date Collected: 08/19/16 12:08
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 86.7

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.16	U	0.91	0.16	ug/Kg	☼	08/29/16 13:40	09/02/16 23:13	1
Perfluoroheptanoic acid (PFHpA)	0.14	U	0.91	0.14	ug/Kg	☼	08/29/16 13:40	09/02/16 23:13	1
Perfluorohexane Sulfonate (PFHxS)	0.32	U	0.91	0.32	ug/Kg	☼	08/29/16 13:40	09/02/16 23:13	1
Perfluorononanoic acid (PFNA)	0.25	U	0.91	0.25	ug/Kg	☼	08/29/16 13:40	09/02/16 23:13	1
Perfluorooctanesulfonic acid (PFOS)	0.16	U	0.91	0.16	ug/Kg	☼	08/29/16 13:40	09/02/16 23:13	1
Perfluorooctanoic acid (PFOA)	0.26	U	0.91	0.26	ug/Kg	☼	08/29/16 13:40	09/02/16 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*121*		*57 - 153*	*08/29/16 13:40*	*09/02/16 23:13*	*1*
13C8 PFOS	*110*		*70 - 130*	*08/29/16 13:40*	*09/02/16 23:13*	*1*

Client Sample ID: SB-PFC-MW4-0.5

Lab Sample ID: 280-87416-6
Date Collected: 08/24/16 08:20
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 85.0

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.16	U	0.93	0.16	ug/Kg	☼	08/29/16 13:40	09/03/16 00:27	1
Perfluoroheptanoic acid (PFHpA)	0.14	U	0.93	0.14	ug/Kg	☼	08/29/16 13:40	09/03/16 00:27	1
Perfluorohexane Sulfonate (PFHxS)	0.33	U	0.93	0.33	ug/Kg	☼	08/29/16 13:40	09/03/16 00:27	1
Perfluorononanoic acid (PFNA)	0.26	U	0.93	0.26	ug/Kg	☼	08/29/16 13:40	09/03/16 00:27	1
Perfluorooctanesulfonic acid (PFOS)	**0.32**	**J**	0.93	0.16	ug/Kg	☼	08/29/16 13:40	09/03/16 00:27	1
Perfluorooctanoic acid (PFOA)	0.27	U	0.93	0.27	ug/Kg	☼	08/29/16 13:40	09/03/16 00:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*123*		*57 - 153*	*08/29/16 13:40*	*09/03/16 00:27*	*1*
13C8 PFOS	*103*		*70 - 130*	*08/29/16 13:40*	*09/03/16 00:27*	*1*

Client Sample ID: SB-PFC-MW4-3.0

Lab Sample ID: 280-87416-7
Date Collected: 08/24/16 08:45
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 93.6

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.15	U	0.85	0.15	ug/Kg	☼	08/29/16 13:40	09/02/16 23:50	1
Perfluoroheptanoic acid (PFHpA)	0.13	U	0.85	0.13	ug/Kg	☼	08/29/16 13:40	09/02/16 23:50	1
Perfluorohexane Sulfonate (PFHxS)	0.30	U	0.85	0.30	ug/Kg	☼	08/29/16 13:40	09/02/16 23:50	1
Perfluorononanoic acid (PFNA)	0.24	U	0.85	0.24	ug/Kg	☼	08/29/16 13:40	09/02/16 23:50	1
Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.85	0.15	ug/Kg	☼	08/29/16 13:40	09/02/16 23:50	1
Perfluorooctanoic acid (PFOA)	0.25	U	0.85	0.25	ug/Kg	☼	08/29/16 13:40	09/02/16 23:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*124*		*57 - 153*	*08/29/16 13:40*	*09/02/16 23:50*	*1*
13C8 PFOS	*101*		*70 - 130*	*08/29/16 13:40*	*09/02/16 23:50*	*1*

Client Sample ID: MW-FB5

Lab Sample ID: 280-87416-8
Date Collected: 08/24/16 14:40
Matrix: Water
Date Received: 08/26/16 09:40

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0074	U	0.018	0.0074	ug/L		09/07/16 17:42	09/08/16 12:51	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.027	0.012	ug/L		09/07/16 17:42	09/08/16 12:51	1
Perfluorohexane Sulfonate (PFHxS)	0.0063	U	0.027	0.0063	ug/L		09/07/16 17:42	09/08/16 12:51	1
Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016	ug/L		09/07/16 17:42	09/08/16 12:51	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.027	0.012	ug/L		09/07/16 17:42	09/08/16 12:51	1
Perfluorooctanoic acid (PFOA)	0.0088	U	0.018	0.0088	ug/L		09/07/16 17:42	09/08/16 12:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*100*		*60 - 155*	*09/07/16 17:42*	*09/08/16 12:51*	*1*
13C8 PFOS	*124*		*45 - 130*	*09/07/16 17:42*	*09/08/16 12:51*	*1*

Client Sample ID: SB-PFC-MW2-3.0

Lab Sample ID: 280-87416-9
Date Collected: 08/25/16 13:25
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 93.5

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.15	U	0.84	0.15	ug/Kg	☼	08/29/16 13:40	09/02/16 23:38	1
Perfluoroheptanoic acid (PFHpA)	0.13	U	0.84	0.13	ug/Kg	☼	08/29/16 13:40	09/02/16 23:38	1
Perfluorohexane Sulfonate (PFHxS)	0.29	U	0.84	0.29	ug/Kg	☼	08/29/16 13:40	09/02/16 23:38	1
Perfluorononanoic acid (PFNA)	0.23	U	0.84	0.23	ug/Kg	☼	08/29/16 13:40	09/02/16 23:38	1
Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.84	0.15	ug/Kg	☼	08/29/16 13:40	09/02/16 23:38	1
Perfluorooctanoic acid (PFOA)	0.24	U	0.84	0.24	ug/Kg	☼	08/29/16 13:40	09/02/16 23:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*119*		*57 - 153*	*08/29/16 13:40*	*09/02/16 23:38*	*1*
13C8 PFOS	*107*		*70 - 130*	*08/29/16 13:40*	*09/02/16 23:38*	*1*

Client Sample ID: MW-FB6
Lab Sample ID: 280-87416-10

Date Collected: 08/25/16 17:05
Matrix: Water

Date Received: 08/26/16 09:40

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0070	U *	0.017	0.0070	ug/L		09/08/16 22:13	09/10/16 03:08	1
Perfluoroheptanoic acid (PFHpA)	0.011	U	0.025	0.011	ug/L		09/08/16 22:13	09/10/16 03:08	1
Perfluorohexane Sulfonate (PFHxS)	0.0059	U	0.025	0.0059	ug/L		09/08/16 22:13	09/10/16 03:08	1
Perfluorononanoic acid (PFNA)	0.015	U	0.034	0.015	ug/L		09/08/16 22:13	09/10/16 03:08	1
Perfluorooctanesulfonic acid (PFOS)	0.011	U *	0.025	0.011	ug/L		09/08/16 22:13	09/10/16 03:08	1
Perfluorooctanoic acid (PFOA)	0.0083	U	0.017	0.0083	ug/L		09/08/16 22:13	09/10/16 03:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*103*		*60 - 155*	*09/08/16 22:13*	*09/10/16 03:08*	*1*
13C8 PFOS	*119*		*45 - 130*	*09/08/16 22:13*	*09/10/16 03:08*	*1*

Surrogate Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-87416-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

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

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	3C8 PFO/ (57-153)	3C8 PFOS (70-130)
280-87416-1	SB-PFC-MW3-0.5	125	104
280-87416-2	SB-PFC-MW3-2.5	123	103
280-87416-4	SB-PFC-MW3-21.0	122	103
280-87416-5	SB-PFC-MW3-46.0	121	110
280-87416-6	SB-PFC-MW4-0.5	123	103
280-87416-7	SB-PFC-MW4-3.0	124	101
280-87416-7 MS	SB-PFC-MW4-3.0	121	105
280-87416-7 MSD	SB-PFC-MW4-3.0	129	102
280-87416-9	SB-PFC-MW2-3.0	119	107
LCS 280-339949/2-A	Lab Control Sample	121	112
MB 280-339949/1-A	Method Blank	122	103

Surrogate Legend

13C8 PFOA = 13C8 PFOA
13C8 PFOS = 13C8 PFOS

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

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

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	3C8 PFO/ (60-155)	3C8 PFOS (45-130)
280-87416-3	MW-FB4	122	107
280-87416-8	MW-FB5	100	124
280-87416-10	MW-FB6	103	119
DLCK 280-340408/14	Lab Control Sample	75	107
DLCK 280-341287/14	Lab Control Sample	102	108
LCS 280-340544/2-A	Lab Control Sample	125	103
LCS 280-340982/2-A	Lab Control Sample	107	127
LCS 280-341407/2-A	Lab Control Sample	101	122
LCSD 280-340544/3-A	Lab Control Sample Dup	125	102
LCSD 280-340982/3-A	Lab Control Sample Dup	102	123
LCSD 280-341407/3-A	Lab Control Sample Dup	102	126
MB 280-340544/1-A	Method Blank	113	103
MB 280-340982/1-A	Method Blank	100	119
MB 280-341407/1-A	Method Blank	105	124

Surrogate Legend

13C8 PFOA = 13C8 PFOA
13C8 PFOS = 13C8 PFOS

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 280-339949/1-A
Matrix: Solid
Analysis Batch: 340832

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 339949

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.14	U	0.80	0.14	ug/Kg		08/29/16 13:40	09/02/16 22:11	1
Perfluoroheptanoic acid (PFHpA)	0.12	U	0.80	0.12	ug/Kg		08/29/16 13:40	09/02/16 22:11	1
Perfluorohexane Sulfonate (PFHxS)	0.28	U	0.80	0.28	ug/Kg		08/29/16 13:40	09/02/16 22:11	1
Perfluorononanoic acid (PFNA)	0.22	U	0.80	0.22	ug/Kg		08/29/16 13:40	09/02/16 22:11	1
Perfluorooctanesulfonic acid (PFOS)	0.14	U	0.80	0.14	ug/Kg		08/29/16 13:40	09/02/16 22:11	1
Perfluorooctanoic acid (PFOA)	0.23	U	0.80	0.23	ug/Kg		08/29/16 13:40	09/02/16 22:11	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*122*		*57 - 153*	*08/29/16 13:40*	*09/02/16 22:11*	*1*
13C8 PFOS	*103*		*70 - 130*	*08/29/16 13:40*	*09/02/16 22:11*	*1*

Lab Sample ID: LCS 280-339949/2-A
Matrix: Solid
Analysis Batch: 340832

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 339949

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	16.9	16.58		ug/Kg		98	68 - 130
Perfluoroheptanoic acid (PFHpA)	19.1	20.30		ug/Kg		106	70 - 130
Perfluorohexane Sulfonate (PFHxS)	18.0	18.98		ug/Kg		105	70 - 135
Perfluorononanoic acid (PFNA)	19.1	17.46		ug/Kg		92	64 - 138
Perfluorooctanesulfonic acid (PFOS)	18.2	19.05		ug/Kg		105	70 - 130
Perfluorooctanoic acid (PFOA)	19.1	20.29		ug/Kg		106	70 - 131

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 PFOA	*121*		*57 - 153*
13C8 PFOS	*112*		*70 - 130*

Lab Sample ID: 280-87416-7 MS
Matrix: Solid
Analysis Batch: 340832

Client Sample ID: SB-PFC-MW4-3.0
Prep Type: Total/NA
Prep Batch: 339949

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.15	U	18.9	16.87		ug/Kg	☼	89	68 - 130
Perfluoroheptanoic acid (PFHpA)	0.13	U	21.4	21.48		ug/Kg	☼	101	70 - 130
Perfluorohexane Sulfonate (PFHxS)	0.30	U	20.2	19.44		ug/Kg	☼	96	70 - 135
Perfluorononanoic acid (PFNA)	0.24	U	21.4	20.17		ug/Kg	☼	94	64 - 138
Perfluorooctanesulfonic acid (PFOS)	0.15	U	20.4	19.39		ug/Kg	☼	95	70 - 130
Perfluorooctanoic acid (PFOA)	0.25	U	21.4	21.17		ug/Kg	☼	99	70 - 131

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
13C8 PFOA	*121*		*57 - 153*
13C8 PFOS	*105*		*70 - 130*

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: 280-87416-7 MSD
Matrix: Solid
Analysis Batch: 340832

Client Sample ID: SB-PFC-MW4-3.0
Prep Type: Total/NA
Prep Batch: 339949

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.15	U	18.9	16.17		ug/Kg	☼	86	68 - 130	4	30
Perfluoroheptanoic acid (PFHpA)	0.13	U	21.4	23.70		ug/Kg	☼	111	70 - 130	10	30
Perfluorohexane Sulfonate (PFHxS)	0.30	U	20.2	20.79		ug/Kg	☼	103	70 - 135	7	30
Perfluorononanoic acid (PFNA)	0.24	U	21.4	20.00		ug/Kg	☼	94	64 - 138	1	30
Perfluorooctanesulfonic acid (PFOS)	0.15	U	20.4	20.31		ug/Kg	☼	100	70 - 130	5	30
Perfluorooctanoic acid (PFOA)	0.25	U	21.4	23.24		ug/Kg	☼	109	70 - 131	9	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C8 PFOA	*129*		*57 - 153*
13C8 PFOS	*102*		*70 - 130*

Lab Sample ID: DLCK 280-340408/14
Matrix: Water
Analysis Batch: 340408

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

Analyte	Spike Added	DLCK Result	DLCK Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.443	0.546		ug/L		123	70 - 130
Perfluoroheptanoic acid (PFHpA)	0.500	0.527		ug/L		105	70 - 130
Perfluorohexane Sulfonate (PFHxS)	0.473	0.586		ug/L		124	70 - 130
Perfluorononanoic acid (PFNA)	0.500	0.486		ug/L		97	70 - 130
Perfluorooctanesulfonic acid (PFOS)	0.478	0.583		ug/L		122	70 - 130
Perfluorooctanoic acid (PFOA)	0.500	0.467		ug/L		93	70 - 130

Surrogate	*DLCK %Recovery*	*DLCK Qualifier*	*Limits*
13C8 PFOA	*75*		*60 - 155*
13C8 PFOS	*107*		*45 - 130*

Lab Sample ID: MB 280-340544/1-A
Matrix: Water
Analysis Batch: 340829

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 340544

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		09/01/16 19:29	09/02/16 13:22	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		09/01/16 19:29	09/02/16 13:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*113*		*60 - 155*	*09/01/16 19:29*	*09/02/16 13:22*	*1*
13C8 PFOS	*103*		*45 - 130*	*09/01/16 19:29*	*09/02/16 13:22*	*1*

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 280-340544/2-A
Matrix: Water
Analysis Batch: 340829

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 340544

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.167		ug/L		94	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.186		ug/L		93	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.170		ug/L		90	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.172		ug/L		86	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.170		ug/L		89	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.182		ug/L		91	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 PFOA	*125*		*60 - 155*
13C8 PFOS	*103*		*45 - 130*

Lab Sample ID: LCSD 280-340544/3-A
Matrix: Water
Analysis Batch: 340829

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 340544

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.177	0.148		ug/L		83	70 - 134	12	30
Perfluoroheptanoic acid (PFHpA)	0.200	0.193		ug/L		96	70 - 135	3	30
Perfluorohexane Sulfonate (PFHxS)	0.189	0.155		ug/L		82	70 - 132	9	30
Perfluorononanoic acid (PFNA)	0.200	0.178		ug/L		89	69 - 143	4	30
Perfluorooctanesulfonic acid (PFOS)	0.191	0.172		ug/L		90	70 - 130	1	20
Perfluorooctanoic acid (PFOA)	0.200	0.176		ug/L		88	70 - 130	4	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C8 PFOA	*125*		*60 - 155*
13C8 PFOS	*102*		*45 - 130*

Lab Sample ID: MB 280-340982/1-A
Matrix: Water
Analysis Batch: 341350

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 340982

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		09/07/16 17:42	09/08/16 11:13	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		09/07/16 17:42	09/08/16 11:13	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		09/07/16 17:42	09/08/16 11:13	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		09/07/16 17:42	09/08/16 11:13	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		09/07/16 17:42	09/08/16 11:13	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		09/07/16 17:42	09/08/16 11:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*100*		*60 - 155*	*09/07/16 17:42*	*09/08/16 11:13*	*1*
13C8 PFOS	*119*		*45 - 130*	*09/07/16 17:42*	*09/08/16 11:13*	*1*

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 280-340982/2-A
Matrix: Water
Analysis Batch: 341350

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 340982

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.179		ug/L		101	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.226		ug/L		113	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.184		ug/L		97	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.201		ug/L		101	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.193		ug/L		101	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.215		ug/L		108	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 PFOA	*107*		*60 - 155*
13C8 PFOS	*127*		*45 - 130*

Lab Sample ID: LCSD 280-340982/3-A
Matrix: Water
Analysis Batch: 341350

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 340982

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.177	0.173		ug/L		97	70 - 134	4	30
Perfluoroheptanoic acid (PFHpA)	0.200	0.231		ug/L		115	70 - 135	2	30
Perfluorohexane Sulfonate (PFHxS)	0.189	0.179		ug/L		95	70 - 132	3	30
Perfluorononanoic acid (PFNA)	0.200	0.209		ug/L		104	69 - 143	4	30
Perfluorooctanesulfonic acid (PFOS)	0.191	0.202		ug/L		106	70 - 130	4	20
Perfluorooctanoic acid (PFOA)	0.200	0.218		ug/L		109	70 - 130	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C8 PFOA	*102*		*60 - 155*
13C8 PFOS	*123*		*45 - 130*

Lab Sample ID: DLCK 280-341287/14
Matrix: Water
Analysis Batch: 341287

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

Analyte	Spike Added	DLCK Result	DLCK Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.443	0.507		ug/L		114	70 - 130
Perfluoroheptanoic acid (PFHpA)	0.500	0.457		ug/L		91	70 - 130
Perfluorohexane Sulfonate (PFHxS)	0.473	0.569		ug/L		120	70 - 130
Perfluorononanoic acid (PFNA)	0.500	0.495		ug/L		99	70 - 130
Perfluorooctanesulfonic acid (PFOS)	0.478	0.554		ug/L		116	70 - 130
Perfluorooctanoic acid (PFOA)	0.500	0.447		ug/L		89	70 - 130

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: DLCK 280-341287/14
Matrix: Water
Analysis Batch: 341287

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

Surrogate	DLCK %Recovery	DLCK Qualifier	Limits
13C8 PFOA	102		60 - 155
13C8 PFOS	108		45 - 130

Lab Sample ID: MB 280-341407/1-A
Matrix: Water
Analysis Batch: 341622

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 341407

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		09/08/16 22:13	09/10/16 02:07	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		09/08/16 22:13	09/10/16 02:07	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		09/08/16 22:13	09/10/16 02:07	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		09/08/16 22:13	09/10/16 02:07	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		09/08/16 22:13	09/10/16 02:07	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		09/08/16 22:13	09/10/16 02:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	105		60 - 155	09/08/16 22:13	09/10/16 02:07	1
13C8 PFOS	124		45 - 130	09/08/16 22:13	09/10/16 02:07	1

Lab Sample ID: LCS 280-341407/2-A
Matrix: Water
Analysis Batch: 341622

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 341407

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.128		ug/L		72	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.168		ug/L		84	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.156		ug/L		82	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.148		ug/L		74	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.131	*	ug/L		69	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.164		ug/L		82	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C8 PFOA	101		60 - 155
13C8 PFOS	122		45 - 130

Lab Sample ID: LCSD 280-341407/3-A
Matrix: Water
Analysis Batch: 341622

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 341407

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.177	0.121	*	ug/L		69	70 - 134	5	30
Perfluoroheptanoic acid (PFHpA)	0.200	0.165		ug/L		82	70 - 135	2	30
Perfluorohexane Sulfonate (PFHxS)	0.189	0.152		ug/L		80	70 - 132	2	30
Perfluorononanoic acid (PFNA)	0.200	0.152		ug/L		76	69 - 143	3	30

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 280-341407/3-A
Matrix: Water
Analysis Batch: 341622

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 341407

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)			0.191	0.138		ug/L		72	70 - 130	5	20
Perfluorooctanoic acid (PFOA)			0.200	0.164		ug/L		82	70 - 130	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C8 PFOA	*102*		*60 - 155*
13C8 PFOS	*126*		*45 - 130*

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD is outside acceptance limits.

Glossary

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

LCMS

Prep Batch: 339949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87416-1	SB-PFC-MW3-0.5	Total/NA	Solid	PFC leach	
280-87416-2	SB-PFC-MW3-2.5	Total/NA	Solid	PFC leach	
280-87416-4	SB-PFC-MW3-21.0	Total/NA	Solid	PFC leach	
280-87416-5	SB-PFC-MW3-46.0	Total/NA	Solid	PFC leach	
280-87416-6	SB-PFC-MW4-0.5	Total/NA	Solid	PFC leach	
280-87416-7	SB-PFC-MW4-3.0	Total/NA	Solid	PFC leach	
280-87416-9	SB-PFC-MW2-3.0	Total/NA	Solid	PFC leach	
MB 280-339949/1-A	Method Blank	Total/NA	Solid	PFC leach	
LCS 280-339949/2-A	Lab Control Sample	Total/NA	Solid	PFC leach	
280-87416-7 MS	SB-PFC-MW4-3.0	Total/NA	Solid	PFC leach	
280-87416-7 MSD	SB-PFC-MW4-3.0	Total/NA	Solid	PFC leach	

Analysis Batch: 340408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-340408/14	Lab Control Sample	Total/NA	Water	DV-LC-0012	

Prep Batch: 340544

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87416-3	MW-FB4	Total/NA	Water	3535	
MB 280-340544/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-340544/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-340544/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 340829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87416-3	MW-FB4	Total/NA	Water	DV-LC-0012	340544
MB 280-340544/1-A	Method Blank	Total/NA	Water	DV-LC-0012	340544
LCS 280-340544/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	340544
LCSD 280-340544/3-A	Lab Control Sample Dup	Total/NA	Water	DV-LC-0012	340544

Analysis Batch: 340832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87416-1	SB-PFC-MW3-0.5	Total/NA	Solid	DV-LC-0012	339949
280-87416-2	SB-PFC-MW3-2.5	Total/NA	Solid	DV-LC-0012	339949
280-87416-4	SB-PFC-MW3-21.0	Total/NA	Solid	DV-LC-0012	339949
280-87416-5	SB-PFC-MW3-46.0	Total/NA	Solid	DV-LC-0012	339949
280-87416-6	SB-PFC-MW4-0.5	Total/NA	Solid	DV-LC-0012	339949
280-87416-7	SB-PFC-MW4-3.0	Total/NA	Solid	DV-LC-0012	339949
280-87416-9	SB-PFC-MW2-3.0	Total/NA	Solid	DV-LC-0012	339949
MB 280-339949/1-A	Method Blank	Total/NA	Solid	DV-LC-0012	339949
LCS 280-339949/2-A	Lab Control Sample	Total/NA	Solid	DV-LC-0012	339949
280-87416-7 MS	SB-PFC-MW4-3.0	Total/NA	Solid	DV-LC-0012	339949
280-87416-7 MSD	SB-PFC-MW4-3.0	Total/NA	Solid	DV-LC-0012	339949

Prep Batch: 340982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87416-8	MW-FB5	Total/NA	Water	3535	
MB 280-340982/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-340982/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-340982/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

LCMS (Continued)

Analysis Batch: 341287

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-341287/14	Lab Control Sample	Total/NA	Water	DV-LC-0012	

Analysis Batch: 341350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87416-8	MW-FB5	Total/NA	Water	DV-LC-0012	340982
MB 280-340982/1-A	Method Blank	Total/NA	Water	DV-LC-0012	340982
LCS 280-340982/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	340982
LCSD 280-340982/3-A	Lab Control Sample Dup	Total/NA	Water	DV-LC-0012	340982

Prep Batch: 341407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87416-10	MW-FB6	Total/NA	Water	3535	
MB 280-341407/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-341407/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-341407/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 341622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87416-10	MW-FB6	Total/NA	Water	DV-LC-0012	341407
MB 280-341407/1-A	Method Blank	Total/NA	Water	DV-LC-0012	341407
LCS 280-341407/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	341407
LCSD 280-341407/3-A	Lab Control Sample Dup	Total/NA	Water	DV-LC-0012	341407

General Chemistry

Analysis Batch: 340248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-87416-1	SB-PFC-MW3-0.5	Total/NA	Solid	Moisture	
280-87416-2	SB-PFC-MW3-2.5	Total/NA	Solid	Moisture	
280-87416-4	SB-PFC-MW3-21.0	Total/NA	Solid	Moisture	
280-87416-5	SB-PFC-MW3-46.0	Total/NA	Solid	Moisture	
280-87416-6	SB-PFC-MW4-0.5	Total/NA	Solid	Moisture	
280-87416-7	SB-PFC-MW4-3.0	Total/NA	Solid	Moisture	
280-87416-9	SB-PFC-MW2-3.0	Total/NA	Solid	Moisture	
280-87416-5 DU	SB-PFC-MW3-46.0	Total/NA	Solid	Moisture	

Client Sample ID: SB-PFC-MW3-0.5
Date Collected: 08/19/16 08:13
Date Received: 08/26/16 09:40

Lab Sample ID: 280-87416-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			340248	08/31/16 06:50	IEU	TAL DEN

Client Sample ID: SB-PFC-MW3-0.5
Date Collected: 08/19/16 08:13
Date Received: 08/26/16 09:40

Lab Sample ID: 280-87416-1
Matrix: Solid
Percent Solids: 97.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.00 g	20 mL	339949	08/29/16 13:40	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340832	09/02/16 22:36	AGCM	TAL DEN

Client Sample ID: SB-PFC-MW3-2.5
Date Collected: 08/19/16 08:30
Date Received: 08/26/16 09:40

Lab Sample ID: 280-87416-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			340248	08/31/16 06:50	IEU	TAL DEN

Client Sample ID: SB-PFC-MW3-2.5
Date Collected: 08/19/16 08:30
Date Received: 08/26/16 09:40

Lab Sample ID: 280-87416-2
Matrix: Solid
Percent Solids: 90.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.01 g	20 mL	339949	08/29/16 13:40	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340832	09/02/16 22:48	AGCM	TAL DEN

Client Sample ID: MW-FB4
Date Collected: 08/19/16 08:46
Date Received: 08/26/16 09:40

Lab Sample ID: 280-87416-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			247.7 mL	5 mL	340544	09/01/16 19:29	YJC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340829	09/02/16 15:13	AGCM	TAL DEN

Client Sample ID: SB-PFC-MW3-21.0
Date Collected: 08/19/16 10:38
Date Received: 08/26/16 09:40

Lab Sample ID: 280-87416-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			340248	08/31/16 06:50	IEU	TAL DEN

Client Sample ID: SB-PFC-MW3-21.0
Lab Sample ID: 280-87416-4
Date Collected: 08/19/16 10:38
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 88.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.00 g	20 mL	339949	08/29/16 13:40	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340832	09/02/16 23:01	AGCM	TAL DEN

Client Sample ID: SB-PFC-MW3-46.0
Lab Sample ID: 280-87416-5
Date Collected: 08/19/16 12:08
Matrix: Solid
Date Received: 08/26/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			340248	08/31/16 06:50	IEU	TAL DEN

Client Sample ID: SB-PFC-MW3-46.0
Lab Sample ID: 280-87416-5
Date Collected: 08/19/16 12:08
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 86.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.14 g	20 mL	339949	08/29/16 13:40	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340832	09/02/16 23:13	AGCM	TAL DEN

Client Sample ID: SB-PFC-MW4-0.5
Lab Sample ID: 280-87416-6
Date Collected: 08/24/16 08:20
Matrix: Solid
Date Received: 08/26/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			340248	08/31/16 06:50	IEU	TAL DEN

Client Sample ID: SB-PFC-MW4-0.5
Lab Sample ID: 280-87416-6
Date Collected: 08/24/16 08:20
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 85.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.09 g	20 mL	339949	08/29/16 13:40	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340832	09/03/16 00:27	AGCM	TAL DEN

Client Sample ID: SB-PFC-MW4-3.0
Lab Sample ID: 280-87416-7
Date Collected: 08/24/16 08:45
Matrix: Solid
Date Received: 08/26/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			340248	08/31/16 06:50	IEU	TAL DEN

Client Sample ID: SB-PFC-MW4-3.0

Lab Sample ID: 280-87416-7
Date Collected: 08/24/16 08:45
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 93.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.00 g	20 mL	339949	08/29/16 13:40	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340832	09/02/16 23:50	AGCM	TAL DEN

Client Sample ID: MW-FB5

Lab Sample ID: 280-87416-8
Date Collected: 08/24/16 14:40
Matrix: Water
Date Received: 08/26/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277.5 mL	5 mL	340982	09/07/16 17:42	YJC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			341350	09/08/16 12:51	HKF	TAL DEN

Client Sample ID: SB-PFC-MW2-3.0

Lab Sample ID: 280-87416-9
Date Collected: 08/25/16 13:25
Matrix: Solid
Date Received: 08/26/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			340248	08/31/16 06:50	IEU	TAL DEN

Client Sample ID: SB-PFC-MW2-3.0

Lab Sample ID: 280-87416-9
Date Collected: 08/25/16 13:25
Matrix: Solid
Date Received: 08/26/16 09:40
Percent Solids: 93.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFC leach			10.17 g	20 mL	339949	08/29/16 13:40	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			340832	09/02/16 23:38	AGCM	TAL DEN

Client Sample ID: MW-FB6

Lab Sample ID: 280-87416-10
Date Collected: 08/25/16 17:05
Matrix: Water
Date Received: 08/26/16 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			296.2 mL	5 mL	341407	09/08/16 22:13	CDC	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			341622	09/10/16 03:08	HKF	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Certification Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-87416-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	11964	04-01-17

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

Analysis Method	Prep Method	Matrix	Analyte
DV-LC-0012	3535	Water	Perfluorobutane Sulfonate (PFBS)
DV-LC-0012	3535	Water	Perfluoroheptanoic acid (PFHpA)
DV-LC-0012	3535	Water	Perfluorohexane Sulfonate (PFHxS)
DV-LC-0012	3535	Water	Perfluorononanoic acid (PFNA)
DV-LC-0012	3535	Water	Perfluorooctanesulfonic acid (PFOS)
DV-LC-0012	3535	Water	Perfluorooctanoic acid (PFOA)
DV-LC-0012	PFC leach	Solid	Perfluorobutane Sulfonate (PFBS)
DV-LC-0012	PFC leach	Solid	Perfluoroheptanoic acid (PFHpA)
DV-LC-0012	PFC leach	Solid	Perfluorohexane Sulfonate (PFHxS)
DV-LC-0012	PFC leach	Solid	Perfluorononanoic acid (PFNA)
DV-LC-0012	PFC leach	Solid	Perfluorooctanesulfonic acid (PFOS)
DV-LC-0012	PFC leach	Solid	Perfluorooctanoic acid (PFOA)
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	4025	01-09-17

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

Analysis Method	Prep Method	Matrix	Analyte
DV-LC-0012	PFC leach	Solid	Perfluoroheptanoic acid (PFHpA)
DV-LC-0012	PFC leach	Solid	Perfluorohexane Sulfonate (PFHxS)
DV-LC-0012	PFC leach	Solid	Perfluorononanoic acid (PFNA)
DV-LC-0012	PFC leach	Solid	Perfluorooctanesulfonic acid (PFOS)
DV-LC-0012	PFC leach	Solid	Perfluorooctanoic acid (PFOA)
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	4040	01-29-17

Method PFC

Perfluronated Hydrocarbons (LC/MS) by Method PFC

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Solid Level: Low

GC Column (1): Gemini-NX ID:

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
SB-PFC-MW3-0.5	280-87416-1	125	104
SB-PFC-MW3-2.5	280-87416-2	123	103
SB-PFC-MW3-21.0	280-87416-4	122	103
SB-PFC-MW3-46.0	280-87416-5	121	110
SB-PFC-MW4-0.5	280-87416-6	123	103
SB-PFC-MW4-3.0	280-87416-7	124	101
SB-PFC-MW2-3.0	280-87416-9	119	107
	MB 280-339949/1-A	122	103
	LCS 280-339949/2-A	121	112
SB-PFC-MW4-3.0 MS	280-87416-7 MS	121	105
SB-PFC-MW4-3.0 MSD	280-87416-7 MSD	129	102

	QC LIMITS
PFOA = 13C8 PFOA	57-153
PFOS = 13C8 PFOS	70-130

Column to be used to flag recovery values

FORM II DV-LC-0012

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini-NX ID:

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
MW-FB4	280-87416-3	122	107
MW-FB5	280-87416-8	100	124
MW-FB6	280-87416-10	103	119
	MB 280-340544/1-A	113	103
	MB 280-340982/1-A	100	119
	MB 280-341407/1-A	105	124
	LCS 280-340544/2-A	125	103
	LCS 280-340982/2-A	107	127
	LCS 280-341407/2-A	101	122
	LCSD 280-340544/3-A	125	102
	LCSD 280-340982/3-A	102	123
	LCSD 280-341407/3-A	102	126
	DLCK 280-340408/14	75	107
	DLCK 280-341287/14	102	108

	QC LIMITS
PFOA = 13C8 PFOA	60-155
PFOS = 13C8 PFOS	45-130

Column to be used to flag recovery values

FORM II DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC516I02060.d

Lab ID: LCS 280-339949/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	16.9	16.58	98	68-130	
Perfluoroheptanoic acid (PFHpA)	19.1	20.30	106	70-130	
Perfluorohexane Sulfonate (PFHxS)	18.0	18.98	105	70-135	
Perfluorononanoic acid (PFNA)	19.1	17.46	92	64-138	
Perfluorooctanesulfonic acid (PFOS)	18.2	19.05	105	70-130	
Perfluorooctanoic acid (PFOA)	19.1	20.29	106	70-131	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I02017.d

Lab ID: LCS 280-340544/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.167	94	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.186	93	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.170	90	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.172	86	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.170	89	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.182	91	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I08008.d

Lab ID: LCS 280-340982/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.179	101	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.226	113	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.184	97	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.201	101	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.193	101	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.215	108	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I09106.d

Lab ID: LCS 280-341407/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.128	72	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.168	84	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.156	82	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.148	74	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.131	69	70-130	*
Perfluorooctanoic acid (PFOA)	0.200	0.164	82	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I02018.d

Lab ID: LCSD 280-340544/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.148	83	12	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.193	96	3	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.155	82	9	30	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.178	89	4	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.172	90	1	20	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.176	88	4	20	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I08009.d

Lab ID: LCSD 280-340982/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutane Sulfonate (PFBS)	0.177	0.173	97	4	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.231	115	2	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.179	95	3	30	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.209	104	4	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.202	106	4	20	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.218	109	1	20	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I09107.d

Lab ID: LCSD 280-341407/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.121	69	5	30	70-134	*
Perfluoroheptanoic acid (PFHpA)	0.200	0.165	82	2	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.152	80	2	30	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.152	76	3	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.138	72	5	20	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.164	82	0	20	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC516I02068.d

Lab ID: 280-87416-7 MS Client ID: SB-PFC-MW4-3.0 MS

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	18.9	0.15 U	16.87	89	68-130	
Perfluoroheptanoic acid (PFHpA)	21.4	0.13 U	21.48	101	70-130	
Perfluorohexane Sulfonate (PFHxS)	20.2	0.30 U	19.44	96	70-135	
Perfluorononanoic acid (PFNA)	21.4	0.24 U	20.17	94	64-138	
Perfluorooctanesulfonic acid (PFOS)	20.4	0.15 U	19.39	95	70-130	
Perfluorooctanoic acid (PFOA)	21.4	0.25 U	21.17	99	70-131	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC516I02069.d

Lab ID: 280-87416-7 MSD Client ID: SB-PFC-MW4-3.0 MSD

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	18.9	16.17	86	4	30	68-130	
Perfluoroheptanoic acid (PFHpA)	21.4	23.70	111	10	30	70-130	
Perfluorohexane Sulfonate (PFHxS)	20.2	20.79	103	7	30	70-135	
Perfluorononanoic acid (PFNA)	21.4	20.00	94	1	30	64-138	
Perfluorooctanesulfonic acid (PFOS)	20.4	20.31	100	5	30	70-130	
Perfluorooctanoic acid (PFOA)	21.4	23.24	109	9	30	70-131	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS DETECTION LIMIT CHECK STANDARD RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I01027.d

Lab ID: DLCK 280-340408/14 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	DLCK CONCENTRATION (ug/L)	DLCK % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.443	0.546	123	70-130	
Perfluoroheptanoic acid (PFHpA)	0.500	0.527	105	70-130	
Perfluorohexane Sulfonate (PFHxS)	0.473	0.586	124	70-130	
Perfluorononanoic acid (PFNA)	0.500	0.486	97	70-130	
Perfluorooctanesulfonic acid (PFOS)	0.478	0.583	122	70-130	
Perfluorooctanoic acid (PFOA)	0.500	0.467	93	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS DETECTION LIMIT CHECK STANDARD RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I07017.d

Lab ID: DLCK 280-341287/14 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	DLCK CONCENTRATION (ug/L)	DLCK % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.443	0.507	114	70-130	
Perfluoroheptanoic acid (PFHpA)	0.500	0.457	91	70-130	
Perfluorohexane Sulfonate (PFHxS)	0.473	0.569	120	70-130	
Perfluorononanoic acid (PFNA)	0.500	0.495	99	70-130	
Perfluorooctanesulfonic acid (PFOS)	0.478	0.554	116	70-130	
Perfluorooctanoic acid (PFOA)	0.500	0.447	89	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab File ID: PC516I02059.d Lab Sample ID: MB 280-339949/1-A

Matrix: Solid Date Extracted: 08/29/2016 13:40

Instrument ID: LC_LCMS5 Date Analyzed: 09/02/2016 22:11

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-339949/2-A	PC516I02060.d	09/02/2016 22:24
SB-PFC-MW3-0.5	280-87416-1	PC516I02061.d	09/02/2016 22:36
SB-PFC-MW3-2.5	280-87416-2	PC516I02062.d	09/02/2016 22:48
SB-PFC-MW3-21.0	280-87416-4	PC516I02063.d	09/02/2016 23:01
SB-PFC-MW3-46.0	280-87416-5	PC516I02064.d	09/02/2016 23:13
SB-PFC-MW2-3.0	280-87416-9	PC516I02066.d	09/02/2016 23:38
SB-PFC-MW4-3.0	280-87416-7	PC516I02067.d	09/02/2016 23:50
SB-PFC-MW4-3.0 MS	280-87416-7 MS	PC516I02068.d	09/03/2016 00:02
SB-PFC-MW4-3.0 MSD	280-87416-7 MSD	PC516I02069.d	09/03/2016 00:15
SB-PFC-MW4-0.5	280-87416-6	PC516I02070.d	09/03/2016 00:27

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab File ID: PC516I02016.d Lab Sample ID: MB 280-340544/1-A

Matrix: Water Date Extracted: 09/01/2016 19:29

Instrument ID: LC_LCMS5 Date Analyzed: 09/02/2016 13:22

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-340544/2-A	PC516I02017.d	09/02/2016 13:34
	LCSD 280-340544/3-A	PC516I02018.d	09/02/2016 13:46
MW-FB4	280-87416-3	PC516I02025.d	09/02/2016 15:13

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab File ID: PC516I08007.d Lab Sample ID: MB 280-340982/1-A

Matrix: Water Date Extracted: 09/07/2016 17:42

Instrument ID: LC_LCMS5 Date Analyzed: 09/08/2016 11:13

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-340982/2-A	PC516I08008.d	09/08/2016 11:25
	LCSD 280-340982/3-A	PC516I08009.d	09/08/2016 11:37
MW-FB5	280-87416-8	PC516I08015.d	09/08/2016 12:51

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab File ID: PC516I09105.d Lab Sample ID: MB 280-341407/1-A

Matrix: Water Date Extracted: 09/08/2016 22:13

Instrument ID: LC_LCMS5 Date Analyzed: 09/10/2016 02:07

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-341407/2-A	PC516I09106.d	09/10/2016 02:19
	LCSD 280-341407/3-A	PC516I09107.d	09/10/2016 02:31
MW-FB6	280-87416-10	PC516I09110.d	09/10/2016 03:08

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		BA		HXA		HXS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		13464230	4.04	9694930	5.67	1321868	6.11
UPPER LIMIT		20196345	4.54	14542395	6.17	1982802	6.61
LOWER LIMIT		6732115	3.54	4847465	5.17	660934	5.61
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-340408/12		13436888	4.10	9144106	5.71	1345512	6.13
ICV 280-340408/13		13429034	4.06	9552910	5.69	1479176	6.12
DLCK 280-340408/14		13030540	4.09	9393393	5.70	1348439	6.13
CCV 280-340829/3		13920328	4.31	8834920	5.92	1205707	6.35
MB 280-340544/1-A		21165070*	4.28	12358775	5.89	1939551	6.31
LCS 280-340544/2-A		17606729	4.08	12206841	5.71	1549466	6.14
LCSD 280-340544/3-A		18835182	4.12	12327966	5.79	1754705	6.22
CCV 280-340829/10		15995542	4.03	10200810	5.71	1289472	6.16
280-87416-3	MW-FB4	18922440	3.87	13817692	5.65	1837682	6.09
CCV 280-340829/17		13853830	4.11	9799975	5.79	1298185	6.23
CCV 280-340832/46		13930460	4.03	9863227	5.71	1316574	6.15
MB 280-339949/1-A		15474350	4.07	10890670	5.74	1600134	6.17
LCS 280-339949/2-A		15298070	4.06	11056928	5.72	1407796	6.16
280-87416-1	SB-PFC-MW3-0.5	14580338	4.08	10841745	5.76	1351191	6.19
280-87416-2	SB-PFC-MW3-2.5	14288457	4.06	10603029	5.72	1581571	6.16
280-87416-4	SB-PFC-MW3-21.0	14354573	4.05	12260899	5.73	1431450	6.15
280-87416-5	SB-PFC-MW3-46.0	15055009	4.23	10164436	5.83	1621521	6.25
CCV 280-340832/53		15428447	4.27	9609778	5.89	1368372	6.30
280-87416-9	SB-PFC-MW2-3.0	15253410	4.19	10303124	5.83	1561039	6.26
280-87416-7	SB-PFC-MW4-3.0	15018976	4.12	10709244	5.78	1688350	6.22
280-87416-7 MS	SB-PFC-MW4-3.0 MS	14503727	4.18	9906449	5.83	1431149	6.26
280-87416-7 MSD	SB-PFC-MW4-3.0 MSD	13786346	4.03	10064910	5.72	1351646	6.16
280-87416-6	SB-PFC-MW4-0.5	15909333	4.07	12858554	5.74	1720169	6.19
CCV 280-340832/59		15687503	4.07	9955736	5.74	1425689	6.18

BA = 13C4 PFBA (IS)
HXA = 13C2 PFHxA (IS)
HXS = 18O2 PFHxS (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		OA		PFOS		NA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		15298098	6.45	4615963	6.72	11257964	6.74
UPPER LIMIT		22947147	6.95	6923945	7.22	16886946	7.24
LOWER LIMIT		7649049	5.95	2307982	6.22	5628982	6.24
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-340408/12		14634188	6.47	4418635	6.75	11184421	6.76
ICV 280-340408/13		15295609	6.46	4679676	6.73	11435309	6.75
DLCK 280-340408/14		15470974	6.46	4522509	6.74	11919948	6.75
CCV 280-340829/3		13658780	6.69	4339570	6.96	10246704	6.97
MB 280-340544/1-A		18877147	6.64	6169209	6.90	14488475	6.92
LCS 280-340544/2-A		17060212	6.47	5742336	6.74	13504779	6.76
LCSD 280-340544/3-A		17526288	6.56	6034649	6.82	13389044	6.84
CCV 280-340829/10		16279989	6.51	4809420	6.78	12267200	6.79
280-87416-3	MW-FB4	19062417	6.44	6133688	6.71	15484501	6.73
CCV 280-340829/17		14593543	6.57	4388483	6.84	10481250	6.86
CCV 280-340832/46		16668237	6.49	4878915	6.75	12162873	6.77
MB 280-339949/1-A		16758877	6.50	5570191	6.77	13408538	6.79
LCS 280-339949/2-A		16609719	6.49	5631629	6.75	13670724	6.77
280-87416-1	SB-PFC-MW3-0.5	16325014	6.52	5584548	6.78	13007730	6.79
280-87416-2	SB-PFC-MW3-2.5	17289800	6.49	6031071	6.76	13967824	6.78
280-87416-4	SB-PFC-MW3-21.0	16131246	6.48	5616426	6.75	12959882	6.76
280-87416-5	SB-PFC-MW3-46.0	16374080	6.58	5637391	6.85	12348219	6.87
CCV 280-340832/53		15290501	6.63	4983044	6.89	11553612	6.91
280-87416-9	SB-PFC-MW2-3.0	16154660	6.60	5784312	6.87	12881484	6.89
280-87416-7	SB-PFC-MW4-3.0	16378409	6.57	5773593	6.84	13554458	6.85
280-87416-7 MS	SB-PFC-MW4-3.0 MS	15668998	6.59	5374480	6.87	12022859	6.89
280-87416-7 MSD	SB-PFC-MW4-3.0 MSD	14522084	6.51	5316753	6.78	12198675	6.80
280-87416-6	SB-PFC-MW4-0.5	18433699	6.54	6494002	6.81	15833345	6.83
CCV 280-340832/59		16835415	6.52	5434648	6.79	12398815	6.81

OA = 13C4 PFOA (IS)
PFOS = 13C4 PFOS (IS)
NA = 13C5 PFNA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		DA		UNA		DOA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		10948088	6.98	6568063	7.19	14160405	7.37
UPPER LIMIT		16422132	7.48	9852095	7.69	21240608	7.87
LOWER LIMIT		5474044	6.48	3284032	6.69	7080203	6.87
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-340408/12		10147410	7.01	5810271	7.22	14209759	7.40
ICV 280-340408/13		11281711	7.00	6290686	7.21	13421168	7.38
DLCK 280-340408/14		10465958	7.00	6264106	7.22	14186021	7.38
CCV 280-340829/3		9705720	7.21	5455225	7.40	12604409	7.57
MB 280-340544/1-A		13609317	7.17	7308110	7.37	13947110	7.53
LCS 280-340544/2-A		12816337	7.01	7402956	7.22	12365149	7.39
LCSD 280-340544/3-A		13616496	7.07	7169778	7.28	13274300	7.46
CCV 280-340829/10		11207137	7.05	6554617	7.25	14657036	7.43
280-87416-3	MW-FB4	15341365	6.98	12480690*	7.19	22722731*	7.37
CCV 280-340829/17		10335908	7.10	5545895	7.30	13412616	7.47
CCV 280-340832/46		11722750	7.02	7021149	7.22	15892614	7.39
MB 280-339949/1-A		12567482	7.03	7487816	7.22	16269602	7.41
LCS 280-339949/2-A		13189000	7.02	7857025	7.22	16597730	7.40
280-87416-1	SB-PFC-MW3-0.5	13208343	7.04	7933726	7.23	17957086	7.41
280-87416-2	SB-PFC-MW3-2.5	13819416	7.03	9469603	7.22	21152029	7.40
280-87416-4	SB-PFC-MW3-21.0	12957720	7.01	8175062	7.22	20548487	7.39
280-87416-5	SB-PFC-MW3-46.0	11825028	7.11	7603104	7.31	17750074	7.49
CCV 280-340832/53		11607510	7.15	6512319	7.36	14718016	7.54
280-87416-9	SB-PFC-MW2-3.0	12541337	7.13	8112435	7.34	16115581	7.52
280-87416-7	SB-PFC-MW4-3.0	12745404	7.09	7763088	7.31	17142521	7.49
280-87416-7 MS	SB-PFC-MW4-3.0 MS	11927193	7.13	7421719	7.34	15384211	7.52
280-87416-7 MSD	SB-PFC-MW4-3.0 MSD	11903744	7.05	7085042	7.26	15612708	7.45
280-87416-6	SB-PFC-MW4-0.5	14939242	7.07	9487390	7.27	22006101*	7.45
CCV 280-340832/59		11888240	7.05	7590998	7.27	15852735	7.45

DA = 13C2 PFDA (IS)
UNA = 13C2 PFUnA (IS)
DOA = 13C2 PFDoA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calibration End Date: 09/01/2016 12:33

Calibration ID: 26894

		FOSA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		16144214	7.52				
UPPER LIMIT		24216321	8.02				
LOWER LIMIT		8072107	7.02				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-340408/12		15871820	7.55				
ICV 280-340408/13		16142109	7.53				
DLCK 280-340408/14		16451357	7.53				
CCV 280-340829/3		14898802	7.72				
MB 280-340544/1-A		888206*	7.68				
LCS 280-340544/2-A		960815*	7.54				
LCSD 280-340544/3-A		675248*	7.62				
CCV 280-340829/10		16308479	7.60				
280-87416-3	MW-FB4	448313*	7.53				
CCV 280-340829/17		15109468	7.66				
CCV 280-340832/46		16999138	7.57				
MB 280-339949/1-A		18499369	7.57				
LCS 280-339949/2-A		19538285	7.55				
280-87416-1	SB-PFC-MW3-0.5	18704030	7.56				
280-87416-2	SB-PFC-MW3-2.5	16342791	7.55				
280-87416-4	SB-PFC-MW3-21.0	17938368	7.54				
280-87416-5	SB-PFC-MW3-46.0	18590412	7.56				
CCV 280-340832/53		16612920	7.62				
280-87416-9	SB-PFC-MW2-3.0	19409347	7.61				
280-87416-7	SB-PFC-MW4-3.0	19675095	7.58				
280-87416-7 MS	SB-PFC-MW4-3.0 MS	17815670	7.61				
280-87416-7 MSD	SB-PFC-MW4-3.0 MSD	18731275	7.53				
280-87416-6	SB-PFC-MW4-0.5	21344819	7.54				
CCV 280-340832/59		18496771	7.54				

FOSA = 13C8 FOSA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/07/2016 13:06

GC Column: Gemini-NX ID: Calibration End Date: 09/07/2016 14:44

Calibration ID: 26932

		BA		HXA		HXS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		15913415	3.99	10962723	5.67	1619814	6.12
UPPER LIMIT		23870123	4.49	16444085	6.17	2429721	6.62
LOWER LIMIT		7956708	3.49	5481362	5.17	809907	5.62
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-341287/12		16017006	4.00	10765324	5.69	1637333	6.12
ICV 280-341287/13		17317387	3.98	11389614	5.67	1622000	6.11
DLCK 280-341287/14		16336502	3.99	11534689	5.68	1563772	6.12
CCV 280-341350/3		17402131	4.05	11493273	5.72	1726572	6.17
MB 280-340982/1-A		19081537	3.90	12834476	5.65	1715193	6.09
LCS 280-340982/2-A		17285608	3.87	11851243	5.64	1634883	6.08
LCSD 280-340982/3-A		17973002	3.83	11805889	5.61	1723375	6.06
280-87416-8	MW-FB5	20503894	3.81	14972386	5.58	1929756	6.04
CCV 280-341350/13		15964329	3.89	11516511	5.62	1700938	6.06
CCV 280-341622/3		17540729	3.87	10231616	5.59	1788591	6.04
MB 280-341407/1-A		26998770*	3.77	14571622	5.55	2403700	6.00
LCS 280-341407/2-A		25726637*	3.76	15070484	5.54	2281805	5.99
LCSD 280-341407/3-A		26803216*	3.76	15593017	5.53	2539507*	5.98
280-87416-10	MW-FB6	24515535*	3.74	14594277	5.53	2258369	5.98
CCV 280-341622/12		19033308	3.82	11642952	5.54	1826901	5.99

BA = 13C4 PFBA (IS)
HXA = 13C2 PFHxA (IS)
HXS = 18O2 PFHxS (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/07/2016 13:06

GC Column: Gemini-NX ID: Calibration End Date: 09/07/2016 14:44

Calibration ID: 26932

		OA		PFOS		NA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		17617058	6.46	6024131	6.73	12912380	6.75
UPPER LIMIT		26425587	6.96	9036197	7.23	19368570	7.25
LOWER LIMIT		8808529	5.96	3012066	6.23	6456190	6.25
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-341287/12		17164350	6.46	5695643	6.73	12902291	6.75
ICV 280-341287/13		18268218	6.45	6403036	6.72	13469612	6.74
DLCK 280-341287/14		18197619	6.46	5971958	6.73	13148607	6.75
CCV 280-341350/3		17503702	6.52	6307217	6.79	13896611	6.81
MB 280-340982/1-A		19036766	6.44	6846115	6.71	15410564	6.73
LCS 280-340982/2-A		16615648	6.42	5921228	6.71	13477569	6.73
LCSD 280-340982/3-A		17032750	6.40	6041614	6.68	13494012	6.70
280-87416-8	MW-FB5	21311972	6.38	7288730	6.66	16493869	6.68
CCV 280-341350/13		20251630	6.40	6433060	6.68	14692280	6.70
CCV 280-341622/3		17721363	6.38	6991760	6.65	14541305	6.66
MB 280-341407/1-A		23852744	6.34	8962441	6.61	20806045*	6.63
LCS 280-341407/2-A		23496629	6.33	9079604*	6.61	20506440*	6.62
LCSD 280-341407/3-A		24486090	6.32	9404525*	6.60	21273477*	6.62
280-87416-10	MW-FB6	22048171	6.31	7322856	6.59	18158564	6.60
CCV 280-341622/12		20447288	6.34	6966707	6.61	16471444	6.63

OA = 13C4 PFOA (IS)
PFOS = 13C4 PFOS (IS)
NA = 13C5 PFNA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/07/2016 13:06

GC Column: Gemini-NX ID: Calibration End Date: 09/07/2016 14:44

Calibration ID: 26932

		DA		UNA		DOA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		13350742	7.00	7479611	7.21	17076070	7.39
UPPER LIMIT		20026113	7.50	11219417	7.71	25614105	7.89
LOWER LIMIT		6675371	6.50	3739806	6.71	8538035	6.89
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-341287/12		13214108	7.01	7849770	7.22	16943794	7.39
ICV 280-341287/13		13741680	7.00	7906065	7.21	18351451	7.38
DLCK 280-341287/14		12717440	7.00	7921223	7.22	17488494	7.40
CCV 280-341350/3		13886873	7.05	8460016	7.27	18675428	7.45
MB 280-340982/1-A		15516774	6.98	8768845	7.20	15045296	7.38
LCS 280-340982/2-A		14154694	6.97	7665528	7.19	14076265	7.38
LCSD 280-340982/3-A		13648165	6.95	7515425	7.16	13829641	7.35
280-87416-8	MW-FB5	16987810	6.92	10958533	7.13	23364954	7.32
CCV 280-341350/13		14181655	6.94	8500393	7.16	19160587	7.34
CCV 280-341622/3		14546422	6.90	9044377	7.11	18993623	7.29
MB 280-341407/1-A		19300483	6.87	9755855	7.09	16377972	7.27
LCS 280-341407/2-A		19832820	6.87	11023360	7.08	19363963	7.26
LCSD 280-341407/3-A		19914256	6.87	11702618*	7.08	18848175	7.26
280-87416-10	MW-FB6	17066800	6.86	9346165	7.06	16724239	7.25
CCV 280-341622/12		16106123	6.87	10249471	7.08	20925617	7.26

DA = 13C2 PFDA (IS)
UNA = 13C2 PFUnA (IS)
DOA = 13C2 PFDoA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/07/2016 13:06

GC Column: Gemini-NX ID: Calibration End Date: 09/07/2016 14:44

Calibration ID: 26932

		FOSA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		18128911	7.52				
UPPER LIMIT		27193367	8.02				
LOWER LIMIT		9064456	7.02				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-341287/12		18085770	7.52				
ICV 280-341287/13		18576700	7.51				
DLCK 280-341287/14		18225084	7.52				
CCV 280-341350/3		18076103	7.51				
MB 280-340982/1-A		551473*	7.48				
LCS 280-340982/2-A		596768*	7.48				
LCSD 280-340982/3-A		427793*	7.46				
280-87416-8	MW-FB5	701355*	7.47				
CCV 280-341350/13		18618901	7.49				
CCV 280-341622/3		20361835	7.46				
MB 280-341407/1-A		398122*	7.44				
LCS 280-341407/2-A		418388*	7.44				
LCSD 280-341407/3-A		438079*	7.43				
280-87416-10	MW-FB6	480024*	7.43				
CCV 280-341622/12		21673677	7.44				

FOSA = 13C8 FOSA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: SB-PFC-MW3-0.5 | Lab Sample ID: 280-87416-1

Matrix: Solid | Lab File ID: PC516I02061.d

Analysis Method: DV-LC-0012 | Date Collected: 08/19/2016 08:13

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.00(g) | Date Analyzed: 09/02/2016 22:36

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 3.0 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.14	U	0.82	0.14
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.26	J	0.82	0.12
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.45	J	0.82	0.29
375-95-1	Perfluorononanoic acid (PFNA)	0.23	U	0.82	0.23
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	5.62		0.82	0.14
335-67-1	Perfluorooctanoic acid (PFOA)	0.24	U	0.82	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	125		57-153
STL01054	13C8 PFOS	104		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02061.d
Lims ID: 280-87416-A-1-A Lab Sample ID: 280-87416-1
Client ID: SB-PFC-MW3-0.5
Sample Type: Client
Inject. Date: 02-Sep-2016 22:36:34 ALS Bottle#: 0 Worklist Smp#: 49
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-1-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:33:54 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:58:54

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.077	4.029	0.048		14580338	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.241				ND			
298.9 > 98.9		5.241							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.762	5.705	0.057		10841745	10.0			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.168	6.140	0.028	0.997	127342	0.2180			
398.9 > 98.9	6.234	6.140	0.094	1.008	58892		2.16(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.178	6.140	0.038	0.948	196034	0.1282			
363.0 > 168.9	6.178	6.140	0.038	0.948	46765		4.19(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.187	6.149	0.038		1351191	9.46			
$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.489	0.019	0.999	13708870	12.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.489	0.029		16325014	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.489				ND			
413.0 > 169.0		6.489							
$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.752	0.028	1.000	3250210	9.68			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.771	6.752	0.019	0.999	1591113	2.73			R
498.9 > 98.9	6.771	6.752	0.019	0.999	536921		2.96(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.752	0.029		5584548	9.56			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.772	0.019		13007730	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.772				ND			
463.0 > 218.9		6.772							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.016	0.019		13208343	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.215	0.019		7933726	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.412	7.393	0.019		17957086	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.557	7.567	-0.010		18704030	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

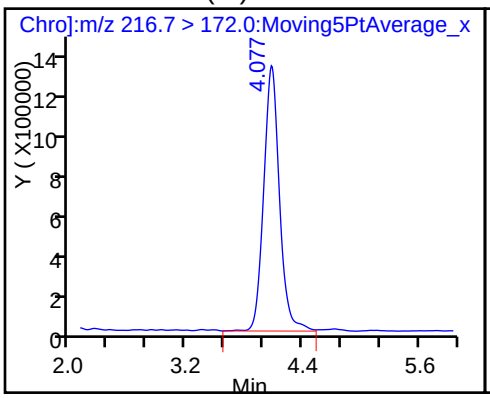
Report Date: 06-Sep-2016 08:34:10 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

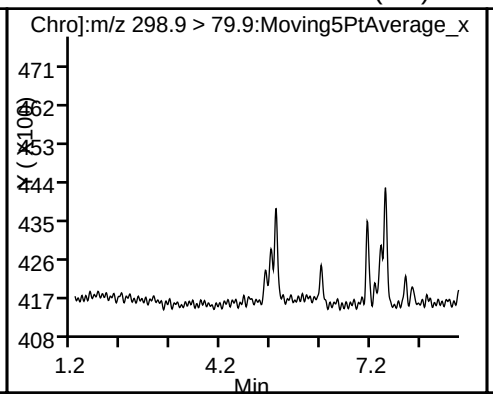
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02061.d

Injection Date:	02-Sep-2016 22:36:34	Instrument ID:	LC_LCMS5		
Lims ID:	280-87416-A-1-A	Lab Sample ID:	280-87416-1		
Client ID:	SB-PFC-MW3-0.5				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	49
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

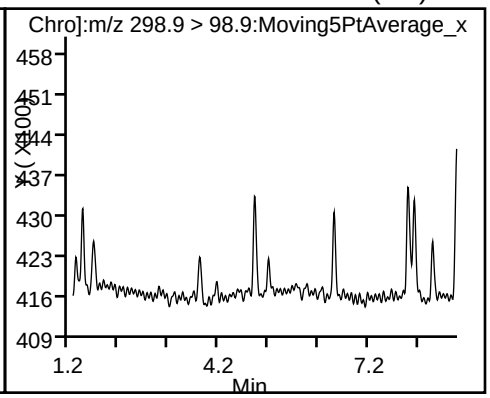
* 1 13C4 PFBA (IS)



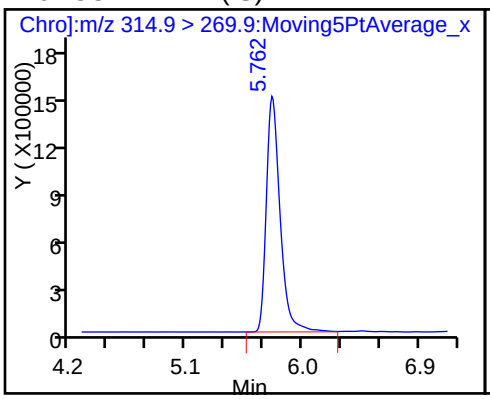
4 Perfluorobutane Sulfonate (ND)



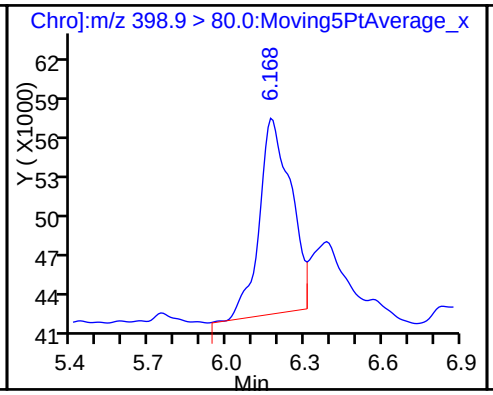
4 Perfluorobutane Sulfonate (ND)



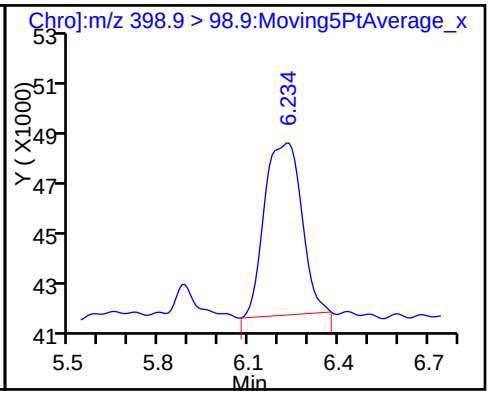
* 6 13C2 PFHxA (IS)



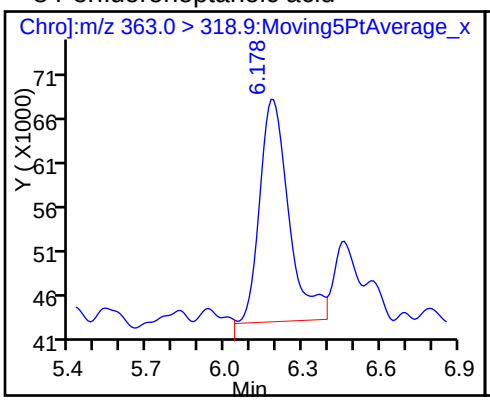
10 Perfluorohexane Sulfonate



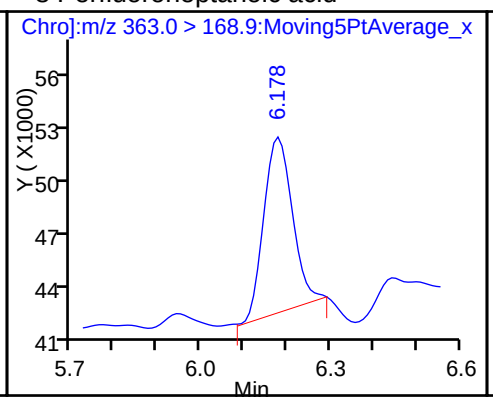
10 Perfluorohexane Sulfonate



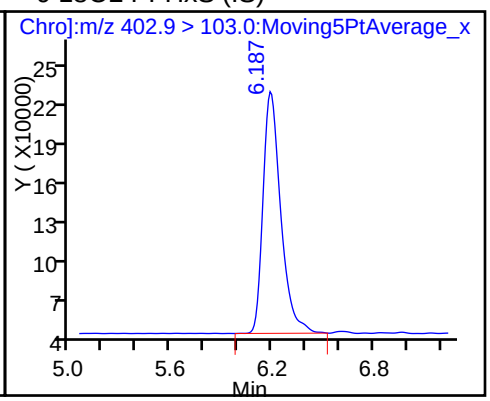
8 Perfluoroheptanoic acid



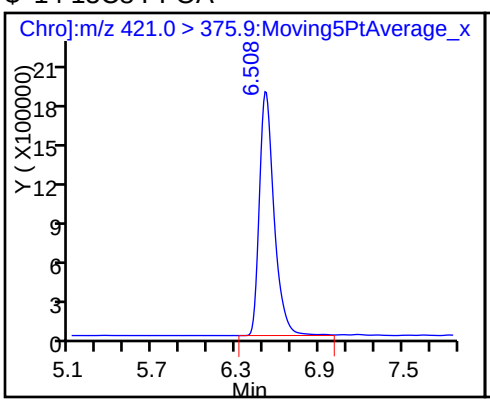
8 Perfluoroheptanoic acid



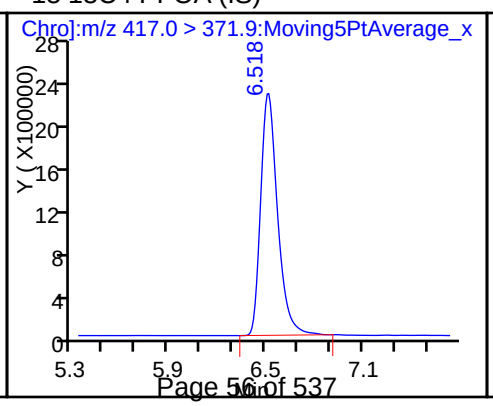
* 9 18O2 PFHxS (IS)



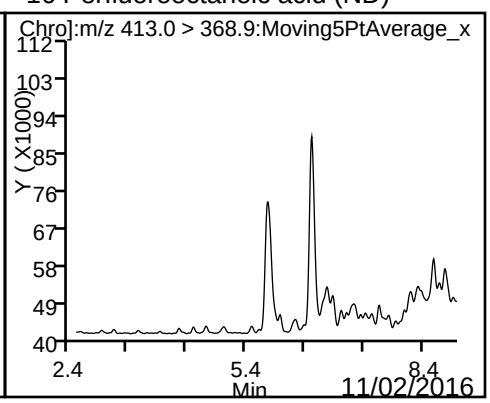
$ 14 13C8 PFOA



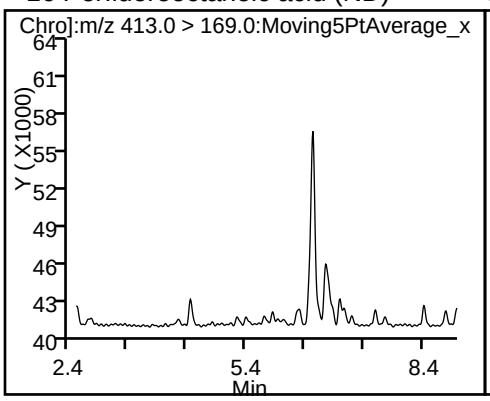
* 15 13C4 PFOA (IS)



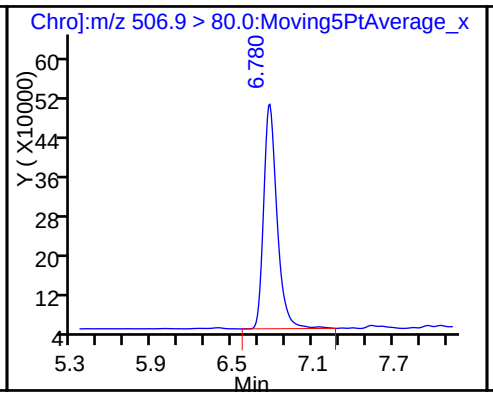
16 Perfluorooctanoic acid (ND)



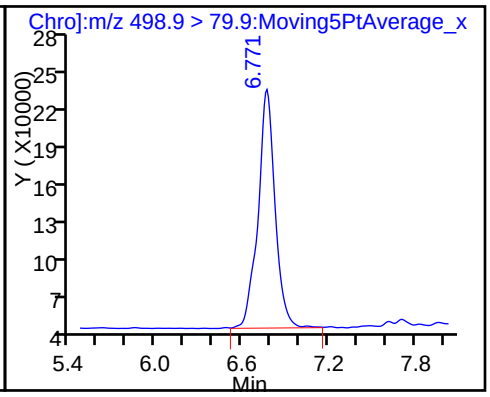
16 Perfluorooctanoic acid (ND)



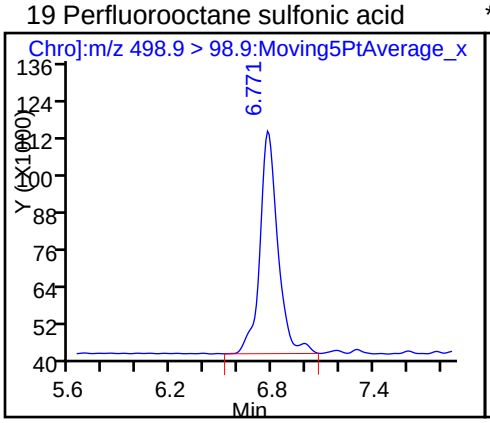
$ 18 13C8 PFOS



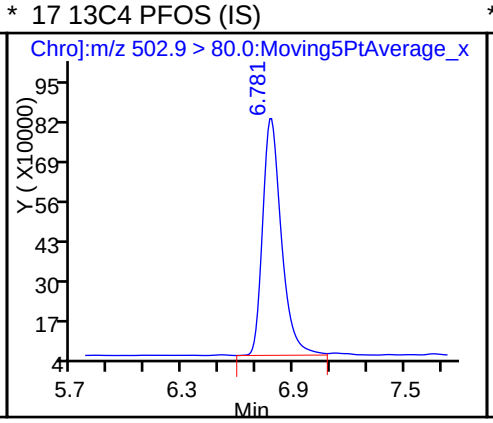
19 Perfluorooctane sulfonic acid



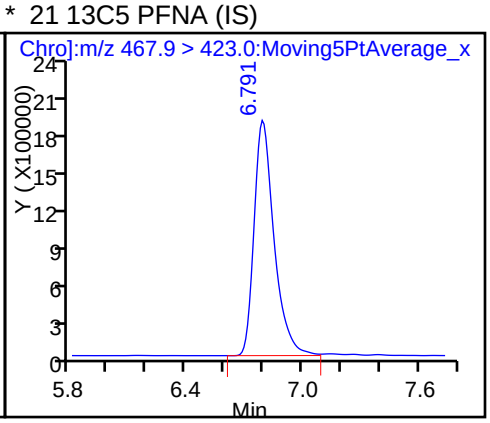
19 Perfluorooctane sulfonic acid



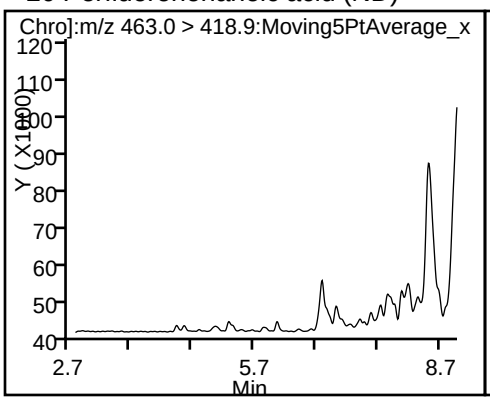
* 17 13C4 PFOS (IS)



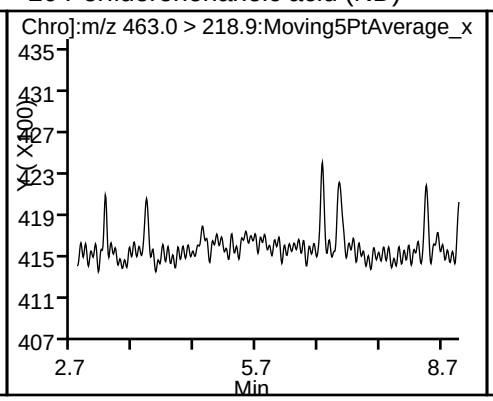
* 21 13C5 PFNA (IS)



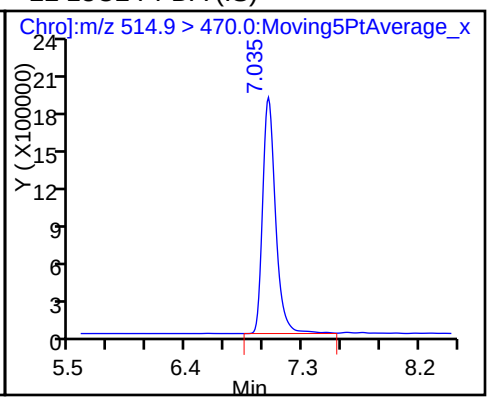
20 Perfluorononanoic acid (ND)



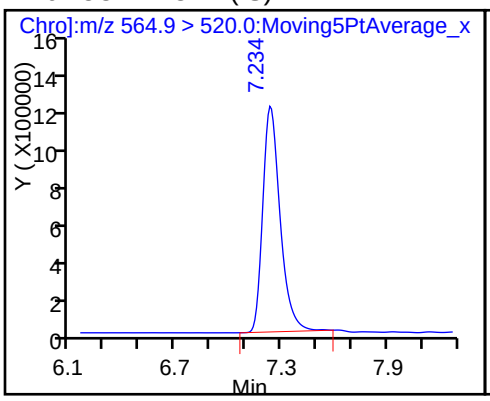
20 Perfluorononanoic acid (ND)



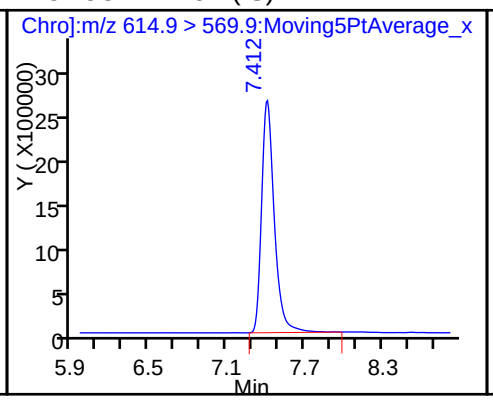
* 22 13C2 PFDA (IS)



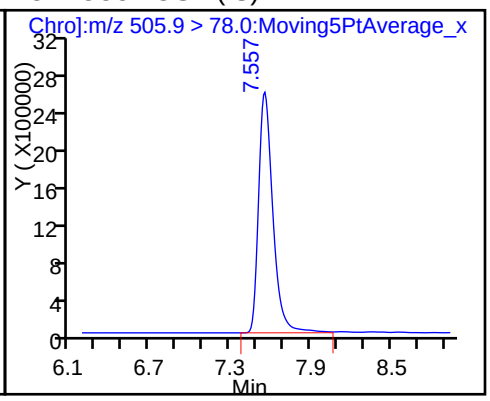
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: SB-PFC-MW3-2.5 | Lab Sample ID: 280-87416-2

Matrix: Solid | Lab File ID: PC516I02062.d

Analysis Method: DV-LC-0012 | Date Collected: 08/19/2016 08:30

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.01(g) | Date Analyzed: 09/02/2016 22:48

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 9.9 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.16	U	0.89	0.16
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.13	U	0.89	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.45	J	0.89	0.31
375-95-1	Perfluorononanoic acid (PFNA)	0.24	U	0.89	0.24
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.02		0.89	0.16
335-67-1	Perfluorooctanoic acid (PFOA)	0.25	U	0.89	0.25

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	123		57-153
STL01054	13C8 PFOS	103		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02062.d
Lims ID: 280-87416-A-2-A Lab Sample ID: 280-87416-2
Client ID: SB-PFC-MW3-2.5
Sample Type: Client
Inject. Date: 02-Sep-2016 22:48:51 ALS Bottle#: 0 Worklist Smp#: 50
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:33:54 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:59:17

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.029	0.029		14288457	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.241				ND			
298.9 > 98.9		5.241							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.705	0.019		10603029	10.0			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.168	6.140	0.028	1.002	138955	0.2029			R
398.9 > 98.9	6.168	6.140	0.028	1.002	26819		5.18(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.140				ND			
363.0 > 168.9		6.140							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.149	0.009		1581571	9.46			
$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.489	0.0	1.000	14245968	12.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.489	0.0		17289800	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.489				ND			
413.0 > 169.0		6.489							
$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.752	0.009	1.000	3472443	9.58			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.752	6.752	0.0	0.999	835736	1.36			R
498.9 > 98.9	6.762	6.752	0.010	1.000	231517		3.61(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.752	0.010		6031071	9.56			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.782	6.772	0.010		13967824	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.772				ND			
463.0 > 218.9		6.772							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.016	0.010		13819416	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.215	0.009		9469603	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.403	7.393	0.010		21152029	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.548	7.567	-0.019		16342791	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

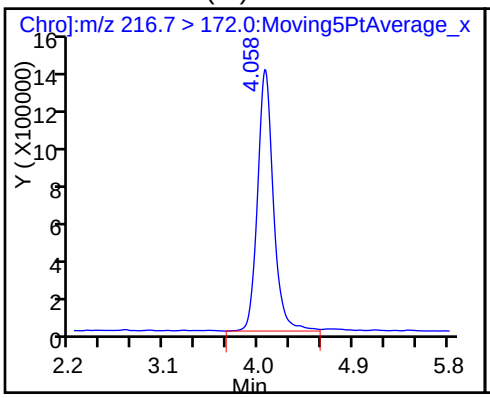
Report Date: 06-Sep-2016 08:34:15 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

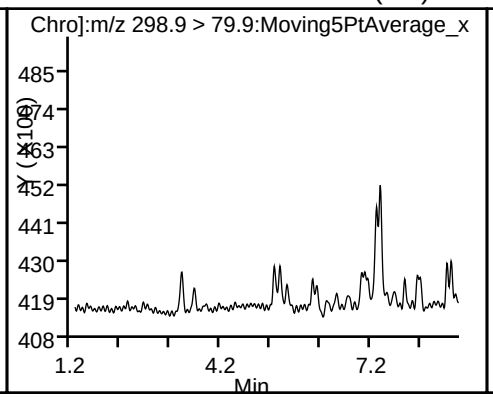
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02062.d

Injection Date:	02-Sep-2016 22:48:51	Instrument ID:	LC_LCMS5		
Lims ID:	280-87416-A-2-A	Lab Sample ID:	280-87416-2		
Client ID:	SB-PFC-MW3-2.5				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	50
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

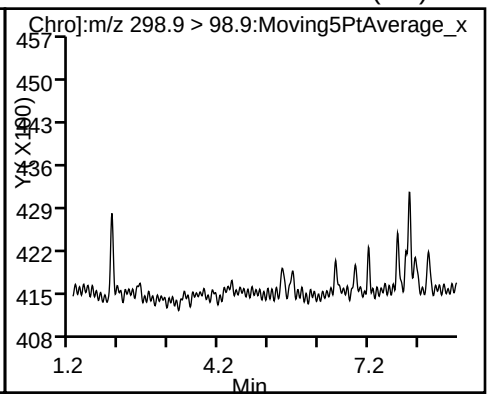
* 1 13C4 PFBA (IS)



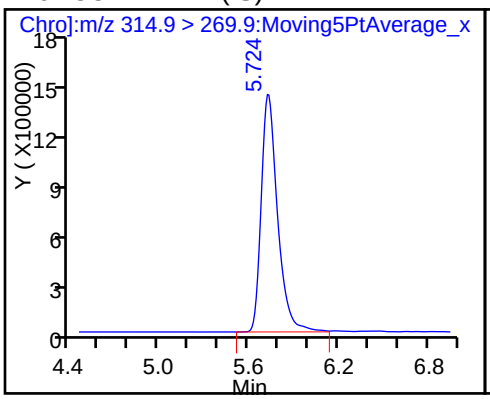
4 Perfluorobutane Sulfonate (ND)



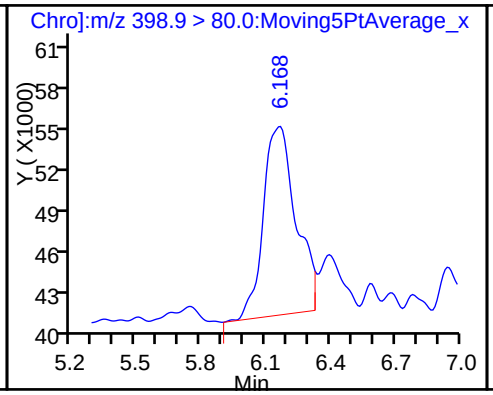
4 Perfluorobutane Sulfonate (ND)



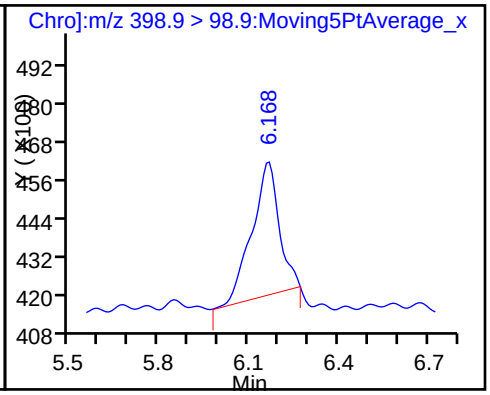
* 6 13C2 PFHxA (IS)



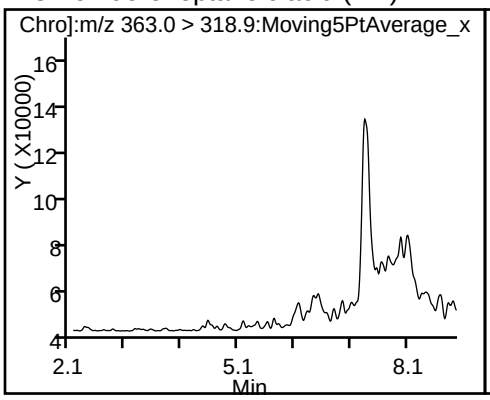
10 Perfluorohexane Sulfonate



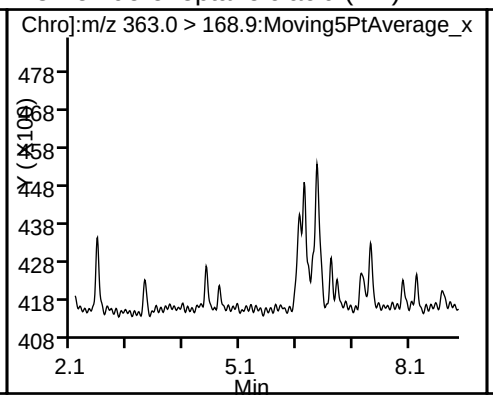
10 Perfluorohexane Sulfonate



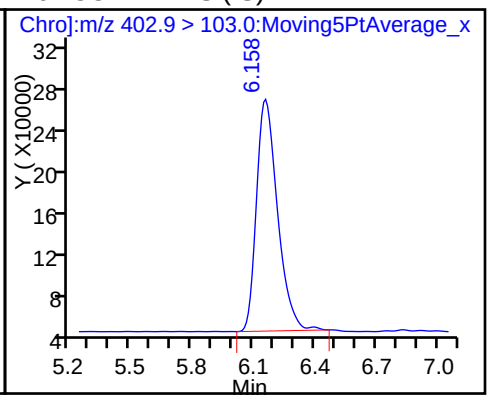
8 Perfluoroheptanoic acid (ND)



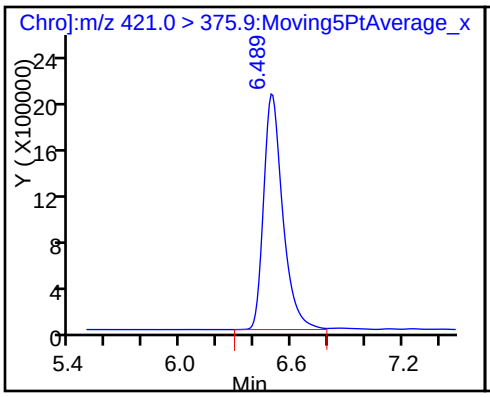
8 Perfluoroheptanoic acid (ND)



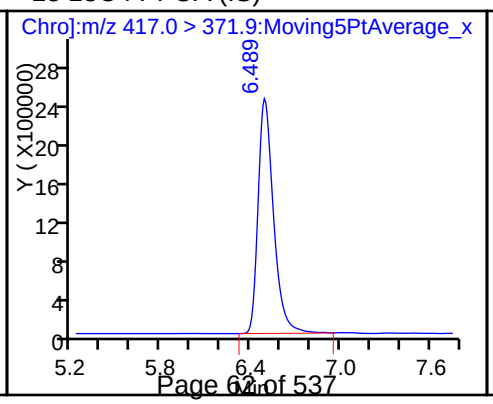
* 9 18O2 PFHxS (IS)



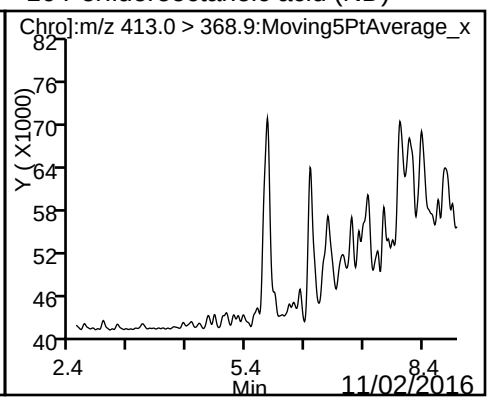
$ 14 13C8 PFOA



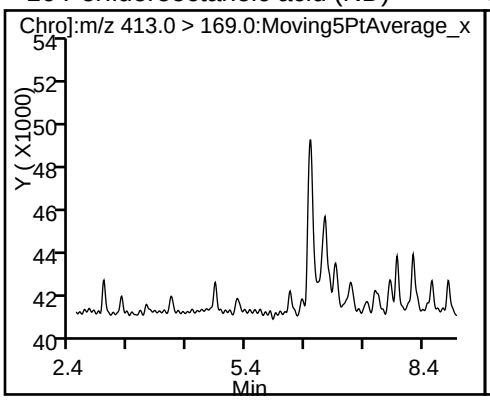
* 15 13C4 PFOA (IS)



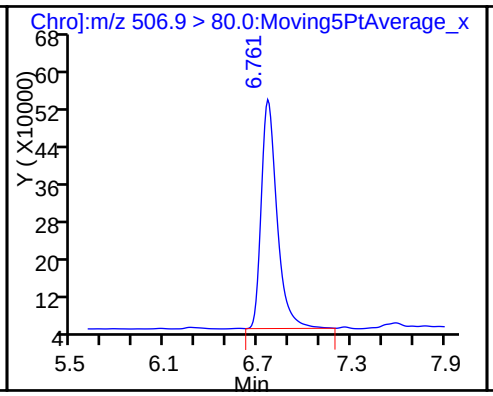
16 Perfluorooctanoic acid (ND)



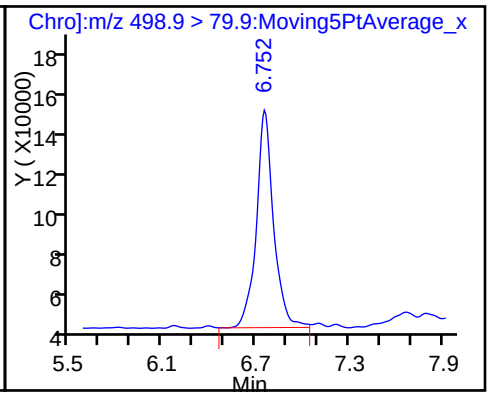
16 Perfluorooctanoic acid (ND)



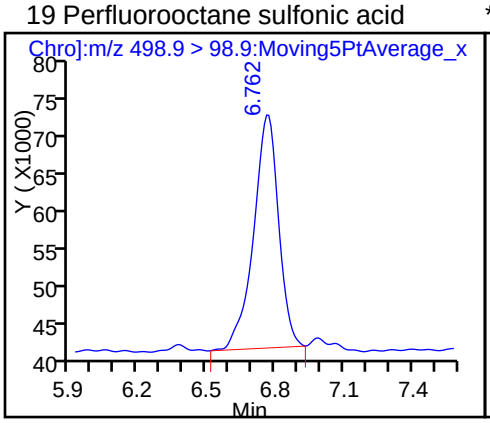
$ 18 13C8 PFOS



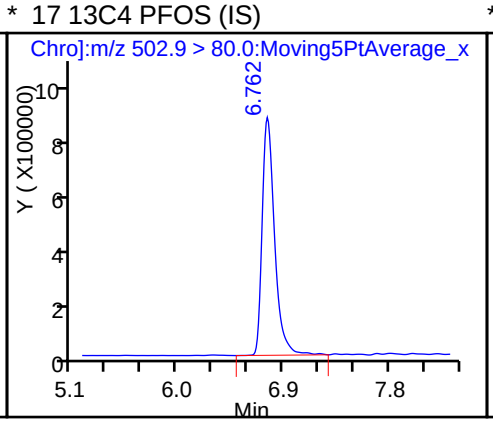
19 Perfluorooctane sulfonic acid



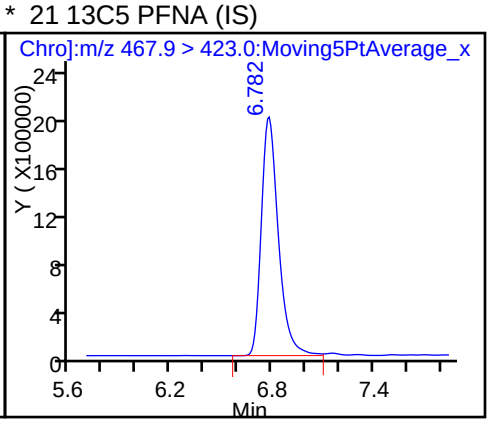
19 Perfluorooctane sulfonic acid



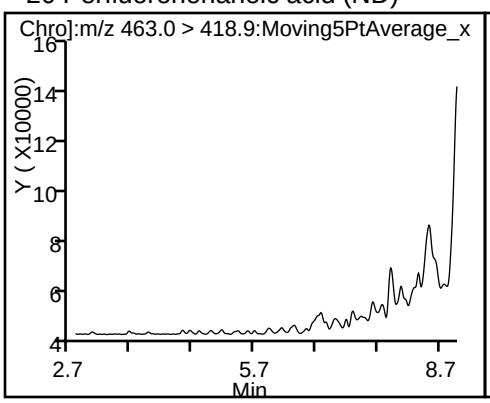
* 17 13C4 PFOS (IS)



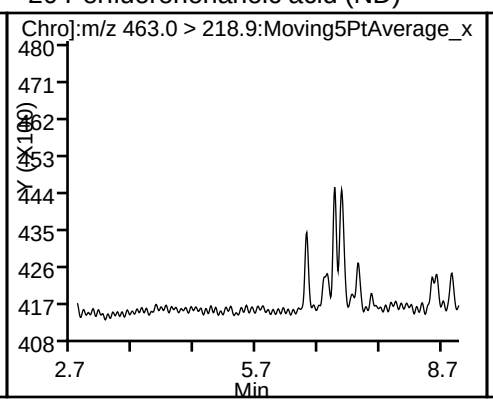
* 21 13C5 PFNA (IS)



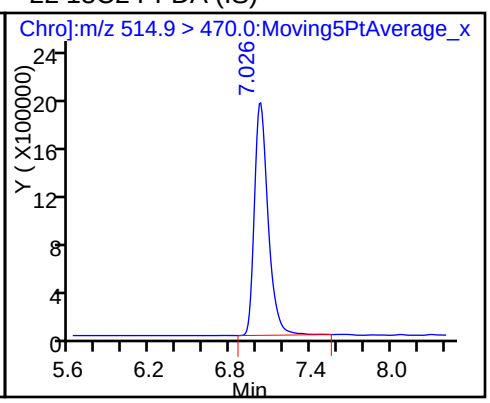
20 Perfluorononanoic acid (ND)



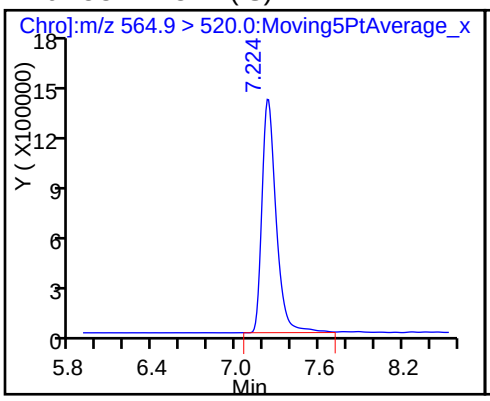
20 Perfluorononanoic acid (ND)



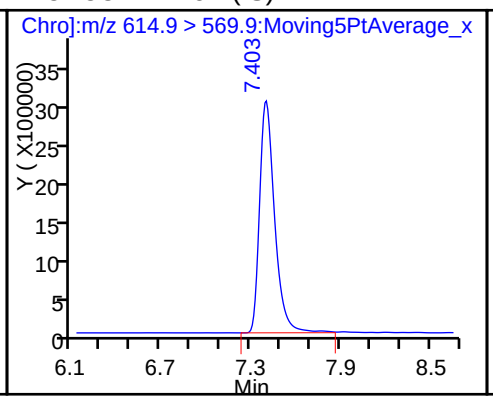
* 22 13C2 PFDA (IS)



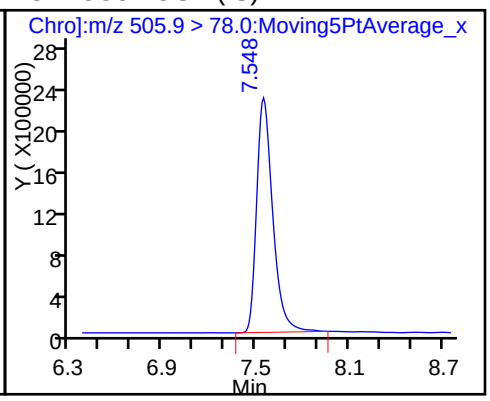
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: MW-FB4 | Lab Sample ID: 280-87416-3

Matrix: Water | Lab File ID: PC516I02025.d

Analysis Method: DV-LC-0012 | Date Collected: 08/19/2016 08:46

Extraction Method: 3535 | Date Extracted: 09/01/2016 19:29

Sample wt/vol: 247.7(mL) | Date Analyzed: 09/02/2016 15:13

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340829 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0083	U	0.020	0.0083
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.018	U	0.040	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	122		60-155
STL01054	13C8 PFOS	107		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02025.d
Lims ID: 280-87416-A-3-A Lab Sample ID: 280-87416-3
Client ID: MW-FB4
Sample Type: Client
Inject. Date: 02-Sep-2016 15:13:05 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:46 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:33:47

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.868	4.029	-0.161		18922440	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		4.030				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.128				ND			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.260				ND			
298.9 > 98.9		5.260							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.260				ND			
298.9 > 98.9		5.260							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.648	5.714	-0.066		13817692	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.724				ND			
313.0 > 118.6		5.724							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.092	6.158	-0.066		1837682	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.159				ND			
398.9 > 98.9		6.159							
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.054	6.159	-0.105	0.994	65173	0.0789			R
398.9 > 98.9	6.121	6.159	-0.038	1.005	5205		12.52(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.150				ND			
363.0 > 168.9		6.150							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.498				ND			
449.0 > 98.9		6.498							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.498				ND			
449.0 > 98.9		6.498							
$ 14 13C8 PFOA									
421.0 > 375.9	6.432	6.508	-0.076	0.998	15660551	12.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.508	-0.066		19062417	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.508				ND			
413.0 > 169.0		6.508							
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.781				ND			
498.9 > 98.9		6.781							
$ 18 13C8 PFOS									
506.9 > 80.0	6.714	6.780	-0.066	1.000	3649809	9.90			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.781	-0.067		6133688	9.56			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.791	-0.057		15484501	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.801				ND			
463.0 > 218.9		6.801							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	7.045	-0.067		15341365	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.036				ND			
513.0 > 219.0		7.036							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.224				ND			
598.9 > 99.0		7.224							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.224				ND			
598.9 > 99.0		7.224							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.253	-0.066		12480690	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.243				ND			
563.0 > 268.9		7.243							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.431	-0.066		22722731	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.432				ND			
613.0 > 168.9		7.432							
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.573				ND			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.595	-0.066		448313	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.587	-0.067	0.999	8397	0.1642			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.705				ND			
712.9 > 169.0		7.705							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND
R - Failed Signal Ratio Test
s - Failed ISTD Recovery Test

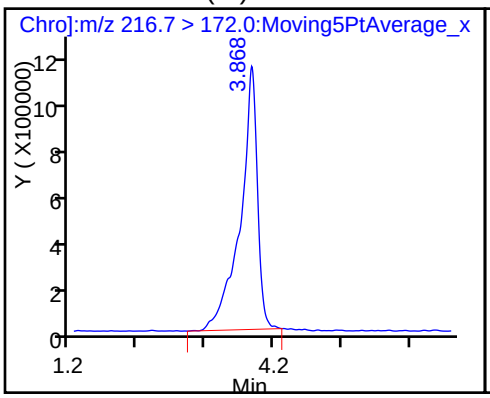
Report Date: 06-Sep-2016 08:22:54 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

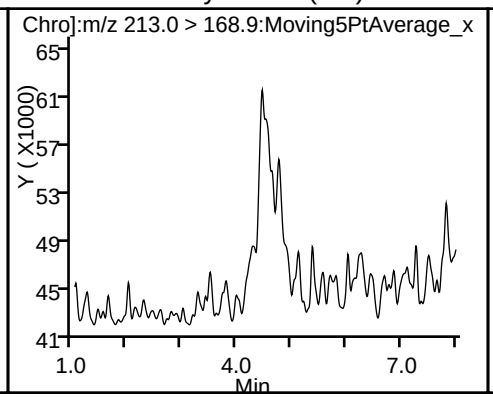
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02025.d

Injection Date:	02-Sep-2016 15:13:05	Instrument ID:	LC_LCMS5		
Lims ID:	280-87416-A-3-A	Lab Sample ID:	280-87416-3		
Client ID:	MW-FB4				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

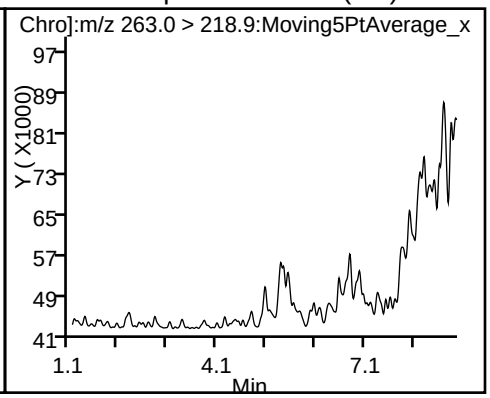
* 1 13C4 PFBA (IS)



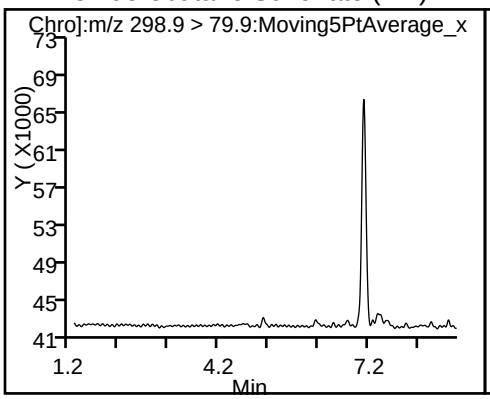
2 Perfluorobutyric acid (ND)



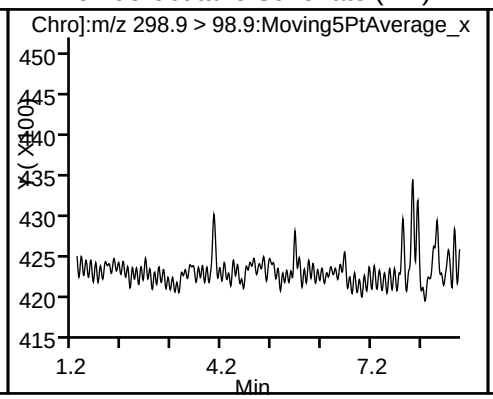
3 Perfluoropentanoic acid (ND)



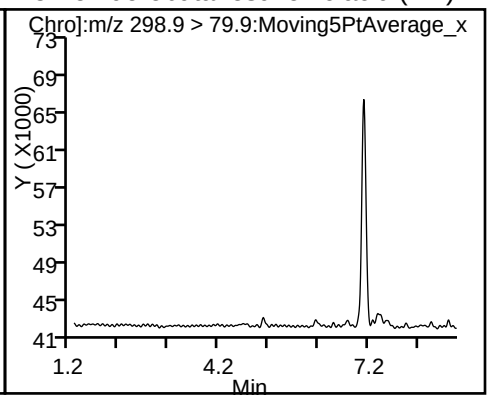
4 Perfluorobutane Sulfonate (ND)



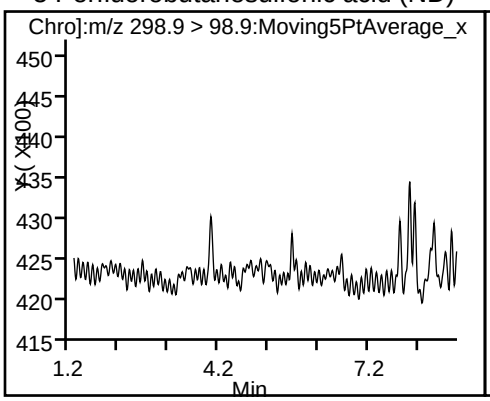
4 Perfluorobutane Sulfonate (ND)



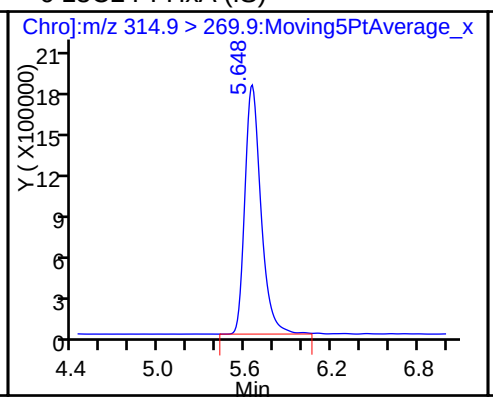
5 Perfluorobutanesulfonic acid (ND)



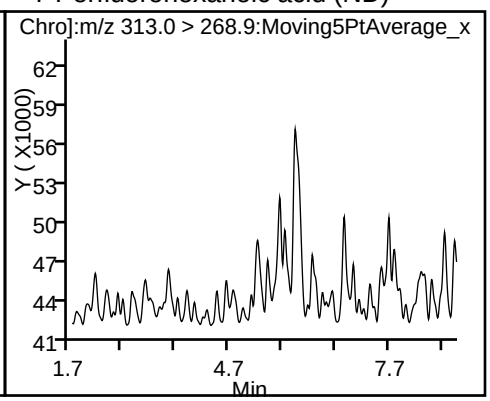
5 Perfluorobutanesulfonic acid (ND)



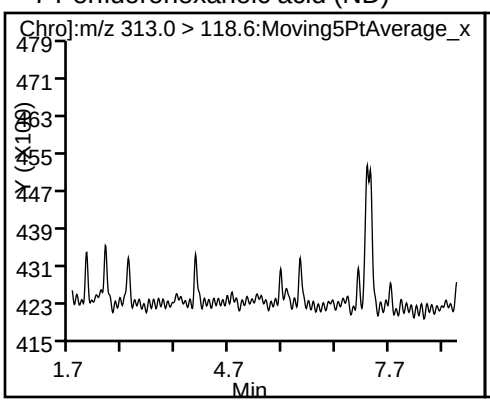
* 6 13C2 PFHxA (IS)



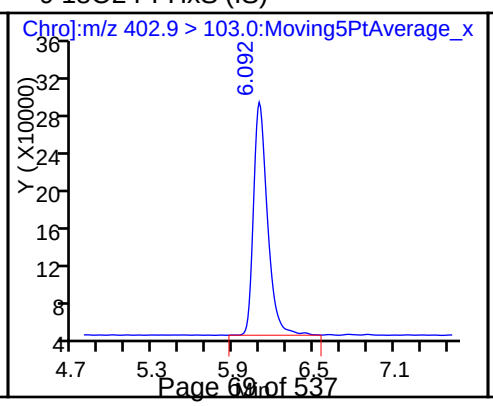
7 Perfluorohexanoic acid (ND)



7 Perfluorohexanoic acid (ND)



* 9 18O2 PFHxS (IS)



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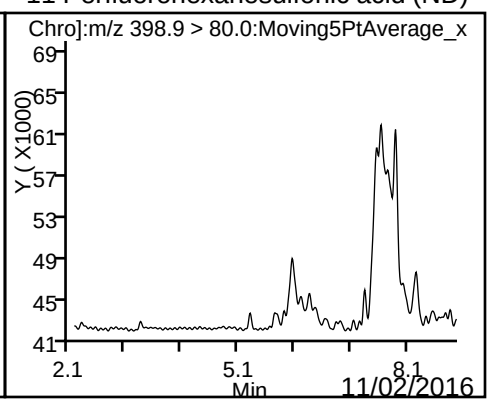
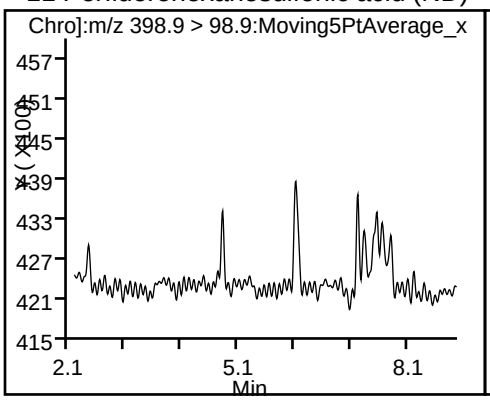
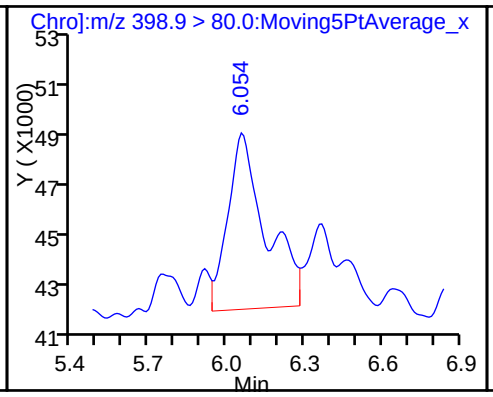


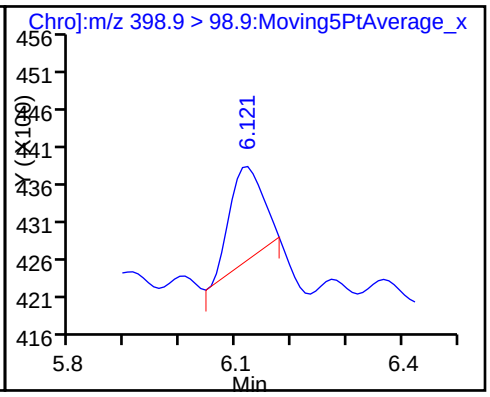
11 Perfluorohexanesulfonic acid (ND)



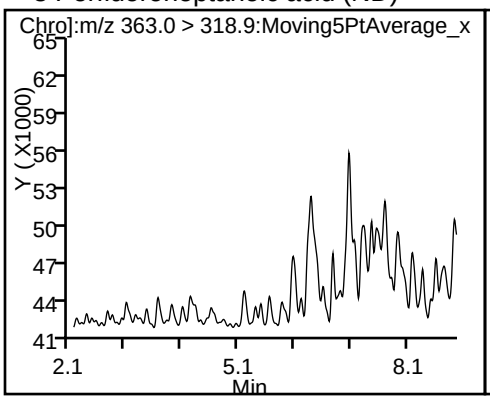
10 Perfluorohexane Sulfonate



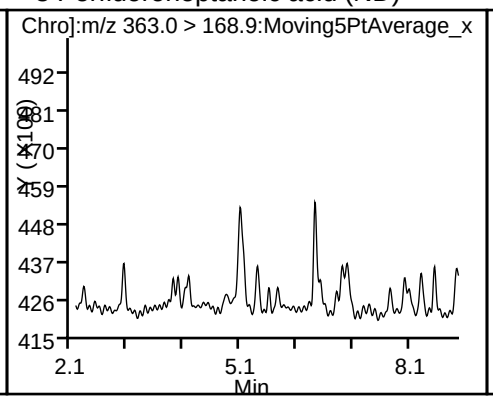
10 Perfluorohexane Sulfonate



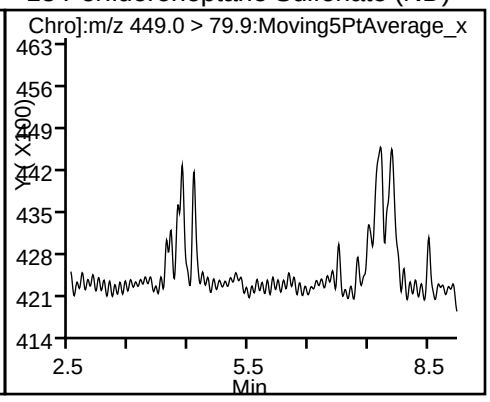
8 Perfluoroheptanoic acid (ND)



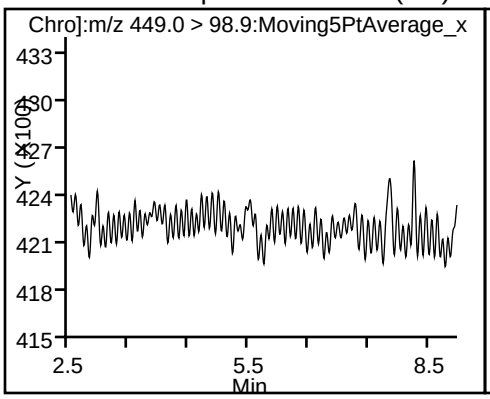
8 Perfluoroheptanoic acid (ND)



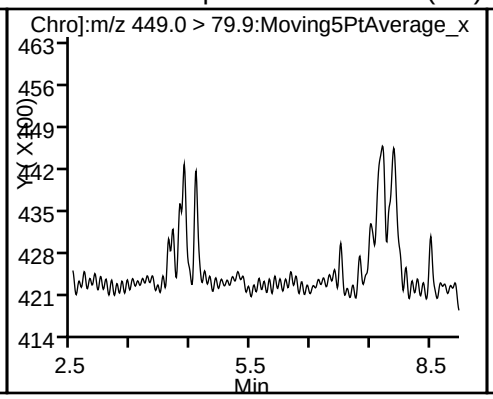
13 Perfluoroheptane Sulfonate (ND)



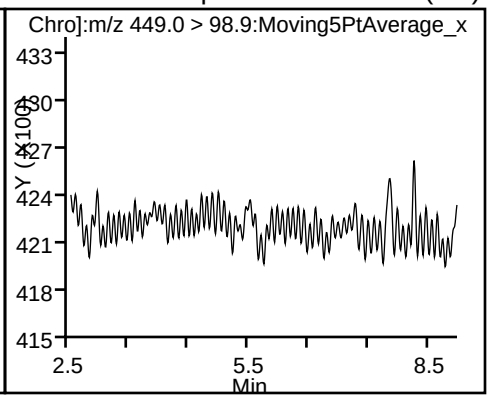
13 Perfluoroheptane Sulfonate (ND)



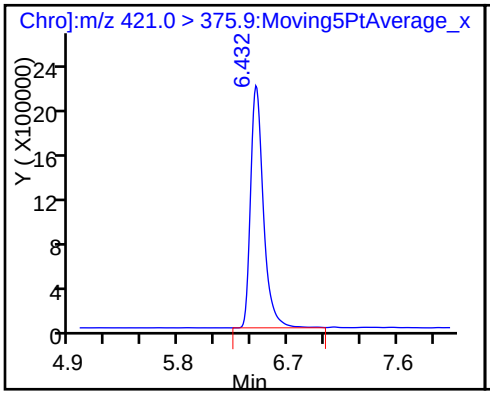
12 Perfluoroheptanesulfonic Acid (ND)



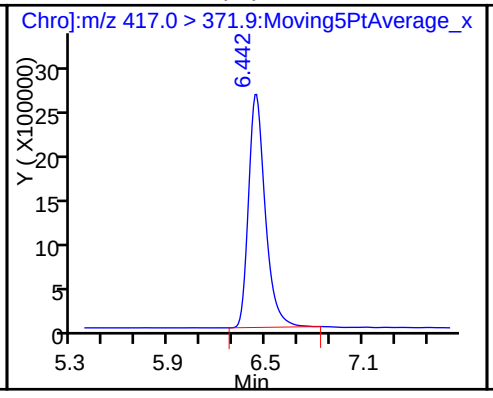
12 Perfluoroheptanesulfonic Acid (ND)



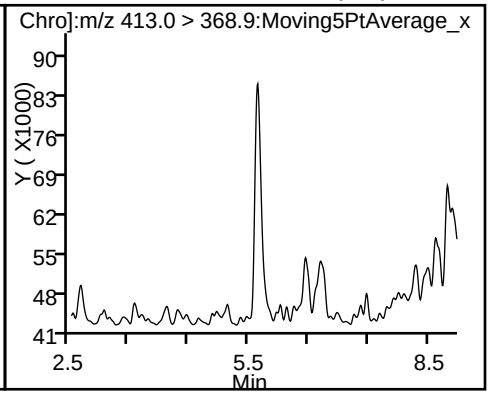
$ 14 13C8 PFOA



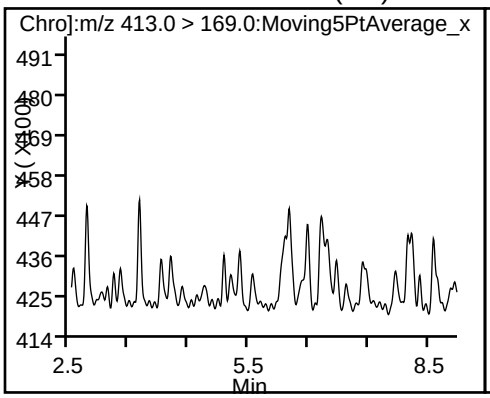
* 15 13C4 PFOA (IS)



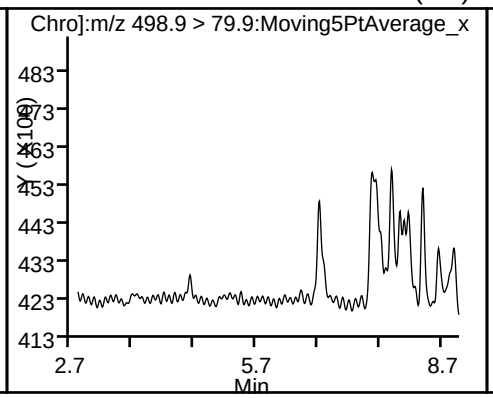
16 Perfluorooctanoic acid (ND)



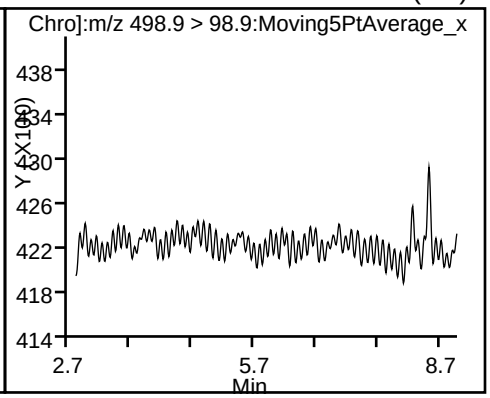
16 Perfluorooctanoic acid (ND)



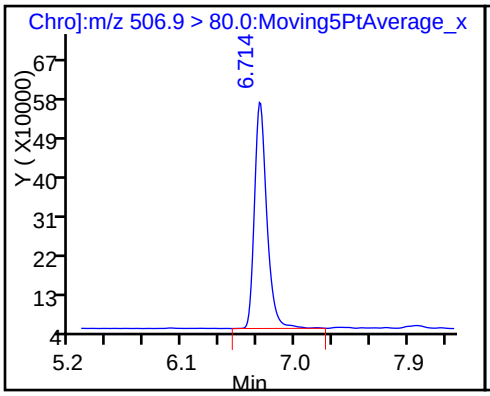
19 Perfluorooctane sulfonic acid (ND)



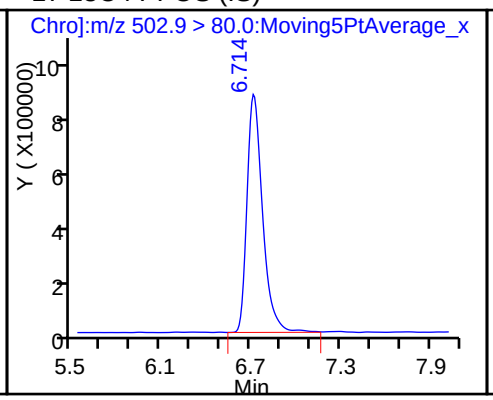
19 Perfluorooctane sulfonic acid (ND)



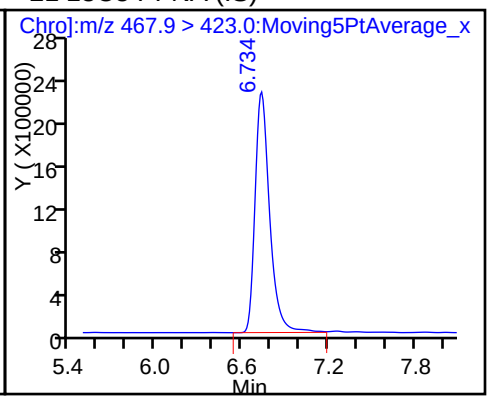
$ 18 13C8 PFOS



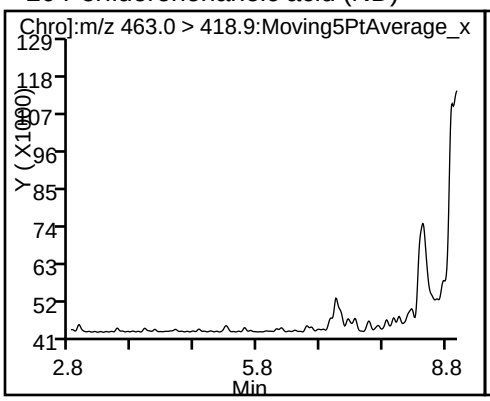
* 17 13C4 PFOS (IS)



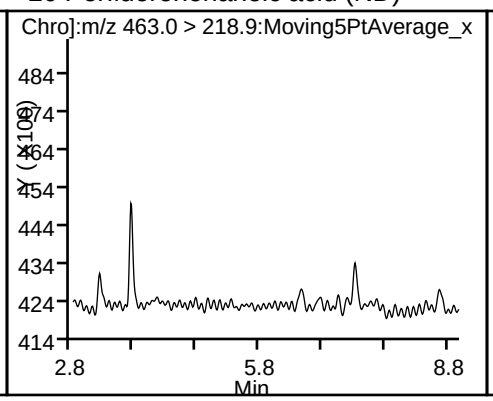
* 21 13C5 PFNA (IS)



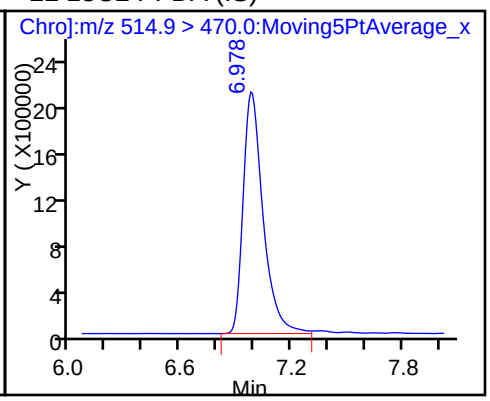
20 Perfluorononanoic acid (ND)



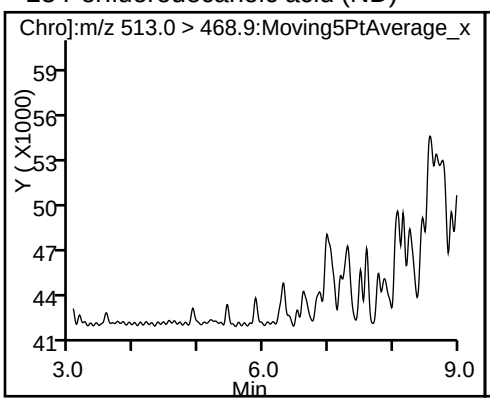
20 Perfluorononanoic acid (ND)



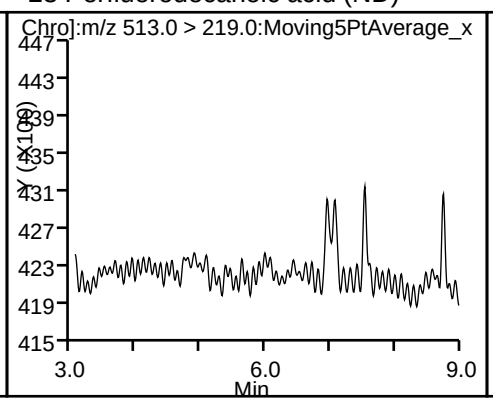
* 22 13C2 PFDA (IS)



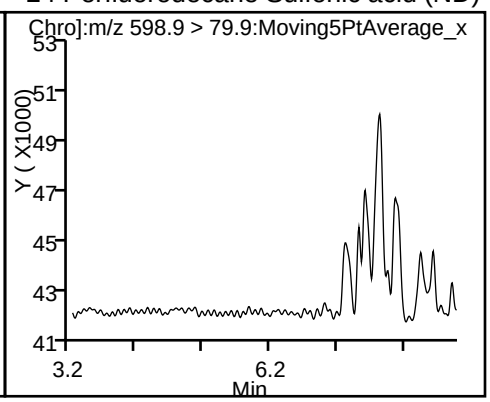
23 Perfluorodecanoic acid (ND)



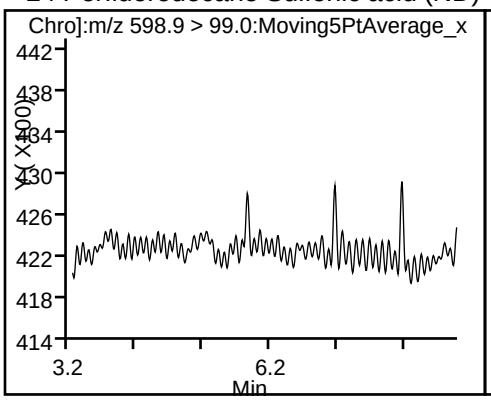
23 Perfluorodecanoic acid (ND)



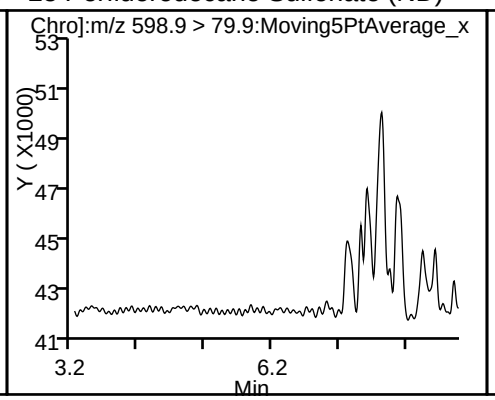
24 Perfluorodecane Sulfonic acid (ND)



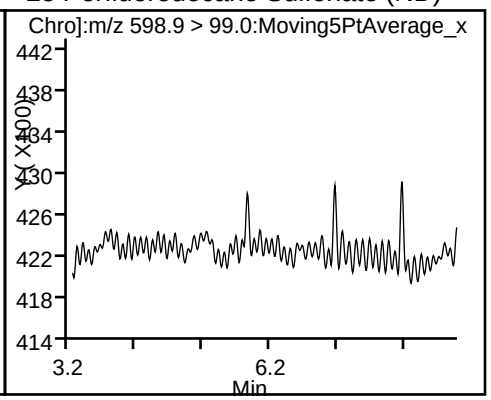
24 Perfluorodecane Sulfonic acid (ND)



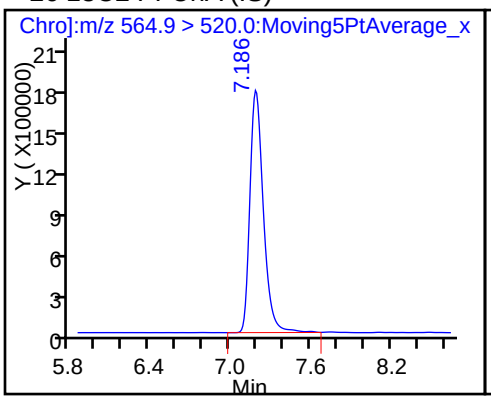
25 Perfluorodecane Sulfonate (ND)



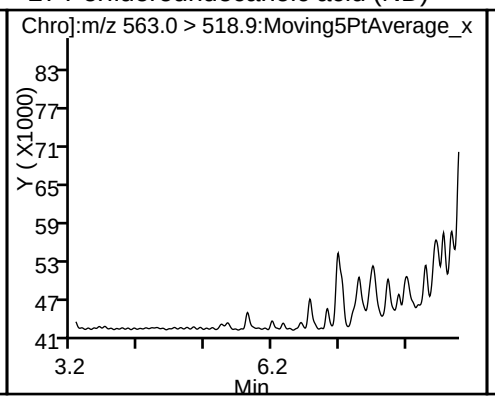
25 Perfluorodecane Sulfonate (ND)



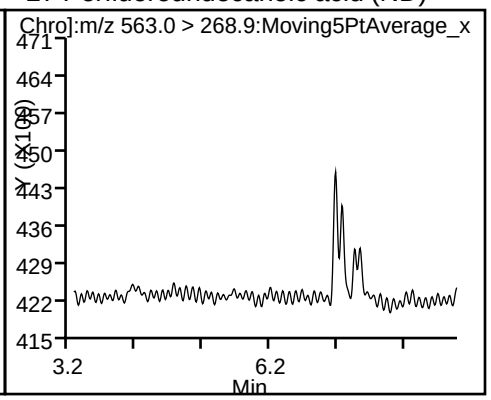
* 26 13C2 PFUnA (IS)



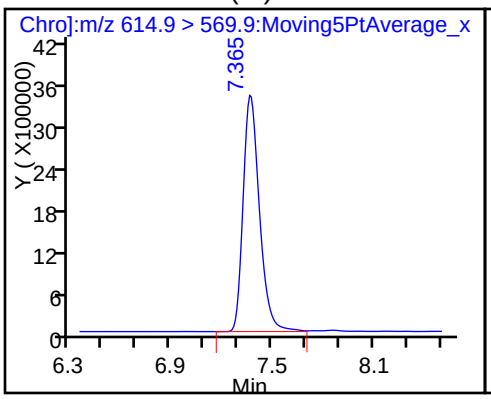
27 Perfluoroundecanoic acid (ND)



27 Perfluoroundecanoic acid (ND)



* 28 13C2 PFDoA (IS)



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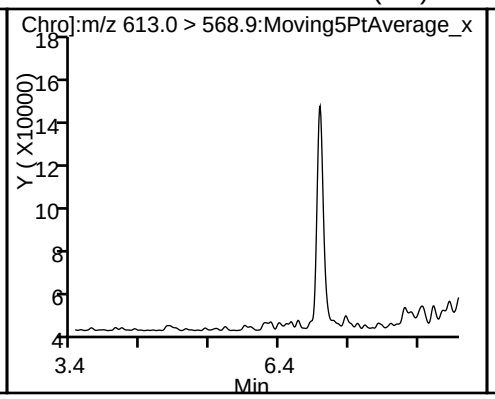
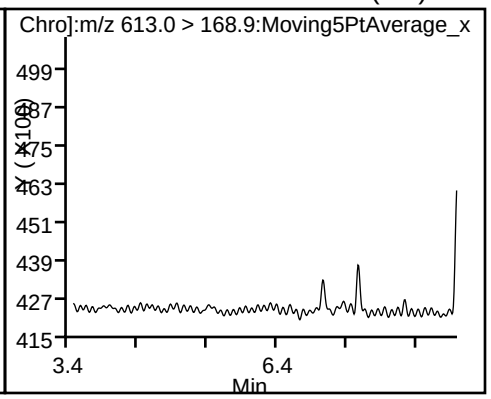
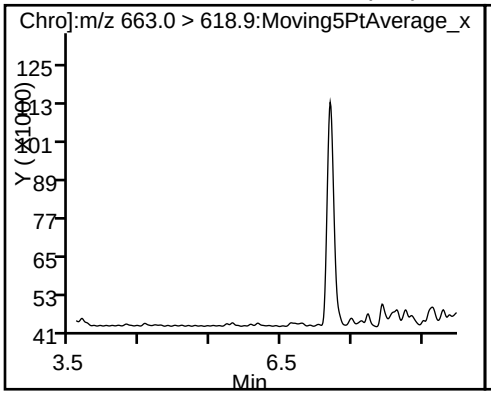


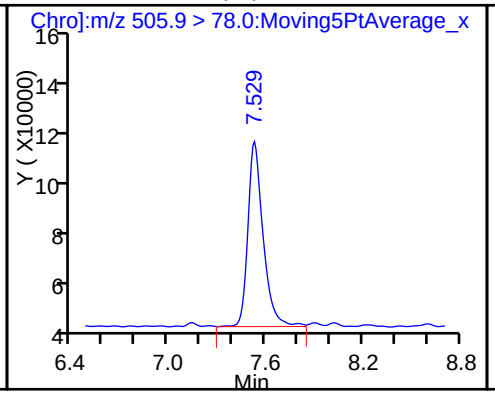
29 Perfluorododecanoic acid (ND)



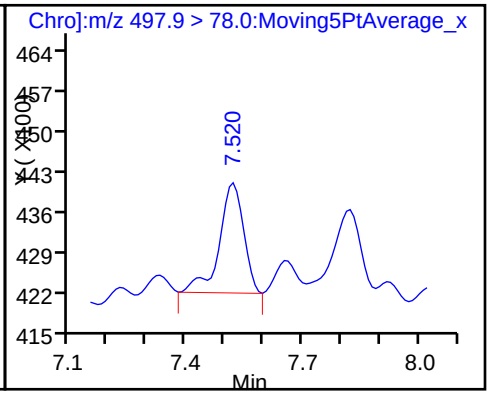
30 Perfluorotridecanoic acid (ND)



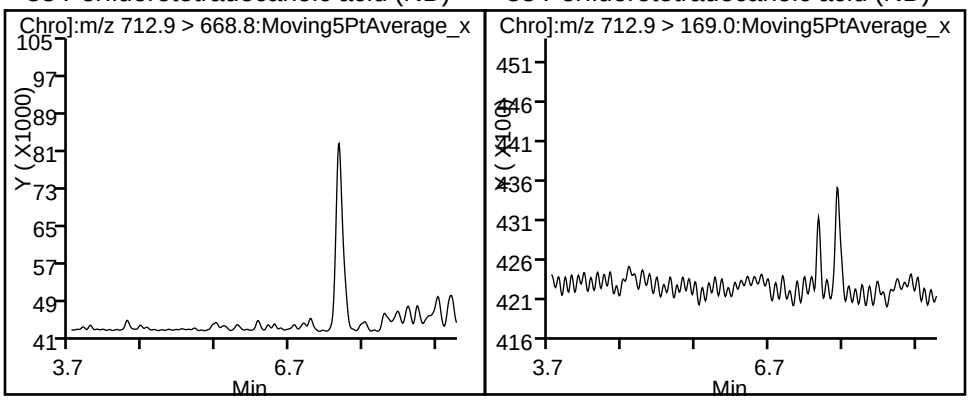
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: SB-PFC-MW3-21.0 | Lab Sample ID: 280-87416-4

Matrix: Solid | Lab File ID: PC516I02063.d

Analysis Method: DV-LC-0012 | Date Collected: 08/19/2016 10:38

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.00(g) | Date Analyzed: 09/02/2016 23:01

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 11.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.16	U	0.91	0.16
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.14	U	0.91	0.14
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.32	U	0.91	0.32
375-95-1	Perfluorononanoic acid (PFNA)	0.25	U	0.91	0.25
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.16	U	0.91	0.16
335-67-1	Perfluorooctanoic acid (PFOA)	0.26	U	0.91	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	122		57-153
STL01054	13C8 PFOS	103		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02063.d
Lims ID: 280-87416-A-4-A Lab Sample ID: 280-87416-4
Client ID: SB-PFC-MW3-21.0
Sample Type: Client
Inject. Date: 02-Sep-2016 23:01:08 ALS Bottle#: 0 Worklist Smp#: 51
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-4-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:33:54 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:59:59

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.048	4.029	0.019		14354573	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.241				ND			
298.9 > 98.9		5.241							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.733	5.705	0.028		12260899	10.0			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.159	6.140	0.019	1.002	51744	0.0805			R
398.9 > 98.9	6.159	6.140	0.019	1.002	3065		16.88(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.140				ND			
363.0 > 168.9		6.140							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.149	0.0		1431450	9.46			
$ 14 13C8 PFOA									
421.0 > 375.9	6.480	6.489	-0.009	1.000	13274708	12.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.480	6.489	-0.009		16131246	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.489				ND			
413.0 > 169.0		6.489							
$ 18 13C8 PFOS									
506.9 > 80.0	6.752	6.752	0.0	1.000	3214899	9.52			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.752				ND			
498.9 > 98.9		6.752							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.752	6.752	0.0		5616426	9.56			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.763	6.772	-0.009		12959882	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.772				ND			
463.0 > 218.9		6.772							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	7.016	-0.009		12957720	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.215	0.0		8175062	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.393	0.0		20548487	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.567	-0.029		17938368	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

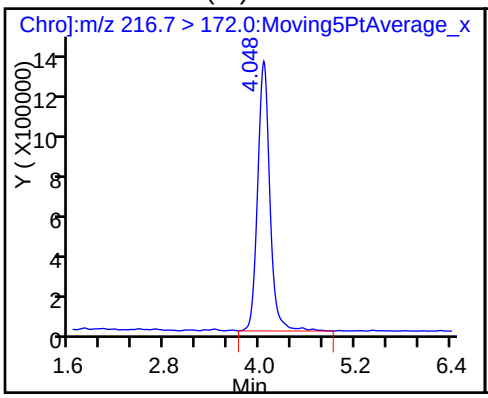
Report Date: 06-Sep-2016 08:34:19 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

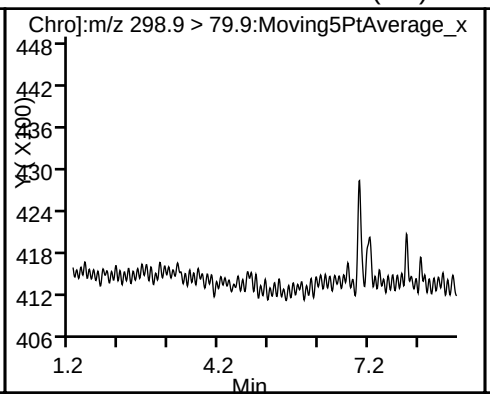
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02063.d

Injection Date:	02-Sep-2016 23:01:08	Instrument ID:	LC_LCMS5		
Lims ID:	280-87416-A-4-A	Lab Sample ID:	280-87416-4		
Client ID:	SB-PFC-MW3-21.0				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	51
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

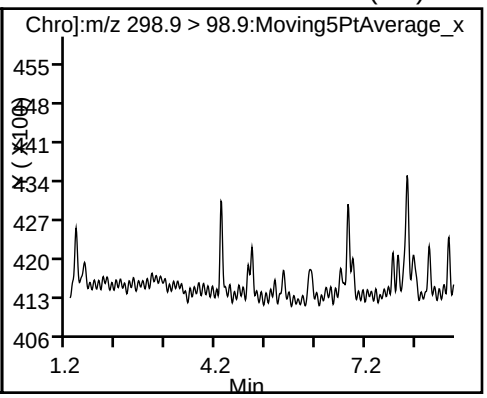
* 1 13C4 PFBA (IS)



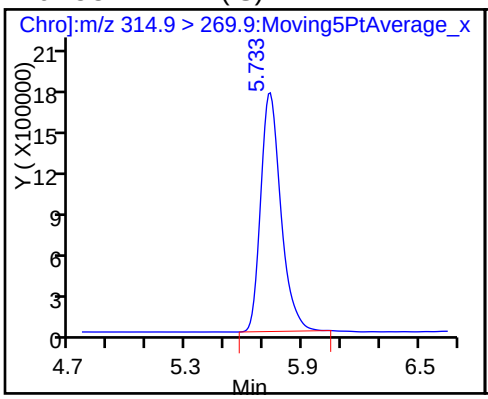
4 Perfluorobutane Sulfonate (ND)



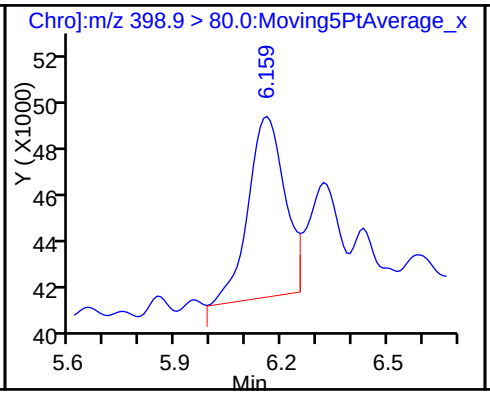
4 Perfluorobutane Sulfonate (ND)



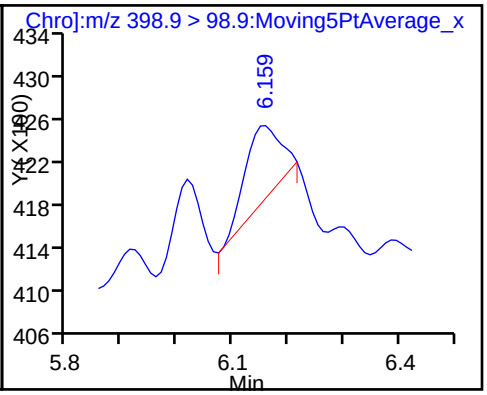
* 6 13C2 PFHxA (IS)



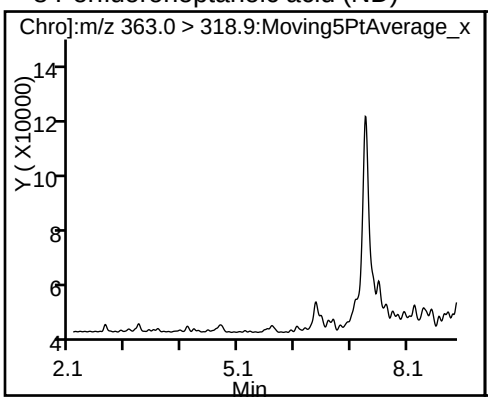
10 Perfluorohexane Sulfonate



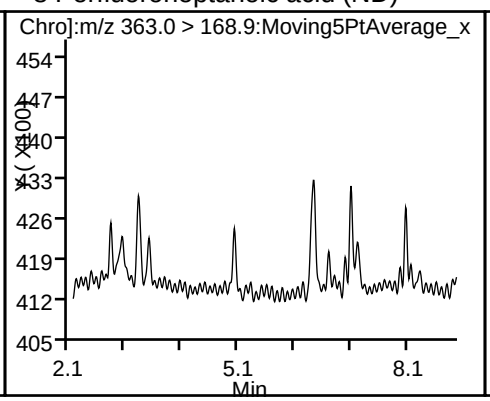
10 Perfluorohexane Sulfonate



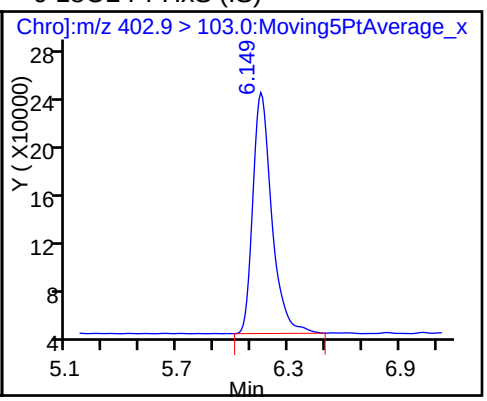
8 Perfluoroheptanoic acid (ND)



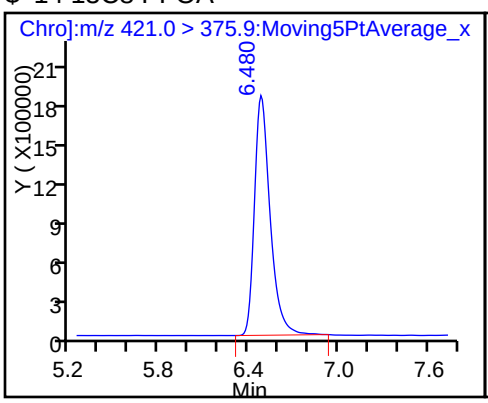
8 Perfluoroheptanoic acid (ND)



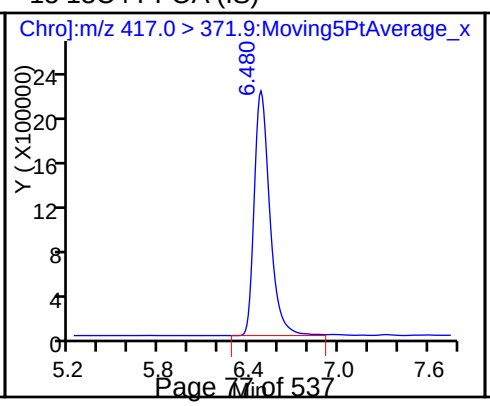
* 9 18O2 PFHxS (IS)



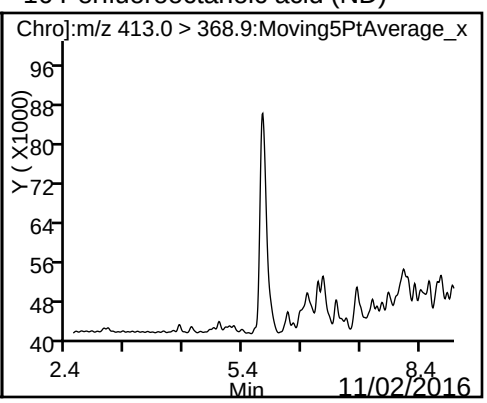
$ 14 13C8 PFOA



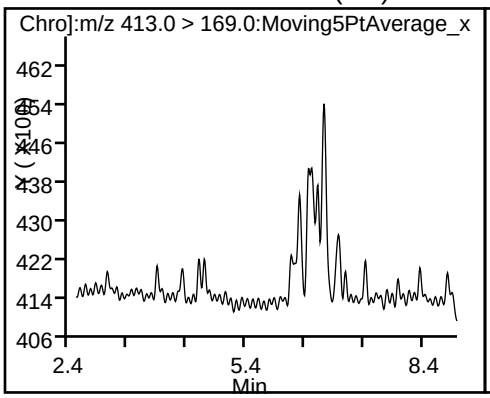
* 15 13C4 PFOA (IS)



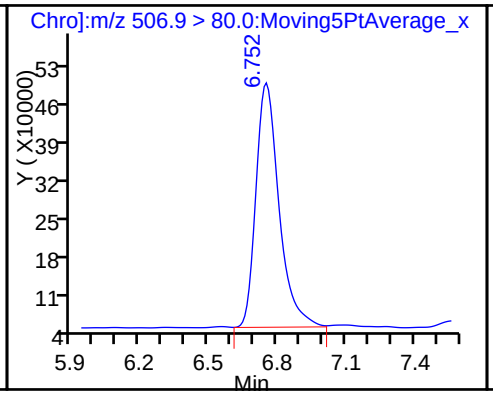
16 Perfluorooctanoic acid (ND)



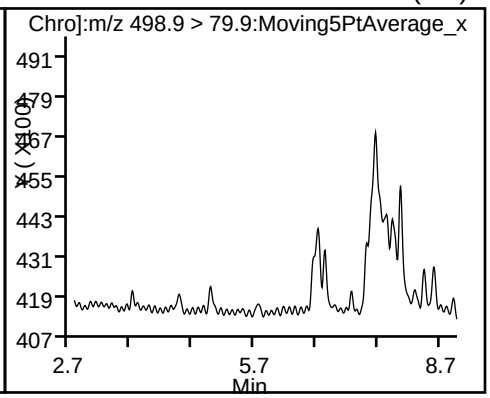
16 Perfluorooctanoic acid (ND)



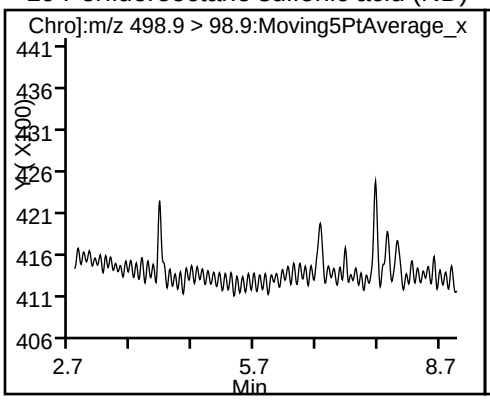
$ 18 13C8 PFOS



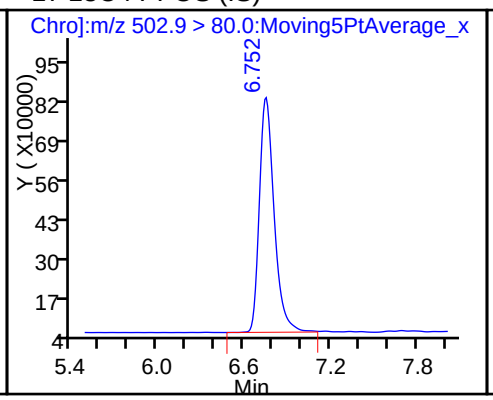
19 Perfluorooctane sulfonic acid (ND)



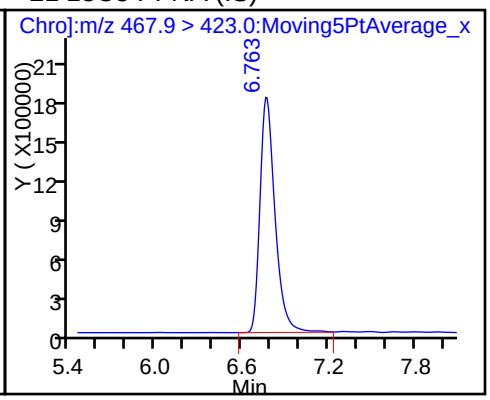
19 Perfluorooctane sulfonic acid (ND)



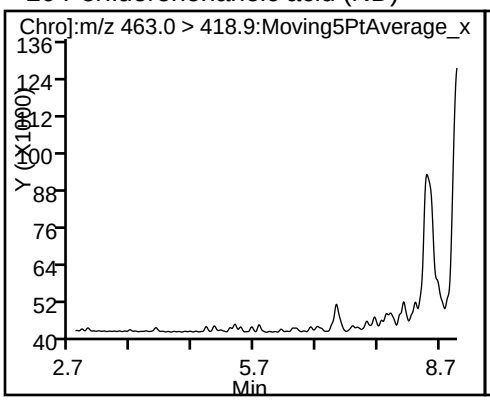
* 17 13C4 PFOS (IS)



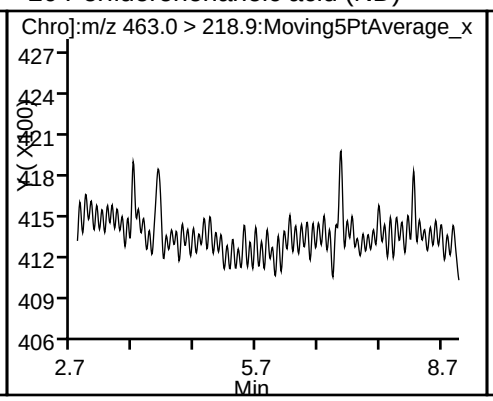
* 21 13C5 PFNA (IS)



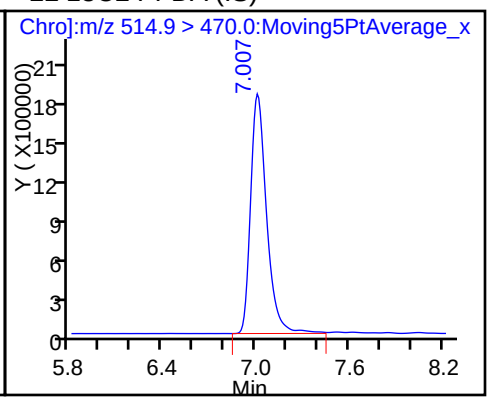
20 Perfluorononanoic acid (ND)



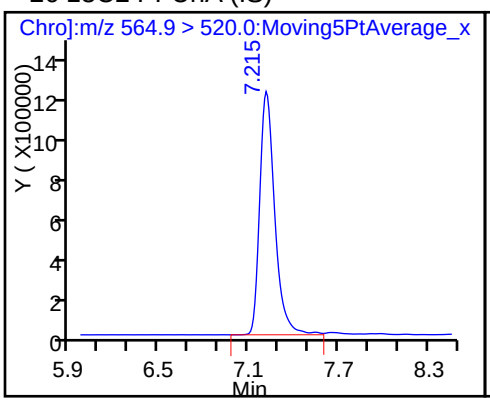
20 Perfluorononanoic acid (ND)



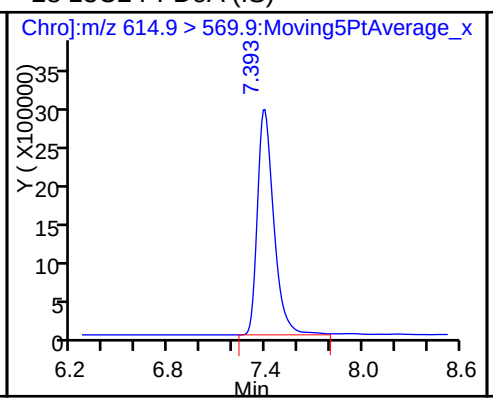
* 22 13C2 PFDA (IS)



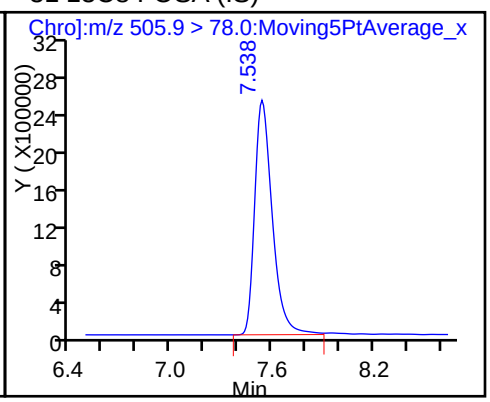
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: SB-PFC-MW3-46.0 | Lab Sample ID: 280-87416-5

Matrix: Solid | Lab File ID: PC516I02064.d

Analysis Method: DV-LC-0012 | Date Collected: 08/19/2016 12:08

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.14(g) | Date Analyzed: 09/02/2016 23:13

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 13.3 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.16	U	0.91	0.16
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.14	U	0.91	0.14
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.32	U	0.91	0.32
375-95-1	Perfluorononanoic acid (PFNA)	0.25	U	0.91	0.25
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.16	U	0.91	0.16
335-67-1	Perfluorooctanoic acid (PFOA)	0.26	U	0.91	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	121		57-153
STL01054	13C8 PFOS	110		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02064.d
Lims ID: 280-87416-A-5-A Lab Sample ID: 280-87416-5
Client ID: SB-PFC-MW3-46.0
Sample Type: Client
Inject. Date: 02-Sep-2016 23:13:27 ALS Bottle#: 0 Worklist Smp#: 52
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-5-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:33:54 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 08:00:32

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.228	4.029	0.199		15055009	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.241				ND			
298.9 > 98.9		5.241							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.828	5.705	0.123		10164436	10.0			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.140				ND			
398.9 > 98.9		6.140							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.140				ND			
363.0 > 168.9		6.140							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.253	6.149	0.104		1621521	9.46			
$ 14 13C8 PFOA									
421.0 > 375.9	6.574	6.489	0.085	0.999	13333468	11.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.584	6.489	0.095		16374080	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.489				ND			
413.0 > 169.0		6.489							
$ 18 13C8 PFOS									
506.9 > 80.0	6.847	6.752	0.095	1.000	3458055	10.2			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.752				ND			
498.9 > 98.9		6.752							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.847	6.752	0.095		5637391	9.56			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.867	6.772	0.095		12348219	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.772				ND			
463.0 > 218.9		6.772							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.111	7.016	0.095		11825028	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.309	7.215	0.094		7603104	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.488	7.393	0.095		17750074	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.557	7.567	-0.010		18590412	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

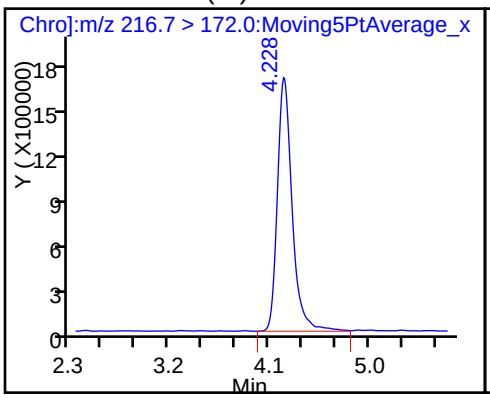
Report Date: 06-Sep-2016 08:34:23 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

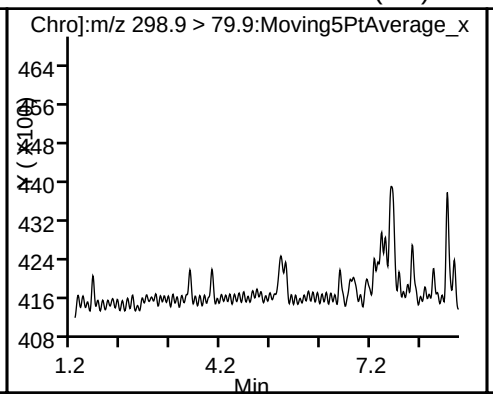
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02064.d

Injection Date:	02-Sep-2016 23:13:27	Instrument ID:	LC_LCMS5		
Lims ID:	280-87416-A-5-A	Lab Sample ID:	280-87416-5		
Client ID:	SB-PFC-MW3-46.0				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	52
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

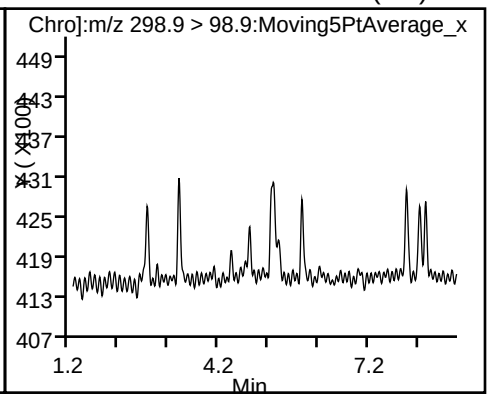
* 1 13C4 PFBA (IS)



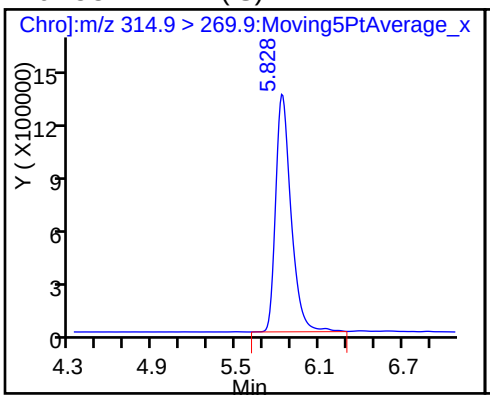
4 Perfluorobutane Sulfonate (ND)



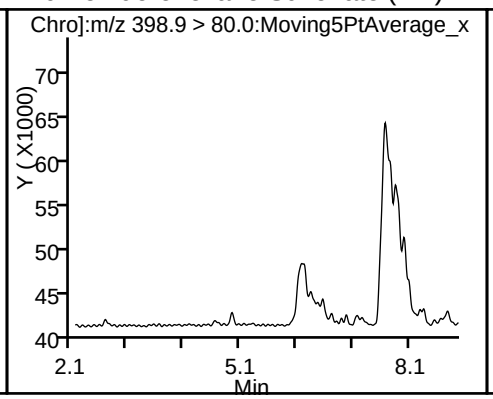
4 Perfluorobutane Sulfonate (ND)



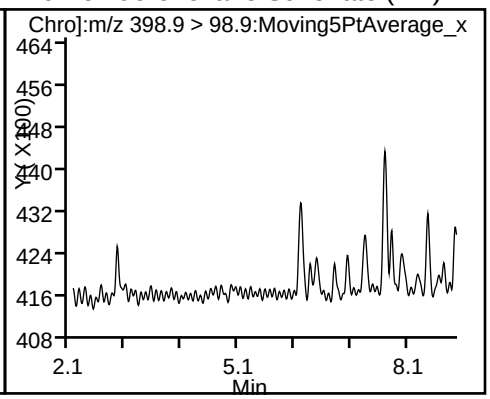
* 6 13C2 PFHxA (IS)



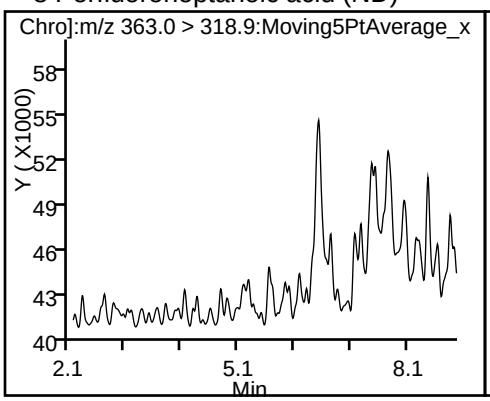
10 Perfluorohexane Sulfonate (ND)



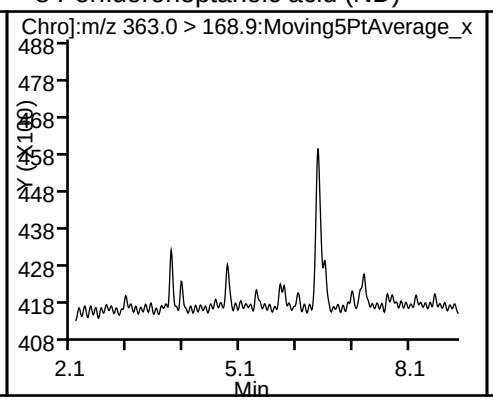
10 Perfluorohexane Sulfonate (ND)



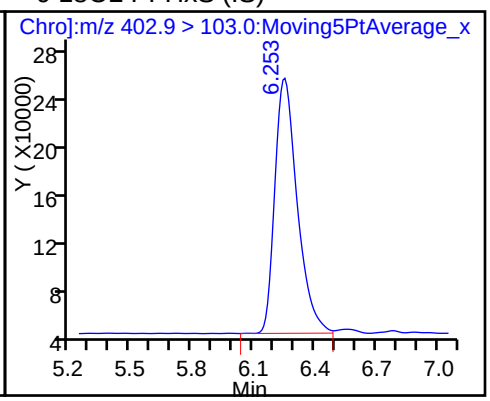
8 Perfluoroheptanoic acid (ND)



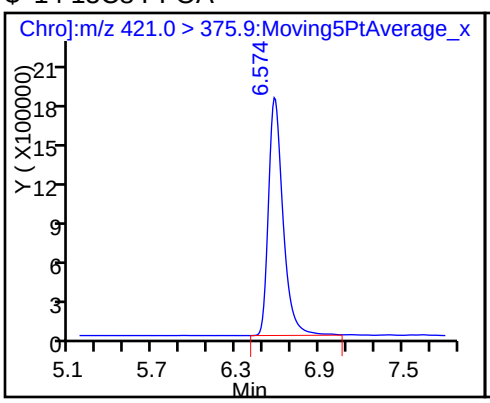
8 Perfluoroheptanoic acid (ND)



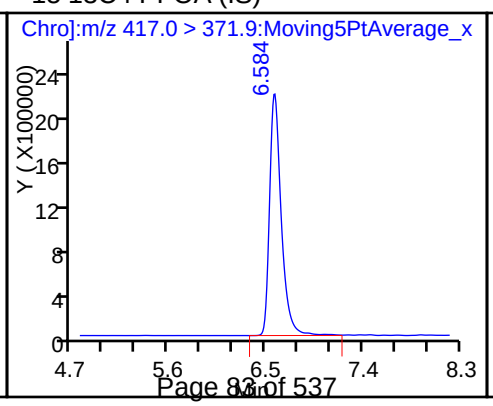
* 9 18O2 PFHxS (IS)



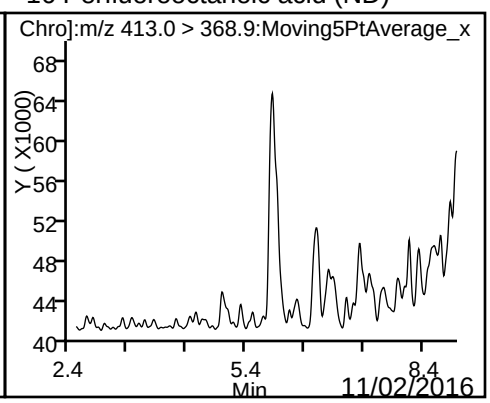
$ 14 13C8 PFOA



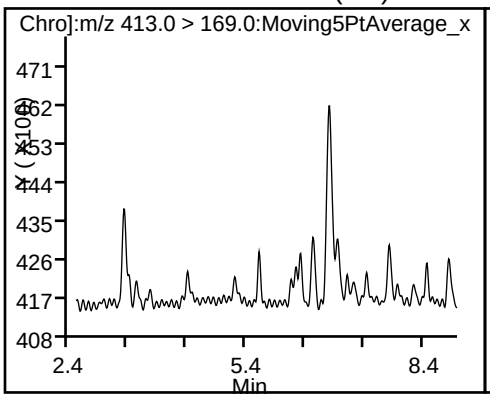
* 15 13C4 PFOA (IS)



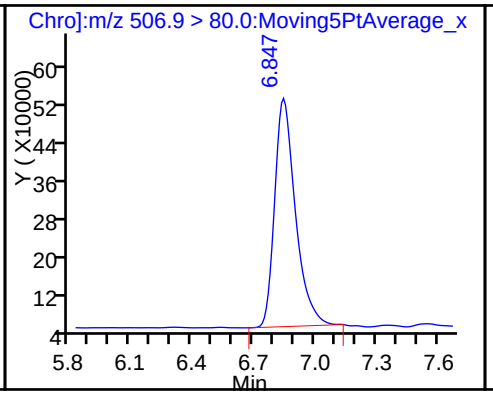
16 Perfluorooctanoic acid (ND)



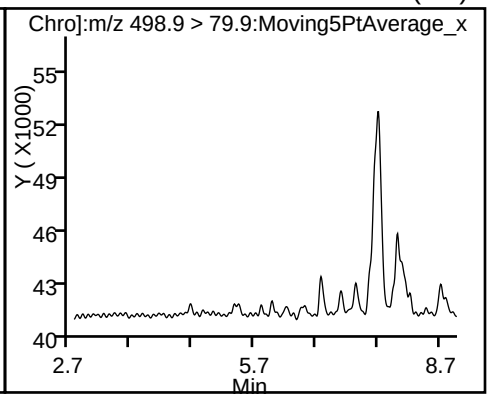
16 Perfluorooctanoic acid (ND)



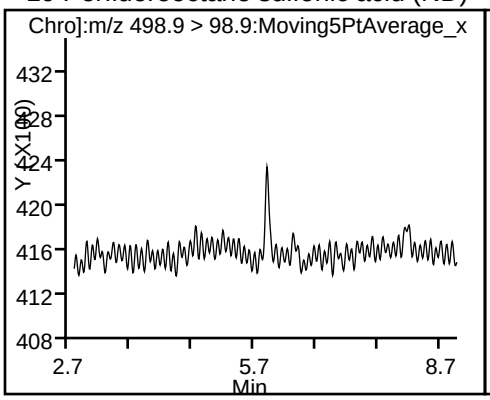
$ 18 13C8 PFOS



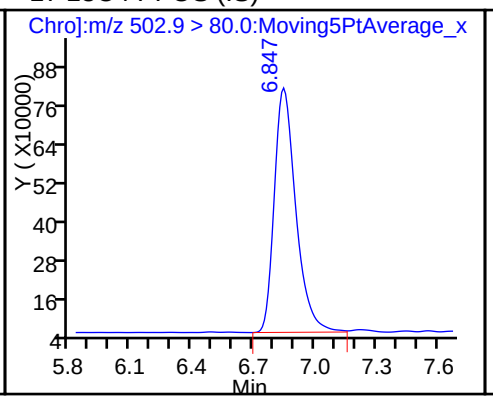
19 Perfluorooctane sulfonic acid (ND)



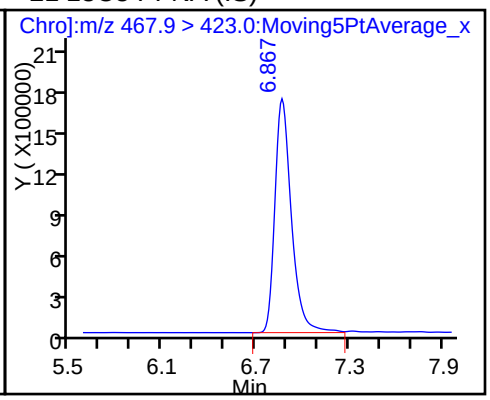
19 Perfluorooctane sulfonic acid (ND)



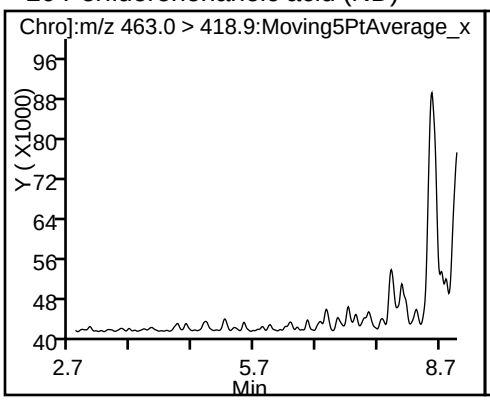
* 17 13C4 PFOS (IS)



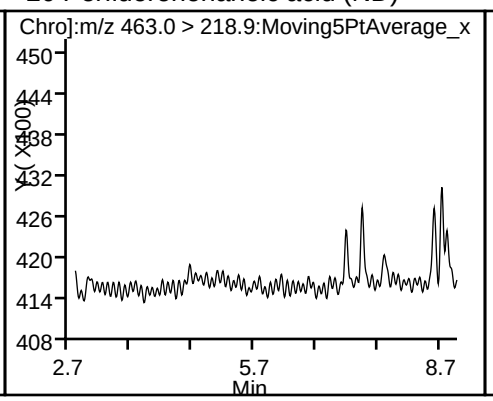
* 21 13C5 PFNA (IS)



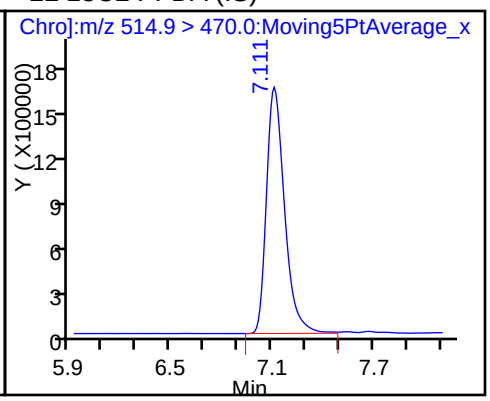
20 Perfluorononanoic acid (ND)



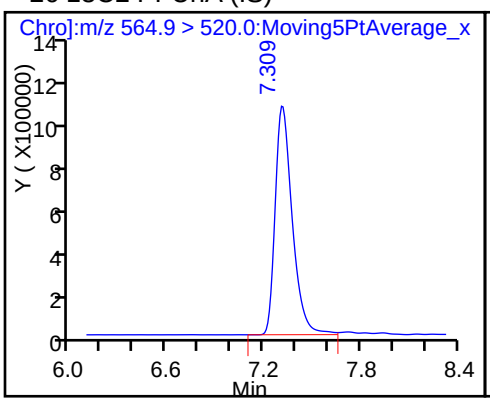
20 Perfluorononanoic acid (ND)



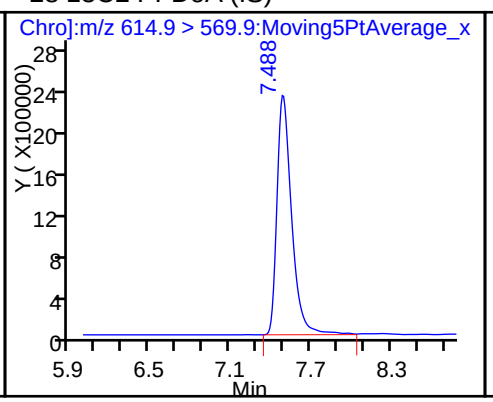
* 22 13C2 PFDA (IS)



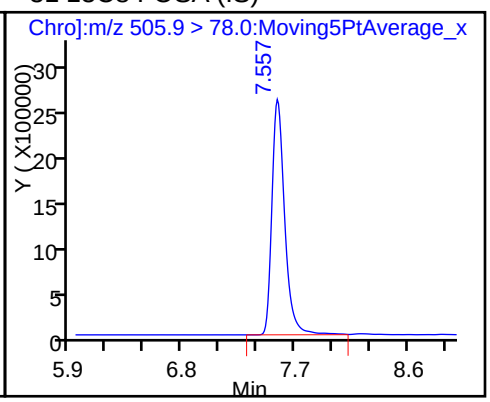
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: SB-PFC-MW4-0.5 | Lab Sample ID: 280-87416-6

Matrix: Solid | Lab File ID: PC516I02070.d

Analysis Method: DV-LC-0012 | Date Collected: 08/24/2016 08:20

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.09(g) | Date Analyzed: 09/03/2016 00:27

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 15.0 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.16	U	0.93	0.16
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.14	U	0.93	0.14
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.33	U	0.93	0.33
375-95-1	Perfluorononanoic acid (PFNA)	0.26	U	0.93	0.26
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.32	J	0.93	0.16
335-67-1	Perfluorooctanoic acid (PFOA)	0.27	U	0.93	0.27

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	123		57-153
STL01054	13C8 PFOS	103		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02070.d
Lims ID: 280-87416-A-6-A Lab Sample ID: 280-87416-6
Client ID: SB-PFC-MW4-0.5
Sample Type: Client
Inject. Date: 03-Sep-2016 00:27:55 ALS Bottle#: 0 Worklist Smp#: 58
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-6-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:34:27 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 08:18:08

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.067	4.266	-0.199		15909333	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.421				ND			
298.9 > 98.9		5.421							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.743	5.885	-0.142		12858554	10.0			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.196	6.310	-0.114	1.002	58820	0.0759			
398.9 > 98.9	6.234	6.310	-0.076	1.008	27067		2.17(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.311				ND			
363.0 > 168.9		6.311							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.187	6.300	-0.113		1720169	9.46			
$ 14 13C8 PFOA									
421.0 > 375.9	6.536	6.631	-0.095	1.000	15292632	12.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.537	6.631	-0.094		18433699	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.632				ND			
413.0 > 169.0		6.632							
$ 18 13C8 PFOS									
506.9 > 80.0	6.809	6.894	-0.085	1.000	3735330	9.57			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.809	6.894	-0.085		6494002	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.809	6.895	-0.086	1.000	44459	0.1363			R
498.9 > 98.9	6.819	6.895	-0.076	1.001	11019		4.03(1.31-2.43)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.829	6.914	-0.085		15833345	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.914				ND			
463.0 > 218.9		6.914							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.073	7.149	-0.076		14939242	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.357	-0.086		9487390	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.536	-0.086		22006101	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.624	-0.086		21344819	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

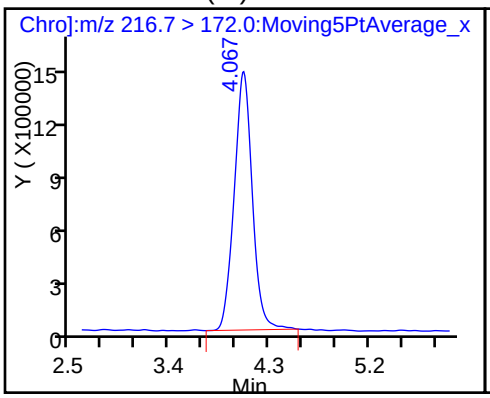
Report Date: 06-Sep-2016 08:34:51 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

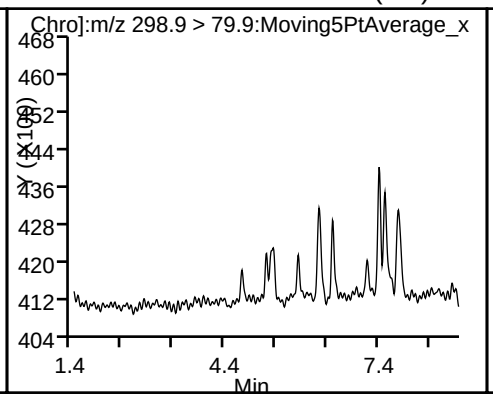
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02070.d

Injection Date:	03-Sep-2016 00:27:55	Instrument ID:	LC_LCMS5		
Lims ID:	280-87416-A-6-A	Lab Sample ID:	280-87416-6		
Client ID:	SB-PFC-MW4-0.5				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	58
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

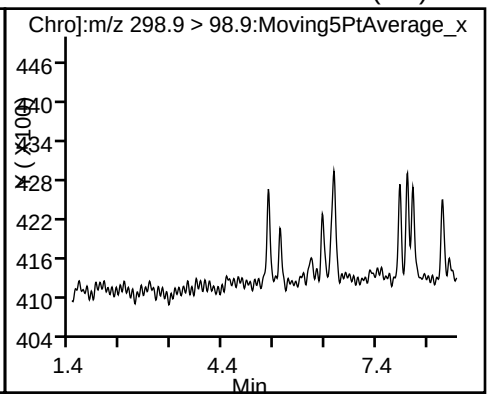
* 1 13C4 PFBA (IS)



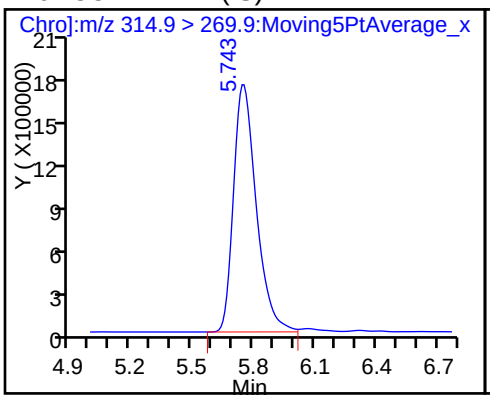
4 Perfluorobutane Sulfonate (ND)



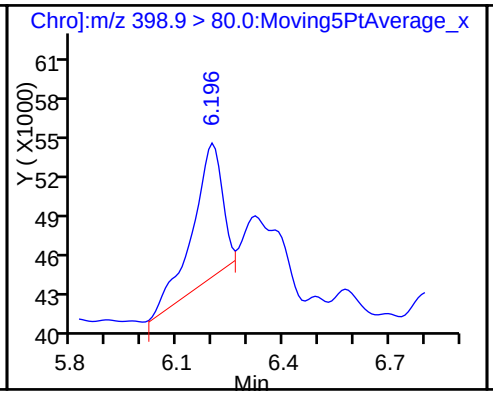
4 Perfluorobutane Sulfonate (ND)



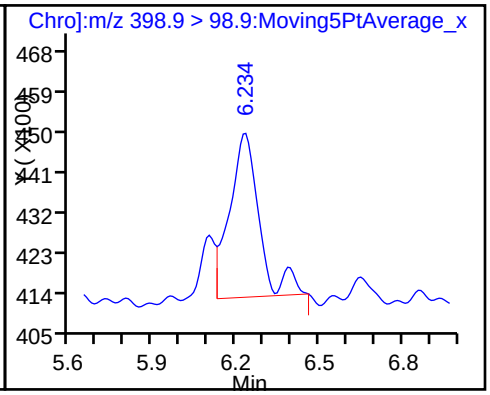
* 6 13C2 PFHxA (IS)



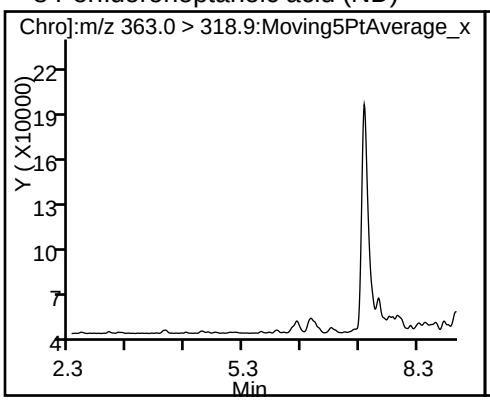
10 Perfluorohexane Sulfonate



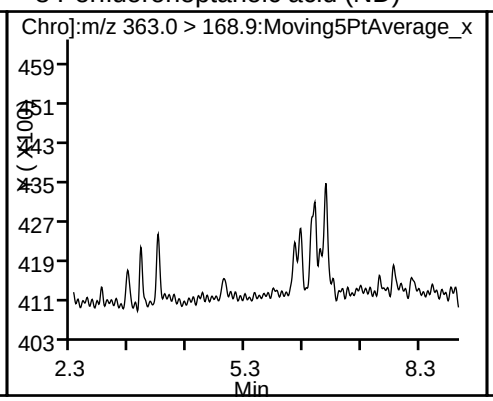
10 Perfluorohexane Sulfonate



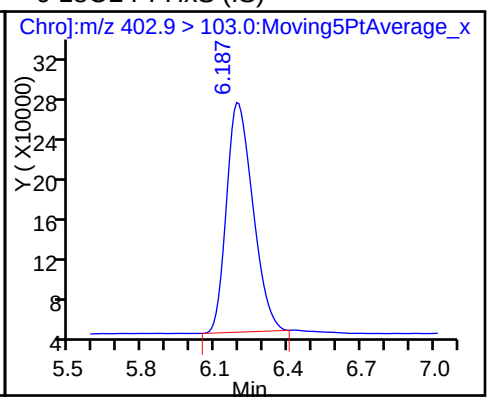
8 Perfluoroheptanoic acid (ND)



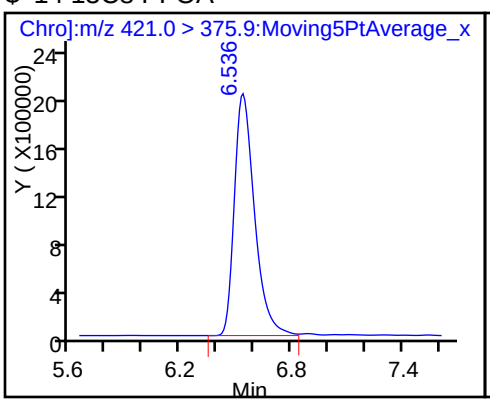
8 Perfluoroheptanoic acid (ND)



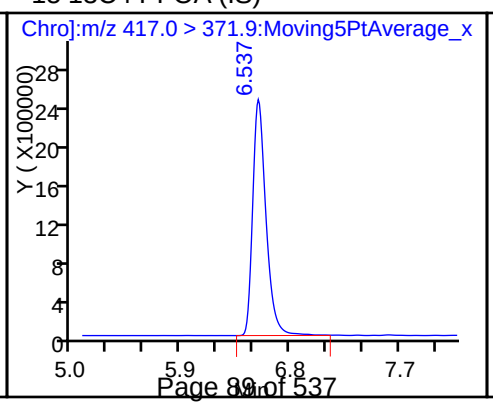
* 9 18O2 PFHxS (IS)



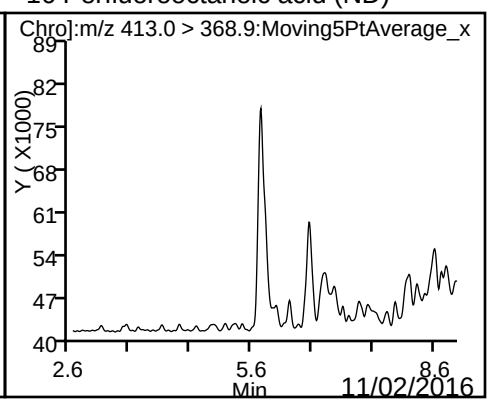
$ 14 13C8 PFOA



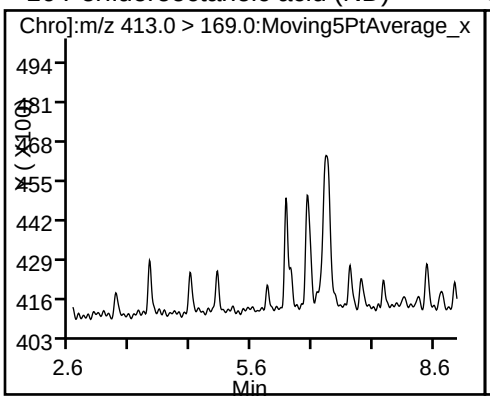
* 15 13C4 PFOA (IS)



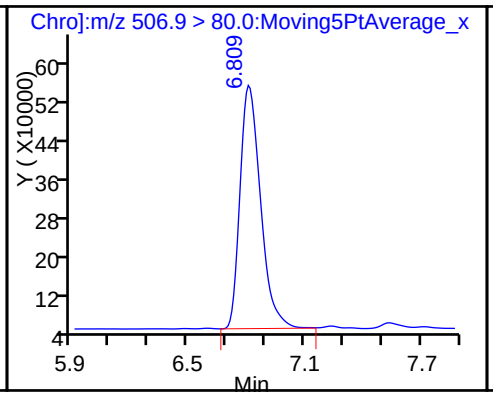
16 Perfluorooctanoic acid (ND)



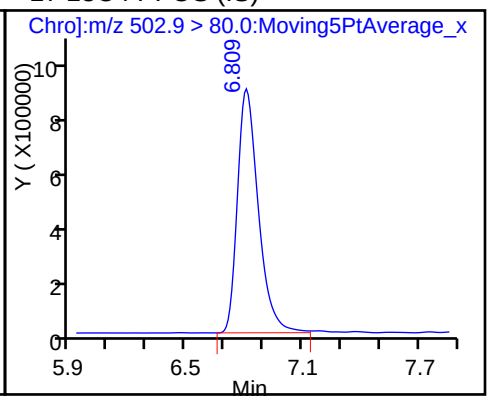
16 Perfluorooctanoic acid (ND)



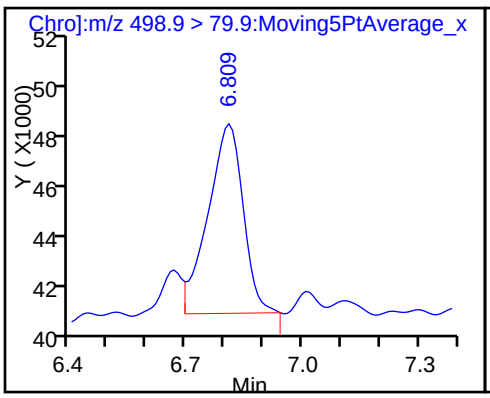
$ 18 13C8 PFOS



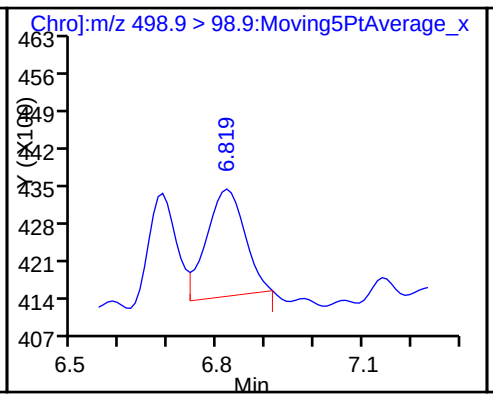
* 17 13C4 PFOS (IS)



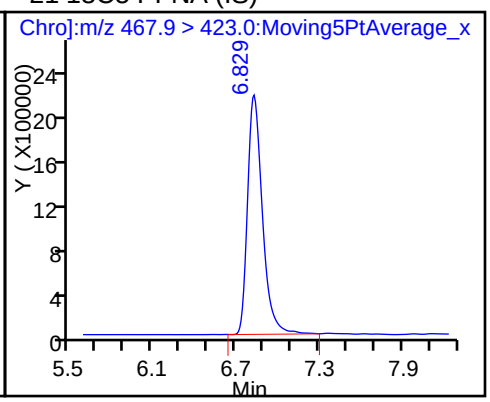
19 Perfluorooctane sulfonic acid



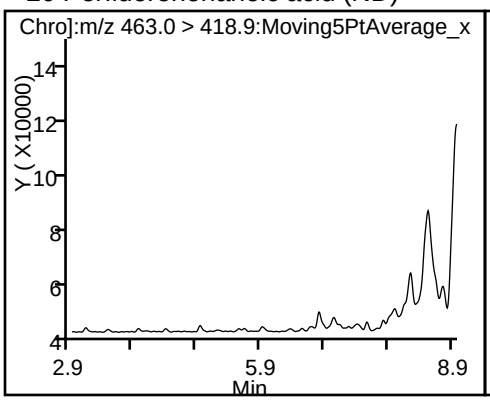
19 Perfluorooctane sulfonic acid



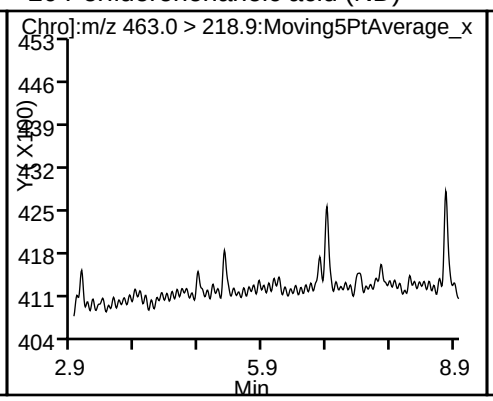
* 21 13C5 PFNA (IS)



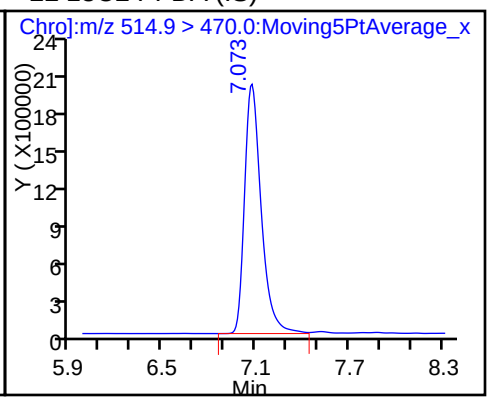
20 Perfluorononanoic acid (ND)



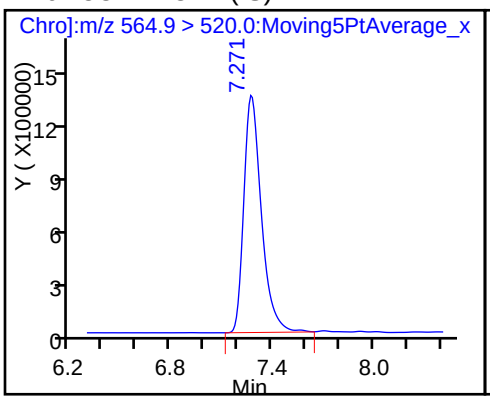
20 Perfluorononanoic acid (ND)



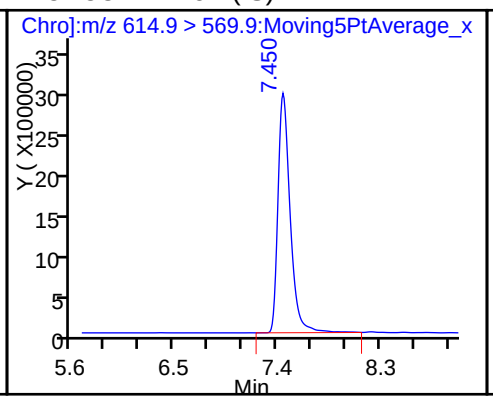
* 22 13C2 PFDA (IS)



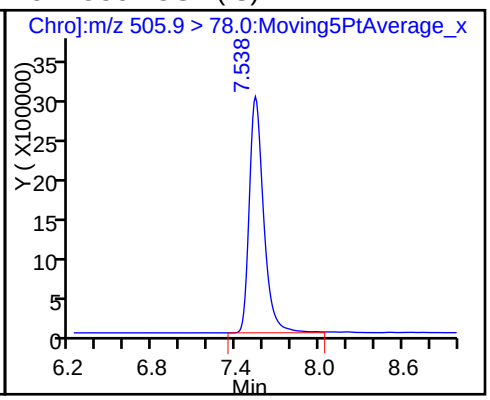
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: SB-PFC-MW4-3.0 | Lab Sample ID: 280-87416-7

Matrix: Solid | Lab File ID: PC516I02067.d

Analysis Method: DV-LC-0012 | Date Collected: 08/24/2016 08:45

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.00(g) | Date Analyzed: 09/02/2016 23:50

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 6.4 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.15	U	0.85	0.15
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.13	U	0.85	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.30	U	0.85	0.30
375-95-1	Perfluorononanoic acid (PFNA)	0.24	U	0.85	0.24
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.85	0.15
335-67-1	Perfluorooctanoic acid (PFOA)	0.25	U	0.85	0.25

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	124		57-153
STL01054	13C8 PFOS	101		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02067.d
Lims ID: 280-87416-A-7-A Lab Sample ID: 280-87416-7
Client ID: SB-PFC-MW4-3.0
Sample Type: Client
Inject. Date: 02-Sep-2016 23:50:26 ALS Bottle#: 0 Worklist Smp#: 55
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-7-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:34:27 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 08:14:53

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.124	4.266	-0.142		15018976	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.421				ND			
298.9 > 98.9		5.421							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.781	5.885	-0.104		10709244	10.0			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.310				ND			
398.9 > 98.9		6.310							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.311				ND			
363.0 > 168.9		6.311							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.215	6.300	-0.085		1688350	9.46			
$ 14 13C8 PFOA									
421.0 > 375.9	6.555	6.631	-0.076	0.999	13616603	12.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.565	6.631	-0.066		16378409	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.632				ND			
413.0 > 169.0		6.632							
$ 18 13C8 PFOS									
506.9 > 80.0	6.828	6.894	-0.066	0.999	3256554	9.38			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.837	6.894	-0.057		5773593	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.895				ND			
498.9 > 98.9		6.895							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.848	6.914	-0.066		13554458	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.914				ND			
463.0 > 218.9		6.914							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.092	7.149	-0.057		12745404	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.309	7.357	-0.048		7763088	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.488	7.536	-0.048		17142521	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.576	7.624	-0.048		19675095	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Report Date: 06-Sep-2016 08:34:37 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02067.d

Injection Date: 02-Sep-2016 23:50:26 Instrument ID: LC_LCMS5

Lims ID: 280-87416-A-7-A Lab Sample ID: 280-87416-7

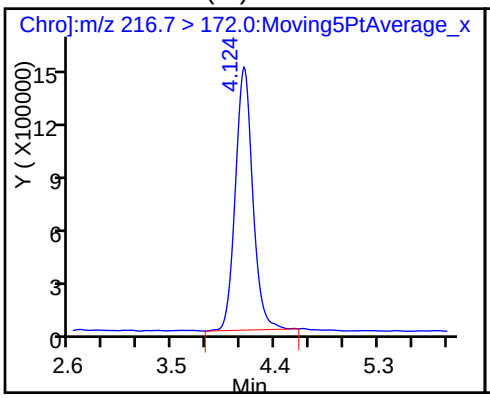
Client ID: SB-PFC-MW4-3.0

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 55

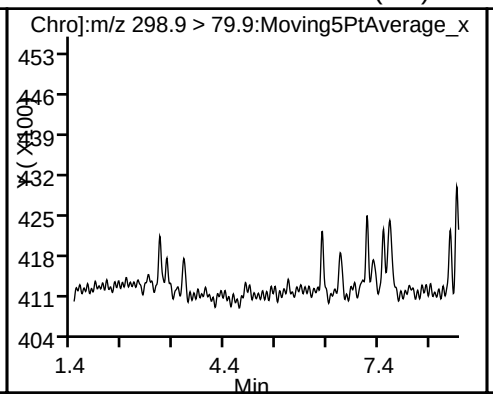
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

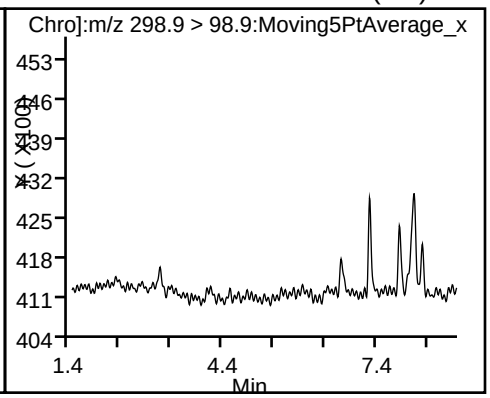
* 1 13C4 PFBA (IS)



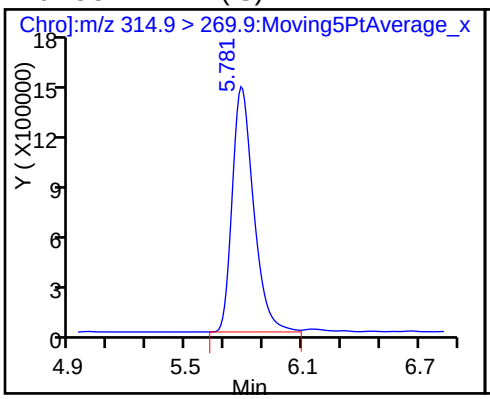
4 Perfluorobutane Sulfonate (ND)



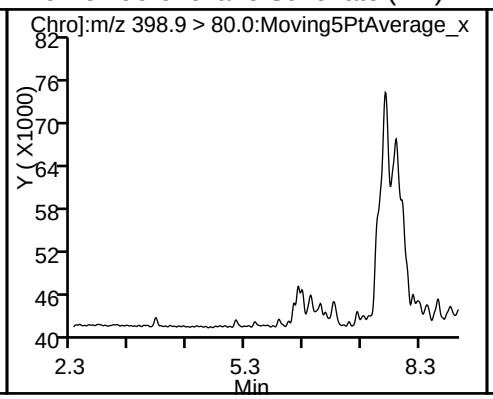
4 Perfluorobutane Sulfonate (ND)



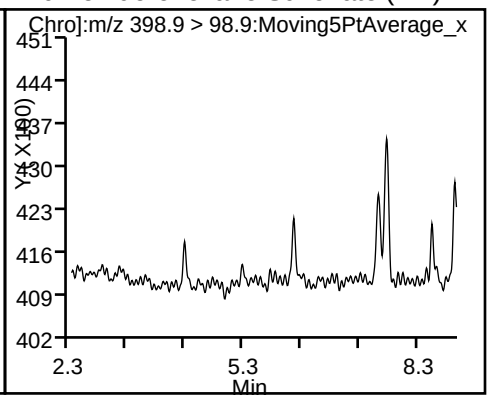
* 6 13C2 PFHxA (IS)



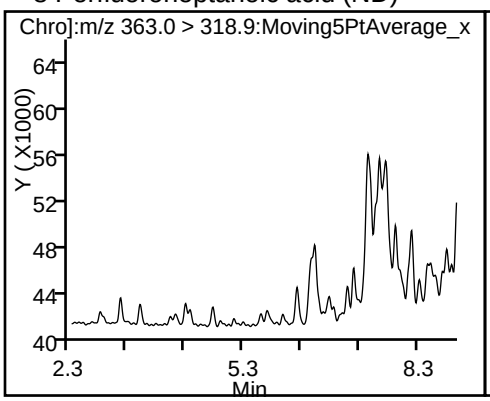
10 Perfluorohexane Sulfonate (ND)



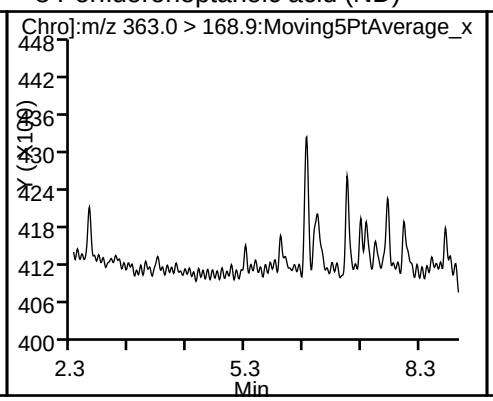
10 Perfluorohexane Sulfonate (ND)



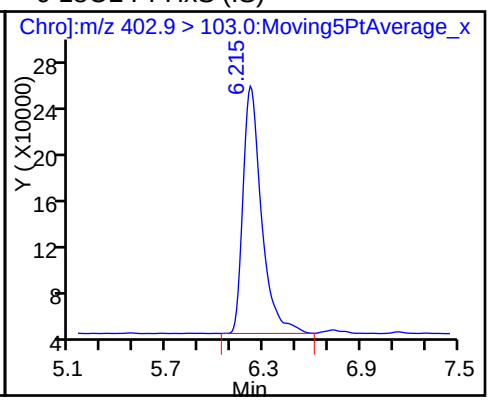
8 Perfluoroheptanoic acid (ND)



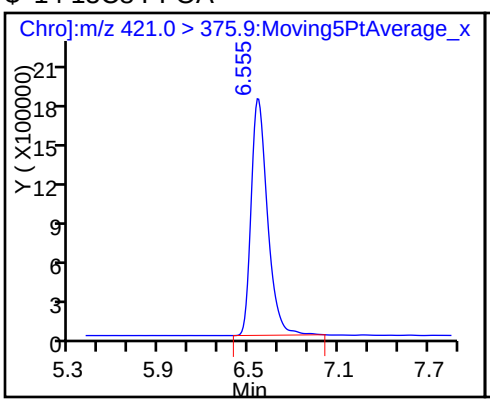
8 Perfluoroheptanoic acid (ND)



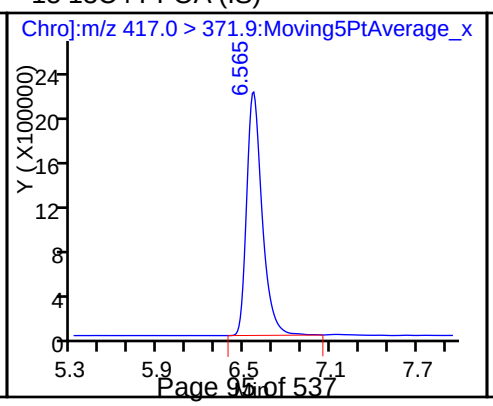
* 9 18O2 PFHxS (IS)



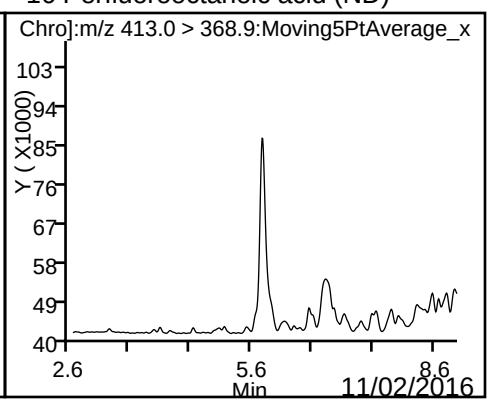
$ 14 13C8 PFOA



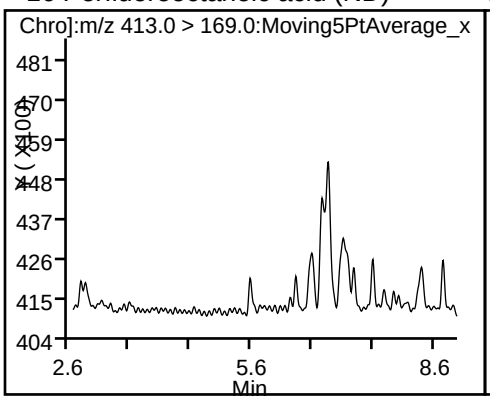
* 15 13C4 PFOA (IS)



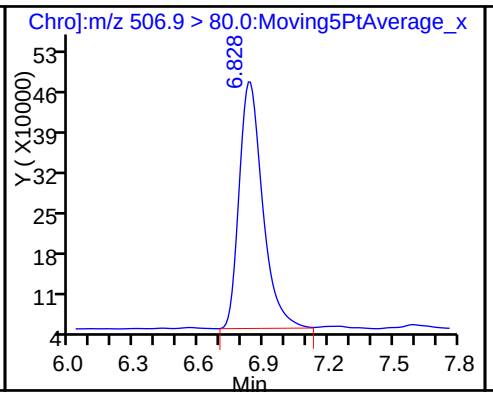
16 Perfluorooctanoic acid (ND)



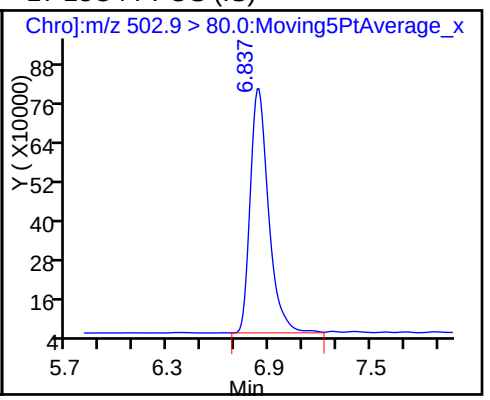
16 Perfluorooctanoic acid (ND)



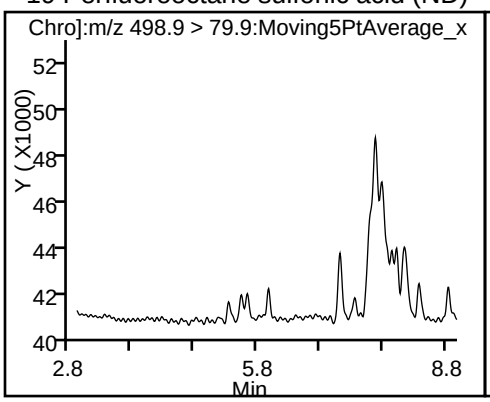
$ 18 13C8 PFOS



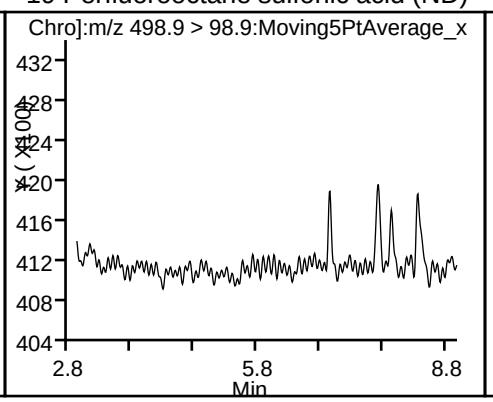
* 17 13C4 PFOS (IS)



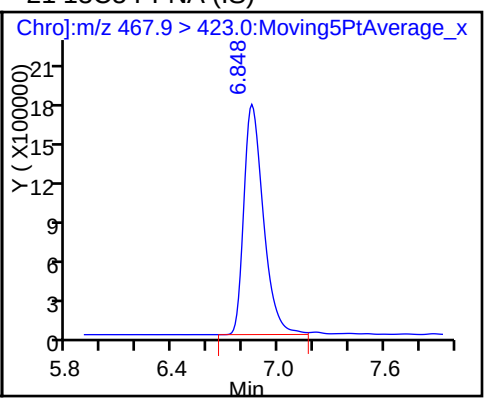
19 Perfluorooctane sulfonic acid (ND)



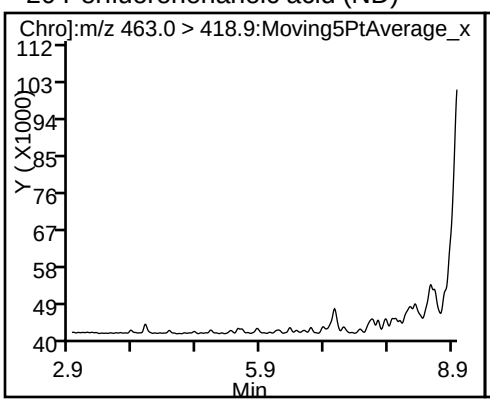
19 Perfluorooctane sulfonic acid (ND)



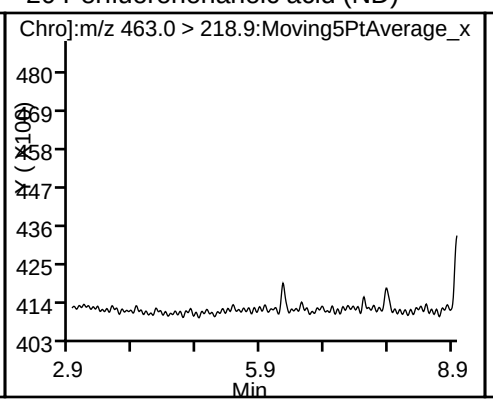
* 21 13C5 PFNA (IS)



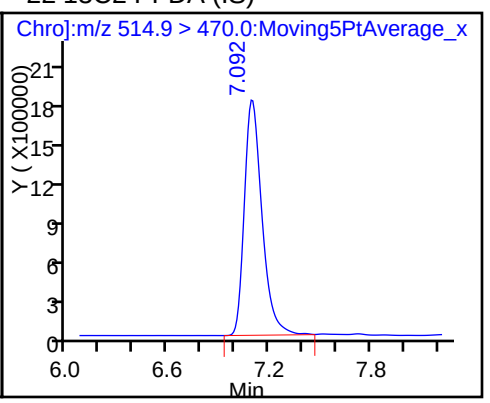
20 Perfluorononanoic acid (ND)



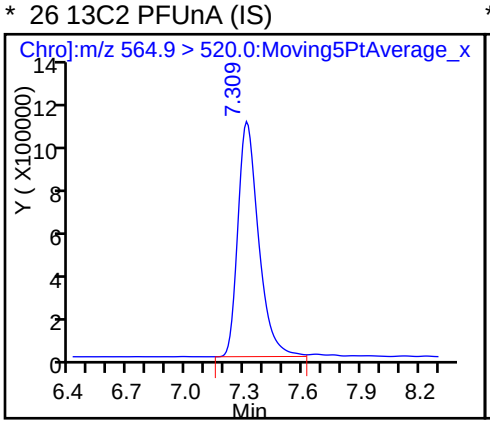
20 Perfluorononanoic acid (ND)



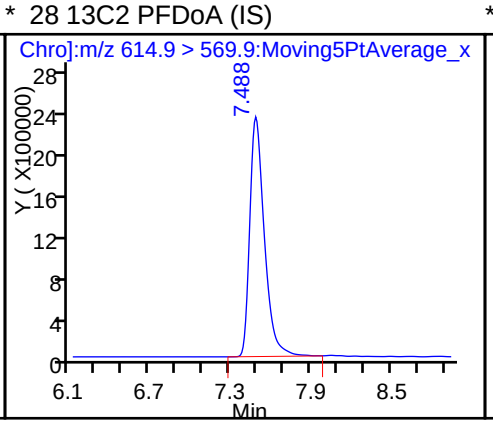
* 22 13C2 PFDA (IS)



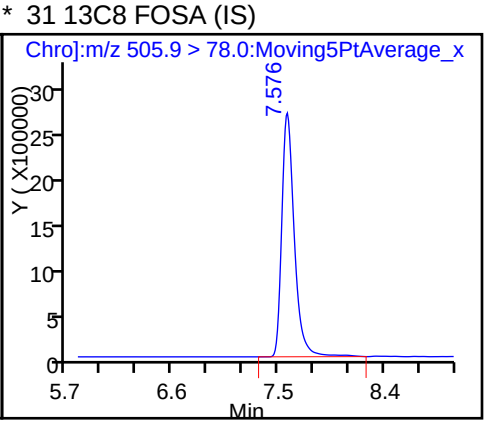
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: MW-FB5 | Lab Sample ID: 280-87416-8

Matrix: Water | Lab File ID: PC516I08015.d

Analysis Method: DV-LC-0012 | Date Collected: 08/24/2016 14:40

Extraction Method: 3535 | Date Extracted: 09/07/2016 17:42

Sample wt/vol: 277.5(mL) | Date Analyzed: 09/08/2016 12:51

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 341350 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0074	U	0.018	0.0074
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.027	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0063	U	0.027	0.0063
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.027	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0088	U	0.018	0.0088

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	100		60-155
STL01054	13C8 PFOS	124		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08015.d
Lims ID: 280-87416-A-8-A Lab Sample ID: 280-87416-8
Client ID: MW-FB5
Sample Type: Client
Inject. Date: 08-Sep-2016 12:51:38 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-8-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 20:38:36 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK012

First Level Reviewer: fiedlerh Date: 08-Sep-2016 20:37:57

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.812	4.048	-0.236		20503894	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.251				ND			
298.9 > 98.9		5.251							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.582	5.724	-0.142		14972386	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.159				ND			
363.0 > 168.9		6.159							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.035	6.168	-0.133		1929756	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.168				ND			
398.9 > 98.9		6.168							
$ 14 13C8 PFOA									
421.0 > 375.9	6.375	6.508	-0.133	1.000	16771200	9.77			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.376	6.518	-0.142		21311972	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.508				ND			
413.0 > 169.0		6.508							
$ 18 13C8 PFOS									
506.9 > 80.0	6.657	6.790	-0.133	1.000	4377575	11.5			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.658	6.790	-0.132		7288730	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.790				ND			
498.9 > 98.9		6.790							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.677	6.810	-0.133		16493869	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.810				ND			
463.0 > 218.9		6.810							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.922	7.054	-0.132		16987810	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.129	7.271	-0.142		10958533	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.318	7.450	-0.132		23364954	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.472	7.510	-0.038		701355	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

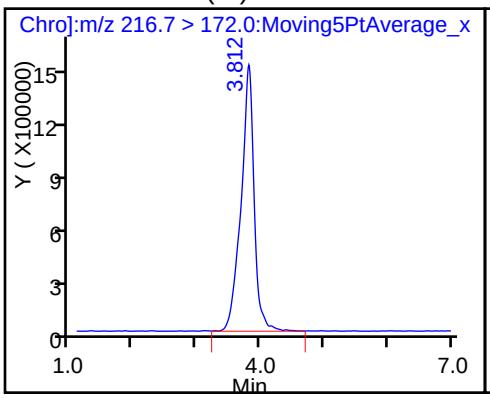
Report Date: 08-Sep-2016 20:39:05 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

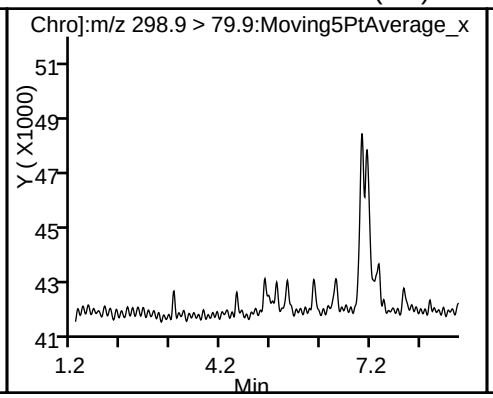
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08015.d

Injection Date:	08-Sep-2016 12:51:38	Instrument ID:	LC_LCMS5		
Lims ID:	280-87416-A-8-A	Lab Sample ID:	280-87416-8		
Client ID:	MW-FB5				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

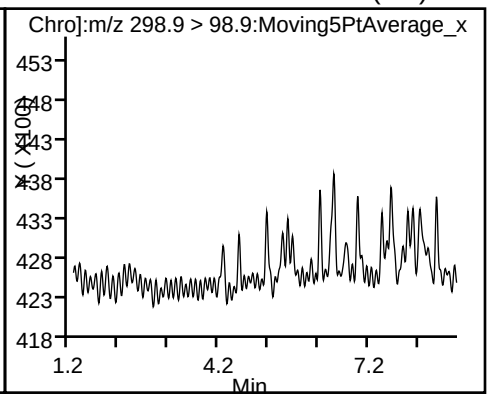
* 1 13C4 PFBA (IS)



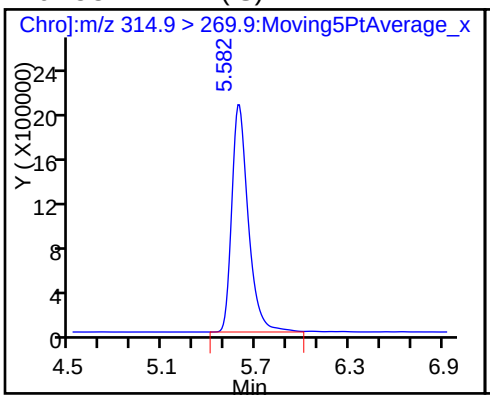
4 Perfluorobutane Sulfonate (ND)



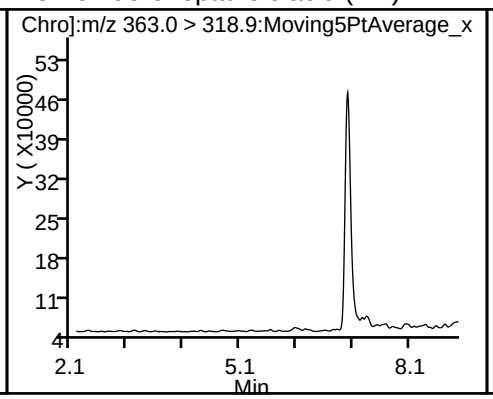
4 Perfluorobutane Sulfonate (ND)



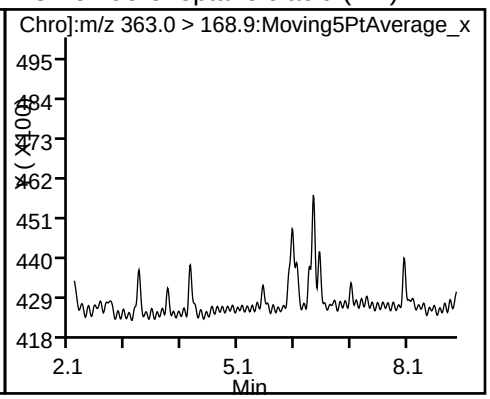
* 6 13C2 PFHxA (IS)



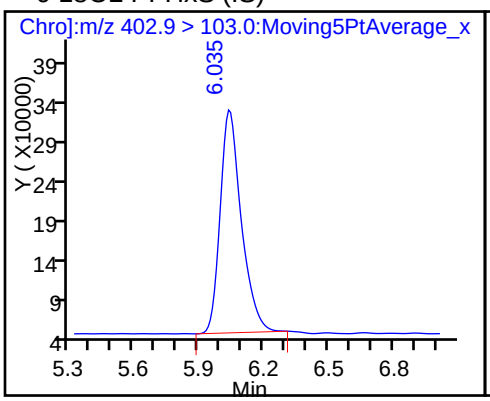
8 Perfluoroheptanoic acid (ND)



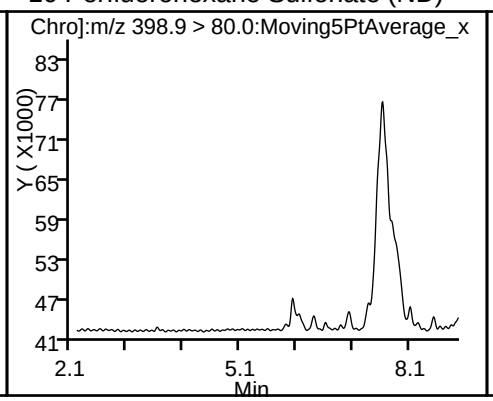
8 Perfluoroheptanoic acid (ND)



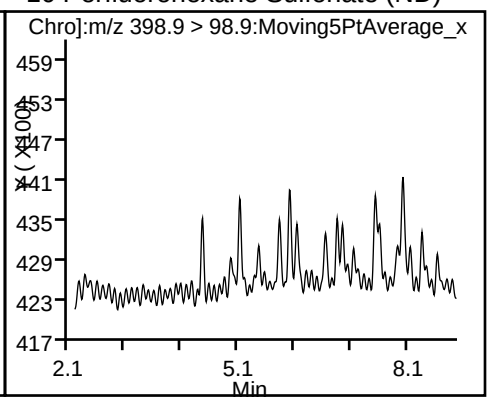
* 9 18O2 PFHxS (IS)



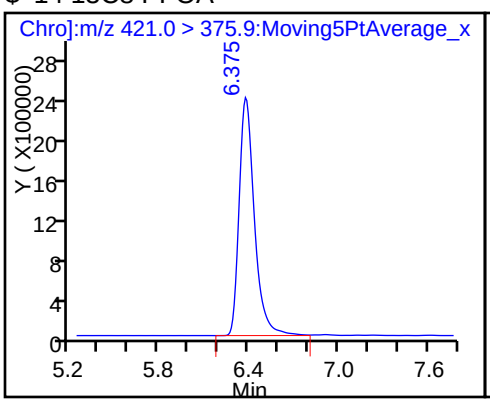
10 Perfluorohexane Sulfonate (ND)



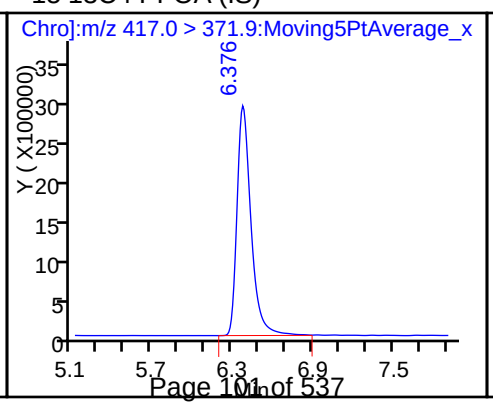
10 Perfluorohexane Sulfonate (ND)



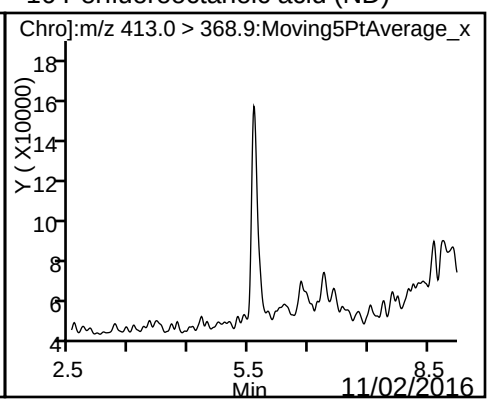
$ 14 13C8 PFOA



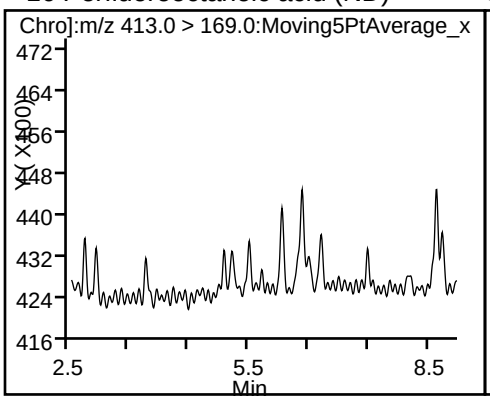
* 15 13C4 PFOA (IS)



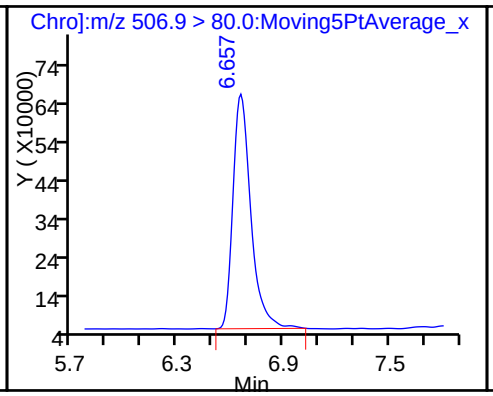
16 Perfluorooctanoic acid (ND)



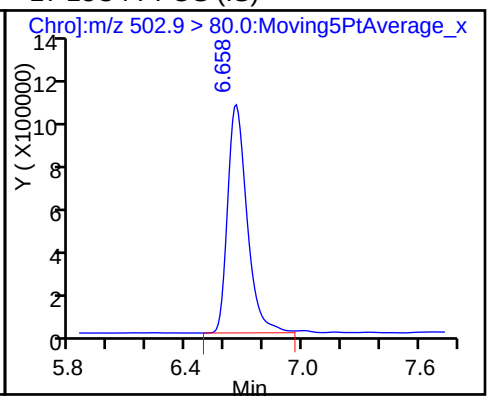
16 Perfluorooctanoic acid (ND)



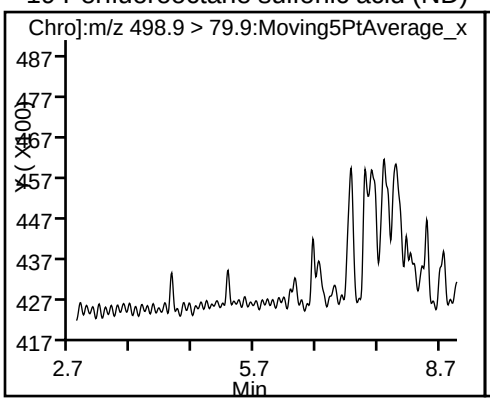
$ 18 13C8 PFOS



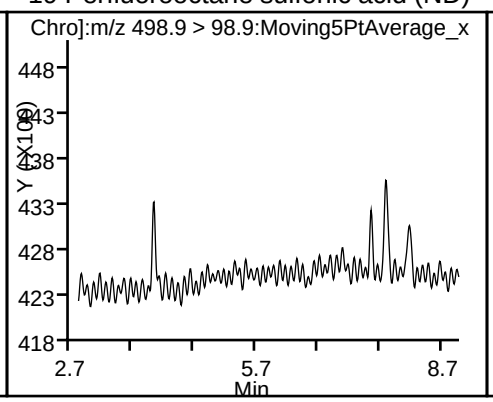
* 17 13C4 PFOS (IS)



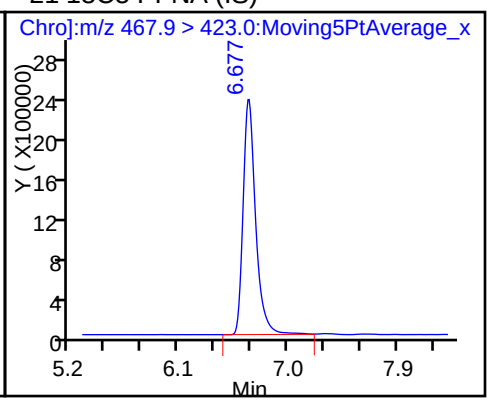
19 Perfluorooctane sulfonic acid (ND)



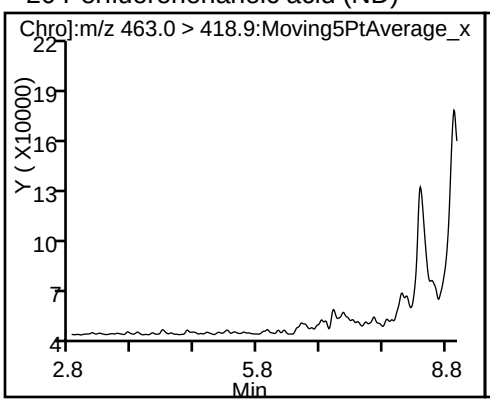
19 Perfluorooctane sulfonic acid (ND)



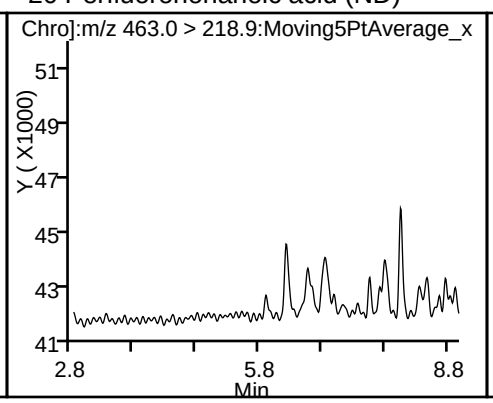
* 21 13C5 PFNA (IS)



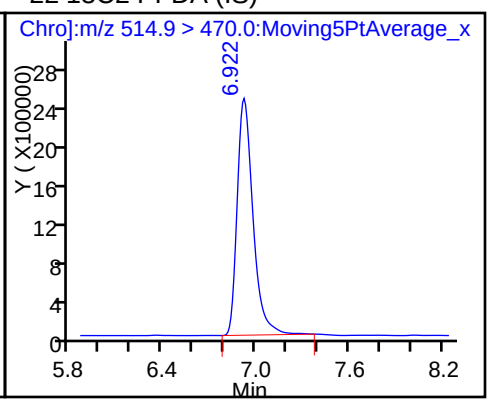
20 Perfluorononanoic acid (ND)



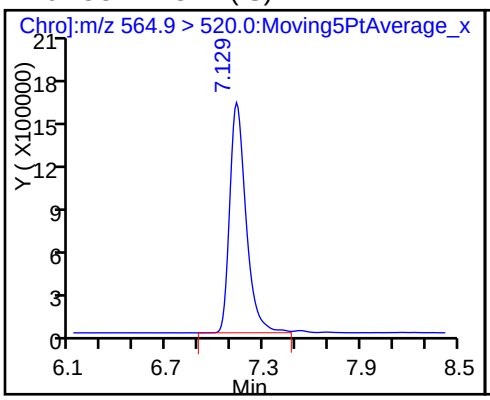
20 Perfluorononanoic acid (ND)



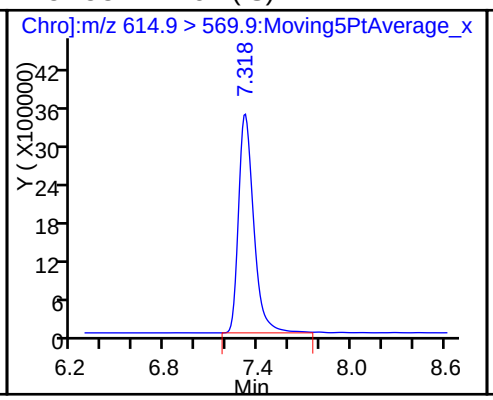
* 22 13C2 PFDA (IS)



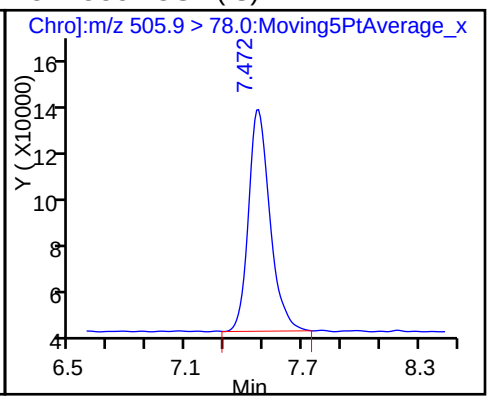
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: SB-PFC-MW2-3.0 | Lab Sample ID: 280-87416-9

Matrix: Solid | Lab File ID: PC516I02066.d

Analysis Method: DV-LC-0012 | Date Collected: 08/25/2016 13:25

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.17(g) | Date Analyzed: 09/02/2016 23:38

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 6.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.15	U	0.84	0.15
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.13	U	0.84	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.29	U	0.84	0.29
375-95-1	Perfluorononanoic acid (PFNA)	0.23	U	0.84	0.23
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.15	U	0.84	0.15
335-67-1	Perfluorooctanoic acid (PFOA)	0.24	U	0.84	0.24

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	119		57-153
STL01054	13C8 PFOS	107		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02066.d
Lims ID: 280-87416-A-9-A Lab Sample ID: 280-87416-9
Client ID: SB-PFC-MW2-3.0
Sample Type: Client
Inject. Date: 02-Sep-2016 23:38:09 ALS Bottle#: 0 Worklist Smp#: 54
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-9-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:34:27 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 08:01:30

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.190	4.266	-0.076		15253410	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.421				ND			
298.9 > 98.9		5.421							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.828	5.885	-0.057		10303124	10.0			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.310				ND			
398.9 > 98.9		6.310							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.311				ND			
363.0 > 168.9		6.311							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.300	-0.037		1561039	9.46			
$ 14 13C8 PFOA									
421.0 > 375.9	6.603	6.631	-0.028	1.000	12936527	11.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.603	6.631	-0.028		16154660	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.632				ND			
413.0 > 169.0		6.632							
$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.894	-0.029	1.000	3446393	9.91			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.894	-0.028		5784312	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.895				ND			
498.9 > 98.9		6.895							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.886	6.914	-0.028		12881484	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.914				ND			
463.0 > 218.9		6.914							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.149	-0.019		12541337	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.357	-0.019		8112435	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.517	7.536	-0.019		16115581	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.624	-0.019		19409347	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

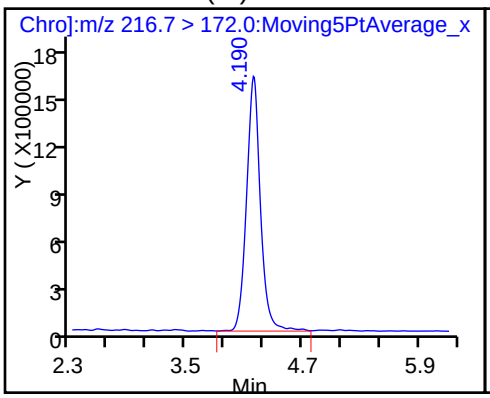
Report Date: 06-Sep-2016 08:34:33 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

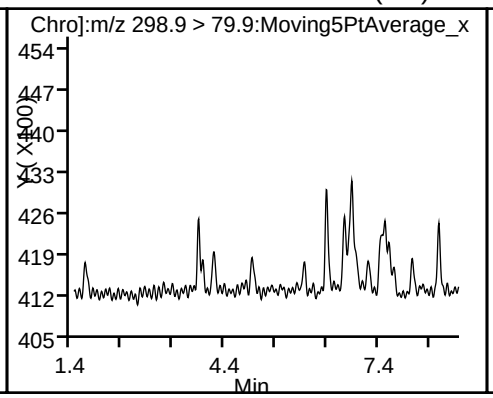
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02066.d

Injection Date:	02-Sep-2016 23:38:09	Instrument ID:	LC_LCMS5		
Lims ID:	280-87416-A-9-A	Lab Sample ID:	280-87416-9		
Client ID:	SB-PFC-MW2-3.0				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	54
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

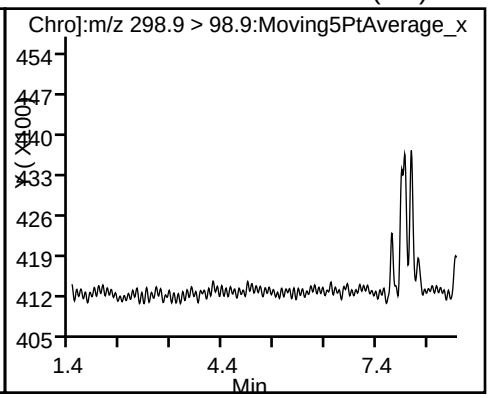
* 1 13C4 PFBA (IS)



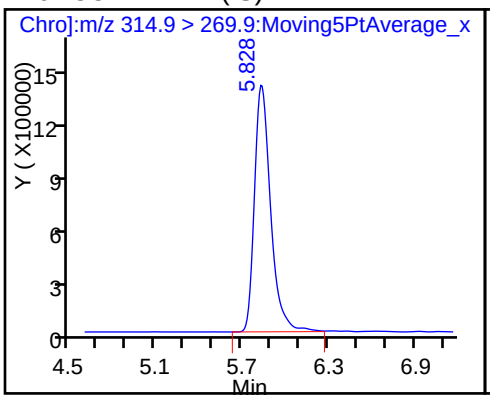
4 Perfluorobutane Sulfonate (ND)



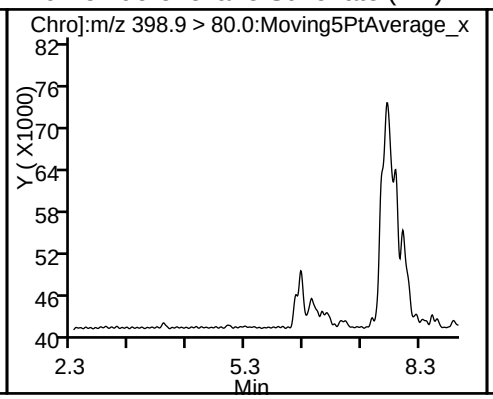
4 Perfluorobutane Sulfonate (ND)



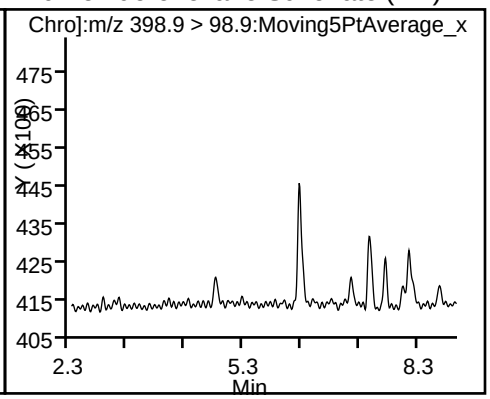
* 6 13C2 PFHxA (IS)



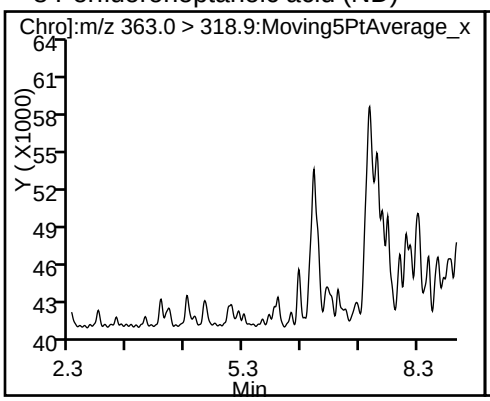
10 Perfluorohexane Sulfonate (ND)



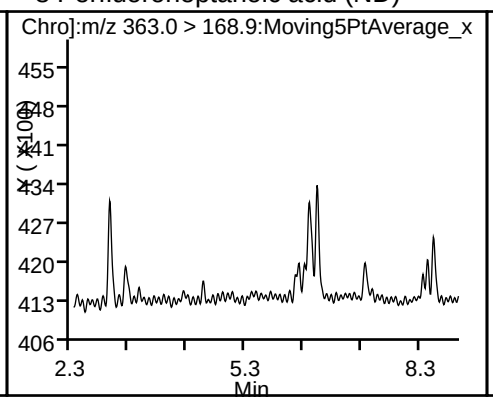
10 Perfluorohexane Sulfonate (ND)



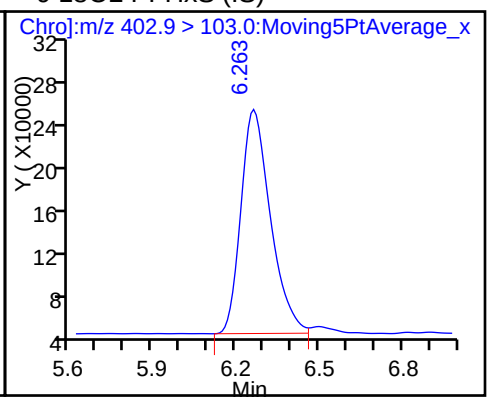
8 Perfluoroheptanoic acid (ND)



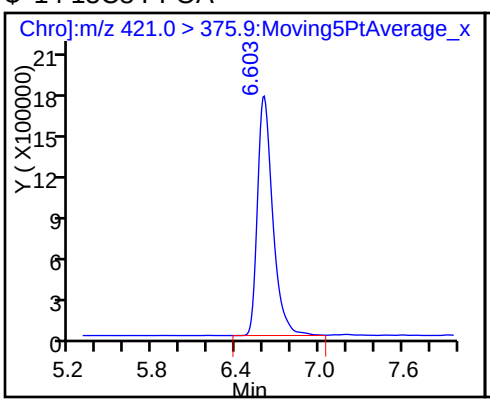
8 Perfluoroheptanoic acid (ND)



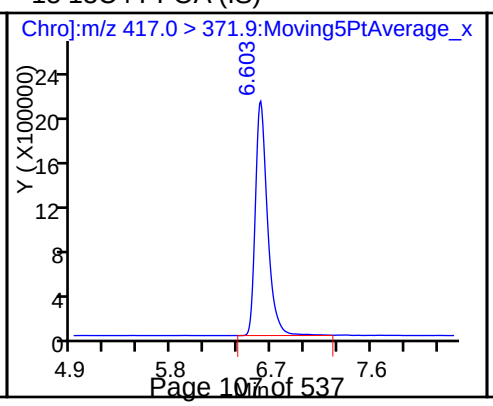
* 9 18O2 PFHxS (IS)



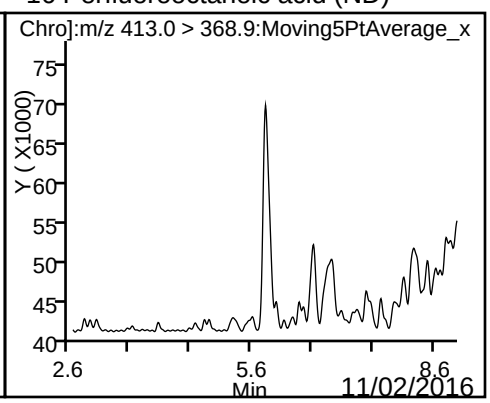
$ 14 13C8 PFOA



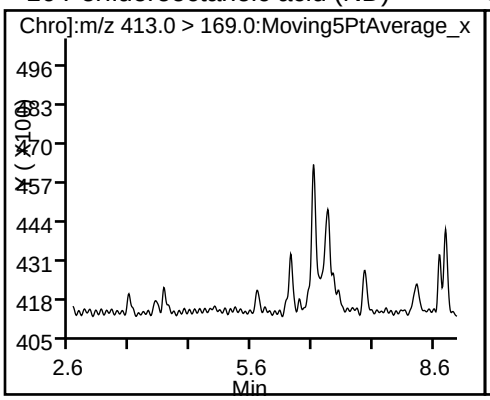
* 15 13C4 PFOA (IS)



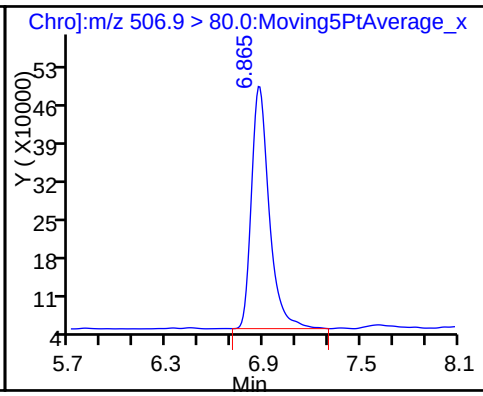
16 Perfluorooctanoic acid (ND)



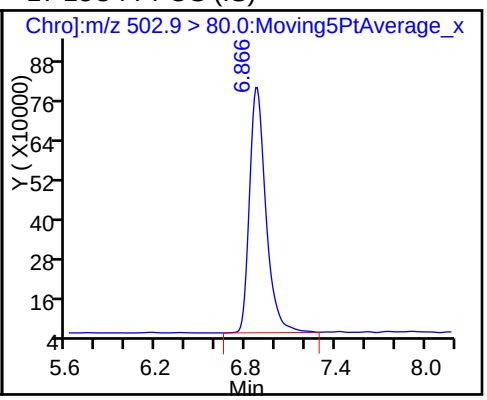
16 Perfluorooctanoic acid (ND)



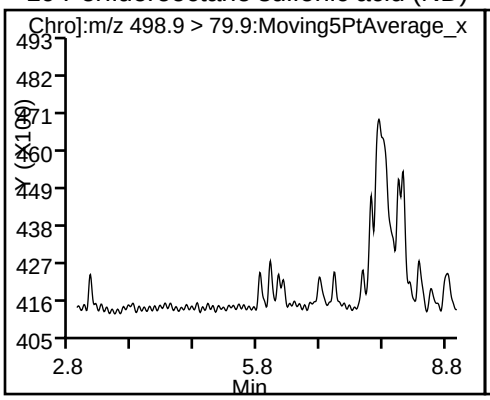
$ 18 13C8 PFOS



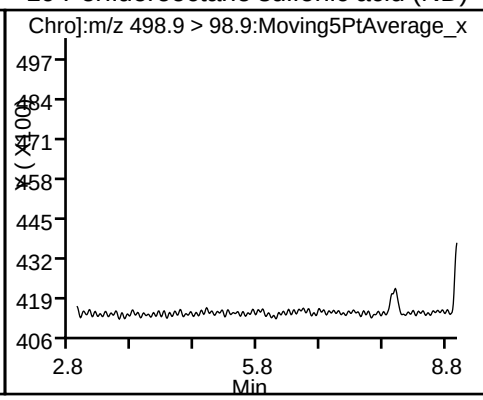
* 17 13C4 PFOS (IS)



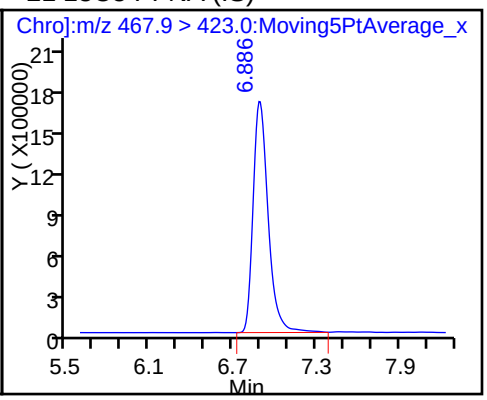
19 Perfluorooctane sulfonic acid (ND)



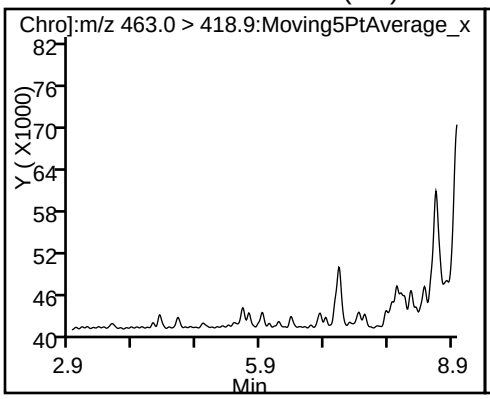
19 Perfluorooctane sulfonic acid (ND)



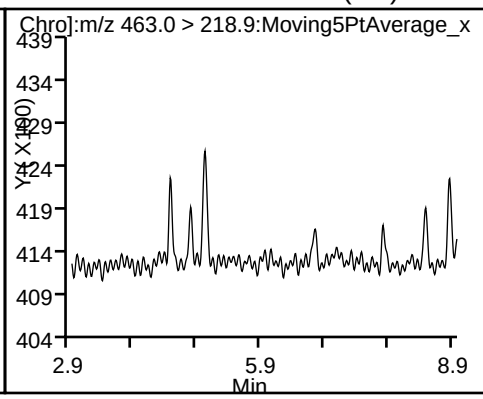
* 21 13C5 PFNA (IS)



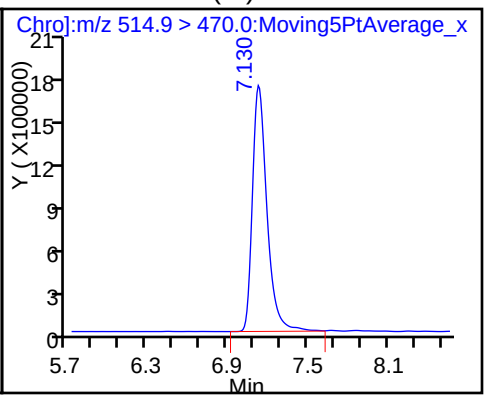
20 Perfluorononanoic acid (ND)



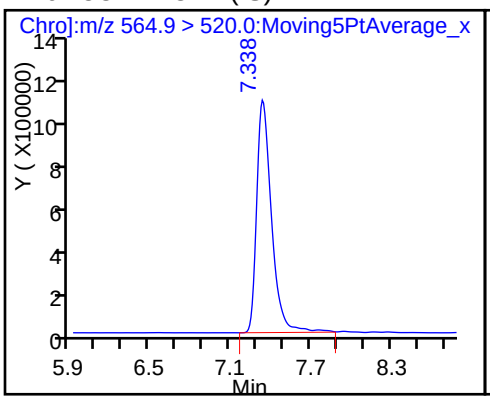
20 Perfluorononanoic acid (ND)



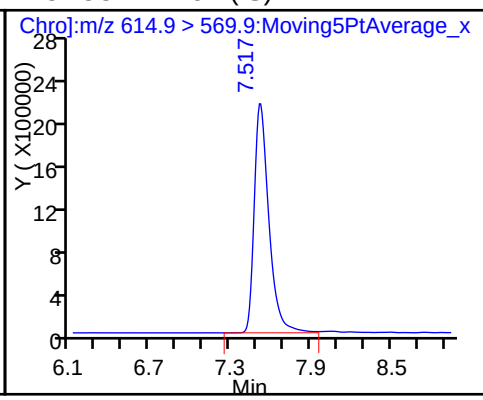
* 22 13C2 PFDA (IS)



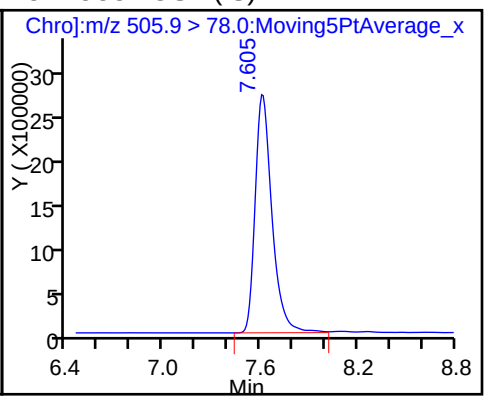
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: MW-FB6 | Lab Sample ID: 280-87416-10

Matrix: Water | Lab File ID: PC516I09110.d

Analysis Method: DV-LC-0012 | Date Collected: 08/25/2016 17:05

Extraction Method: 3535 | Date Extracted: 09/08/2016 22:13

Sample wt/vol: 296.2(mL) | Date Analyzed: 09/10/2016 03:08

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 341622 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0070	U *	0.017	0.0070
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.011	U	0.025	0.011
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0059	U	0.025	0.0059
375-95-1	Perfluorononanoic acid (PFNA)	0.015	U	0.034	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.011	U *	0.025	0.011
335-67-1	Perfluorooctanoic acid (PFOA)	0.0083	U	0.017	0.0083

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	119		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09110.d
Lims ID: 280-87416-B-10-A Lab Sample ID: 280-87416-10
Client ID: MW-FB6
Sample Type: Client
Inject. Date: 10-Sep-2016 03:08:57 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-b-10-a, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 12-Sep-2016 08:06:07 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK018

First Level Reviewer: fiedlerh Date: 12-Sep-2016 08:04:12

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.736	3.868	-0.132		24515535	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.128				ND			
298.9 > 98.9		5.128							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.525	5.591	-0.066		14594277	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.978	6.035	-0.057		2258369	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.026				ND			
363.0 > 168.9		6.026							
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.026				ND			
398.9 > 98.9		6.026							
$ 14 13C8 PFOA									
421.0 > 375.9	6.319	6.375	-0.057	1.001	17943454	10.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.309	6.376	-0.067		22048171	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.376				ND			
413.0 > 169.0		6.376							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.591	6.648	-0.057		7322856	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.639				ND			
498.9 > 98.9		6.639							
$ 18 13C8 PFOS									
506.9 > 80.0	6.591	6.638	-0.047	1.000	4250560	11.1			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.602	6.658	-0.056		18158564	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.659				ND			
463.0 > 218.9		6.659							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.855	6.903	-0.048		17066800	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.063	7.110	-0.047		9346165	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.251	7.289	-0.038		16724239	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.434	7.462	-0.028		480024	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

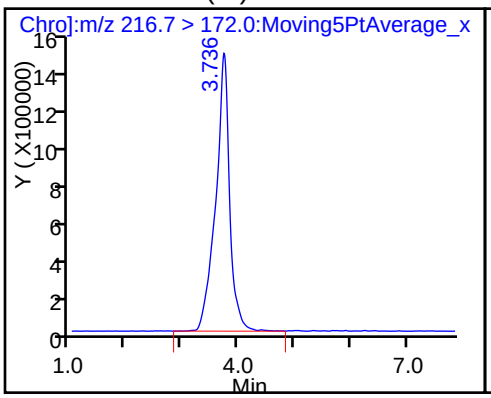
Report Date: 12-Sep-2016 08:06:30 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

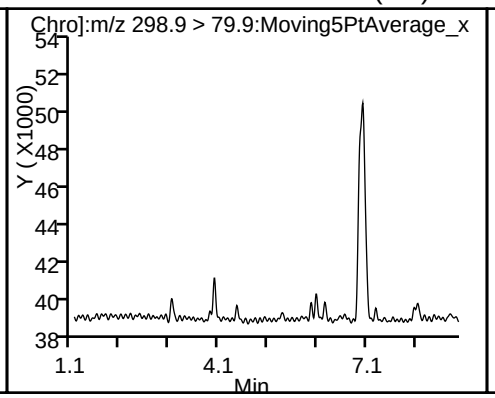
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09110.d

Injection Date:	10-Sep-2016 03:08:57	Instrument ID:	LC_LCMS5		
Lims ID:	280-87416-B-10-A	Lab Sample ID:	280-87416-10		
Client ID:	MW-FB6				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

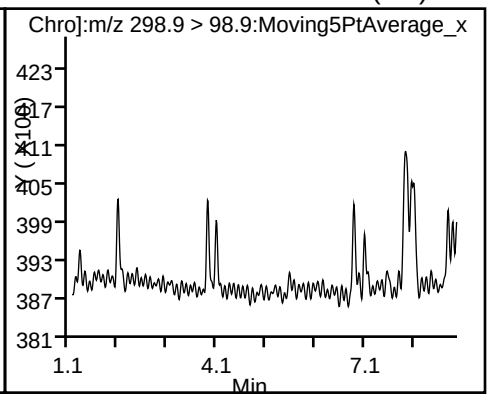
* 1 13C4 PFBA (IS)



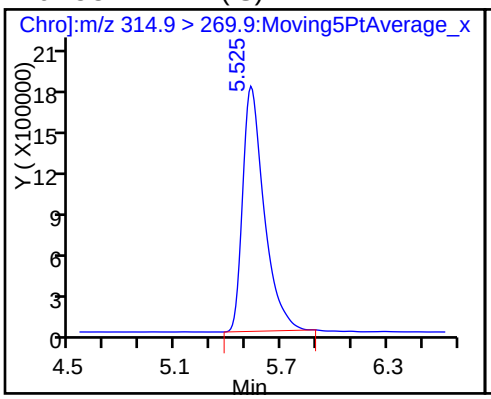
4 Perfluorobutane Sulfonate (ND)



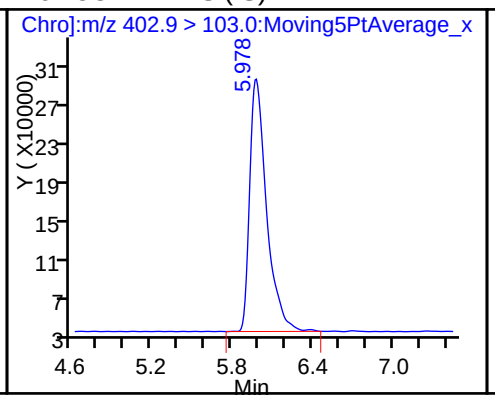
4 Perfluorobutane Sulfonate (ND)



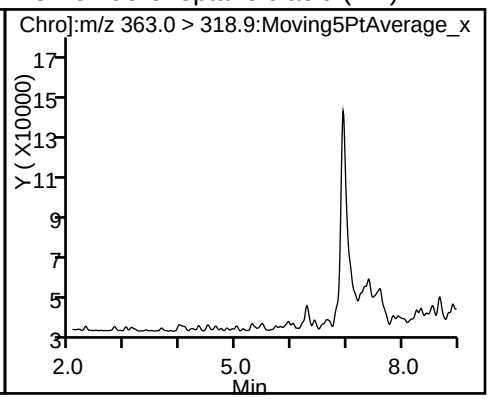
* 6 13C2 PFHxA (IS)



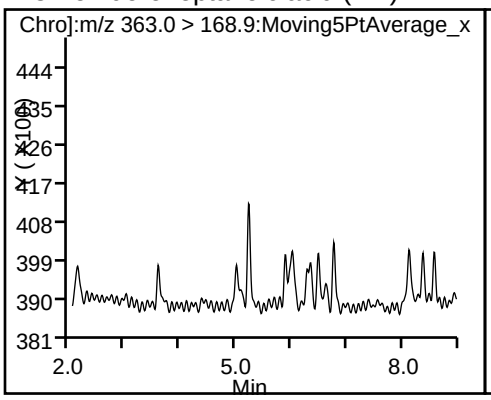
* 9 18O2 PFHxS (IS)



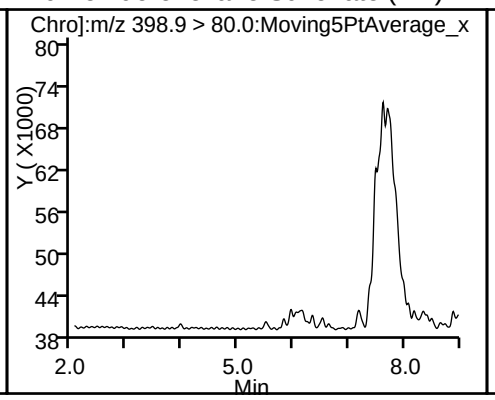
8 Perfluoroheptanoic acid (ND)



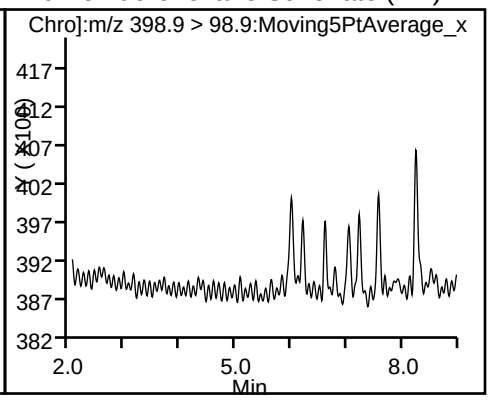
8 Perfluoroheptanoic acid (ND)



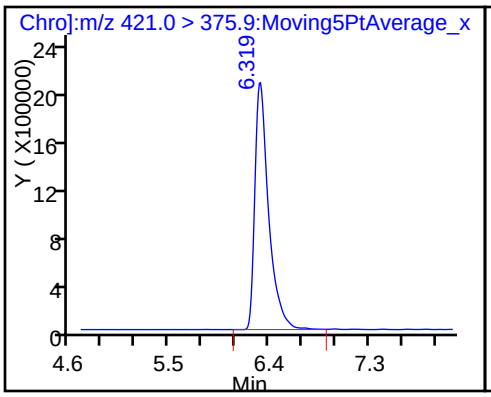
10 Perfluorohexane Sulfonate (ND)



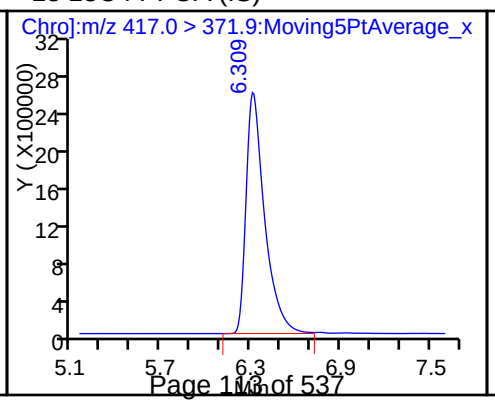
10 Perfluorohexane Sulfonate (ND)



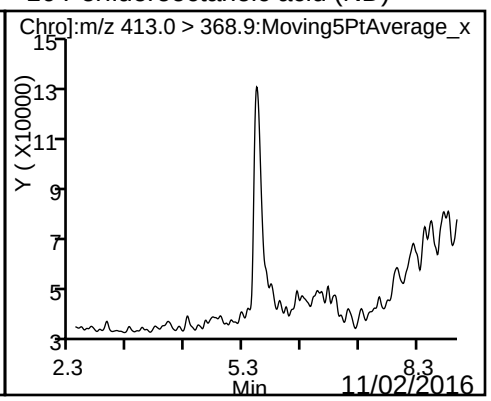
$ 14 13C8 PFOA



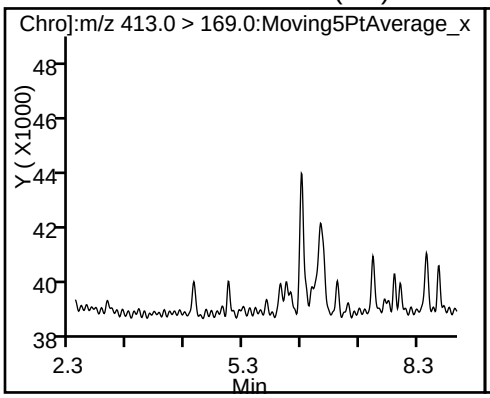
* 15 13C4 PFOA (IS)



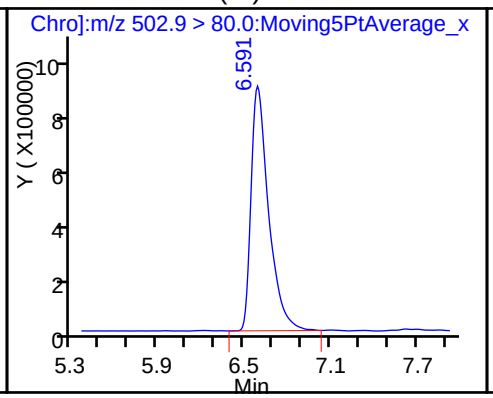
16 Perfluorooctanoic acid (ND)



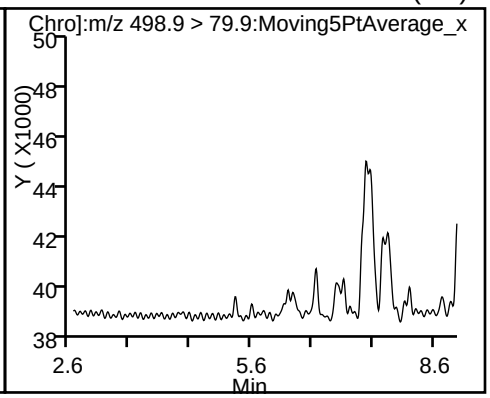
16 Perfluorooctanoic acid (ND)



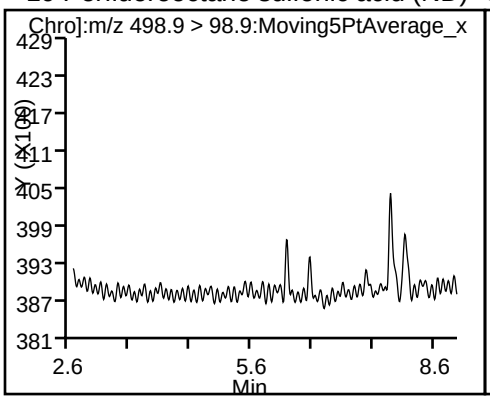
* 17 13C4 PFOS (IS)



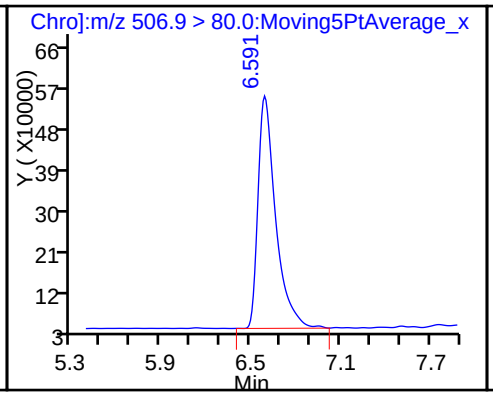
19 Perfluorooctane sulfonic acid (ND)



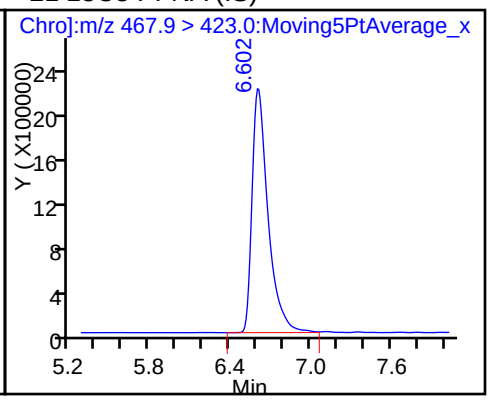
19 Perfluorooctane sulfonic acid (ND)



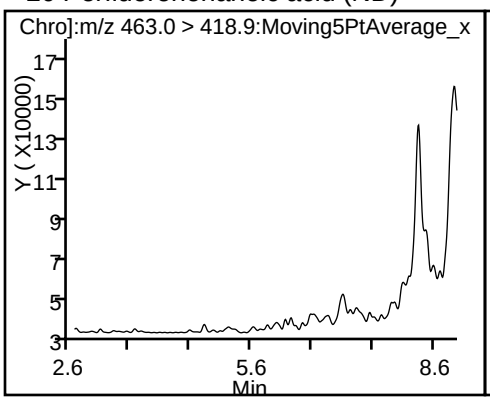
$ 18 13C8 PFOS



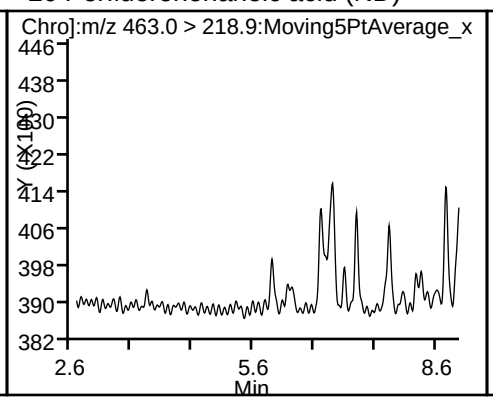
* 21 13C5 PFNA (IS)



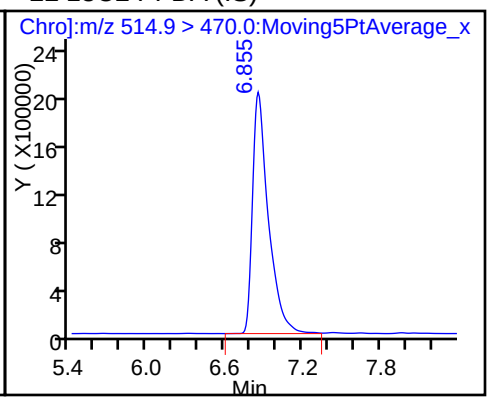
20 Perfluorononanoic acid (ND)



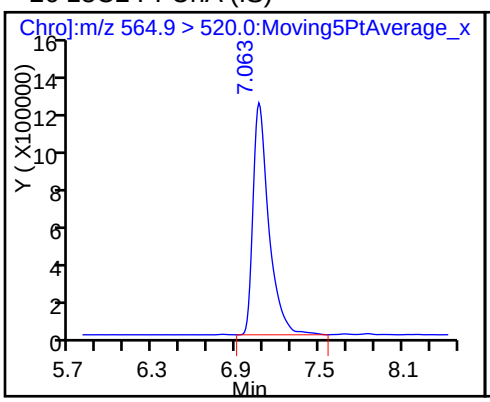
20 Perfluorononanoic acid (ND)



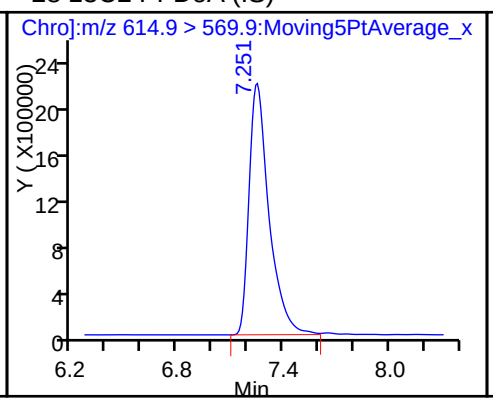
* 22 13C2 PFDA (IS)



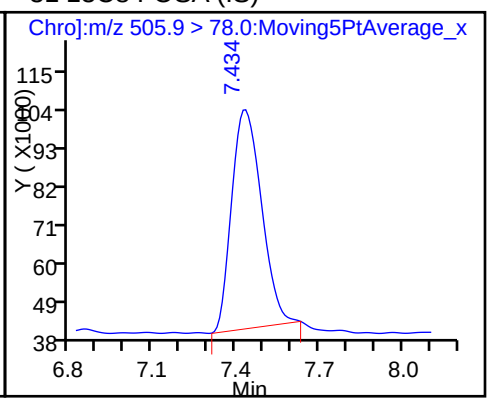
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-87416-1 Analy Batch No.: 340408

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/01/2016 10:55 Calibration End Date: 09/01/2016 12:33 Calibration ID: 26894

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-340408/3	PC516I01016.d
Level 2	STD0005 280-340408/4	PC516I01017.d
Level 3	STD0010 280-340408/5	PC516I01018.d
Level 4	STD0020 280-340408/6	PC516I01019.d
Level 5	STD0050 280-340408/7	PC516I01020.d
Level 6	STD0100 280-340408/8	PC516I01021.d
Level 7	STD0200 280-340408/9	PC516I01022.d
Level 8	STD0500 280-340408/10	PC516I01023.d
Level 9	STD1250 280-340408/11	PC516I01024.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.9096 0.9705	1.0870 0.9382	0.9432 0.9713	0.9822 0.9513	0.9107	Lin2	-0.002	0.9644							0.9960		0.9800
Perfluoropentanoic acid (PFPA)	1.4841 1.0917	1.3447 1.1157	1.1123 1.0764	1.1171 1.1155	1.0333	Lin2	0.0851	1.0817							0.9980		0.9800
Perfluorobutane Sulfonate (PFBS)	4.6094 4.4492	3.9071 4.3295	5.6510 4.1681	4.3433 4.5777	3.9274	Lin2	0.0341	4.4023							0.9830		0.9800
Perfluorobutanesulfonic acid (PFBS)	4.6094 4.4492	3.9071 4.3295	5.6510 4.1681	4.3433 4.5777	3.9274	Lin2	0.0341	4.4023							0.9830		0.9800
Perfluorohexanoic acid (PFHxA)	1.0838 0.8634	0.9846 0.8952	0.9566 0.8605	0.9479 0.8919	0.8496	Lin2	0.0429	0.8837							0.9990		0.9800
Perfluoroheptanoic acid (PFHpA)	0.8765 0.8592	0.8543 0.8377	0.9629 0.8102	0.9140 0.7237	0.8179	Lin2	0.0126	0.8383							0.9930		0.9800
Perfluorohexane Sulfonate (PFHxS)	3.9524 4.0975	4.1340 3.8373	4.5810 3.6691	4.0057 3.8196	4.0647	Lin2	0.0202	3.9968							0.9950		0.9800
Perfluorohexanesulfonic acid	3.9524 4.0975	4.1340 3.8373	4.5810 3.6691	4.0057 3.8196	4.0647	Lin2	0.0202	3.9968							0.9950		0.9800
Perfluoroheptane Sulfonate	0.8318 1.1565	1.0386 1.1033	1.1629 1.1382	1.1078 0.9298	1.0266	Lin2	-0.045	1.1012							0.9930		0.9800
Perfluoroheptanesulfonic Acid (PFHpS)	0.8318 1.1565	1.0386 1.1033	1.1629 1.1382	1.1078 0.9298	1.0266	Lin2	-0.045	1.1012							0.9930		0.9800
Perfluorooctanoic acid (PFOA)	1.4138 1.0413	1.0078 0.9958	1.1068 0.9633	1.1452 0.7977	1.0059	Lin2	0.0833	0.9708							0.9880		0.9800
Perfluorooctanesulfonic acid (PFOS)	0.6543 1.1240	0.7781 1.0430	1.0104 1.0601	1.0556 0.8574	0.9643	Lin2	-0.074	1.0266							0.9910		0.9800
Perfluorononanoic acid (PFNA)	0.9805 1.0535	1.0407 0.9900	1.0870 1.0754	1.1338 1.0497	1.0094	Lin2	-0.012	1.0589							0.9980		0.9800

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-87416-1 Analy Batch No.: 340408

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/01/2016 10:55 Calibration End Date: 09/01/2016 12:33 Calibration ID: 26894

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	1.0741 0.9515	0.9253 0.9378	1.0699 0.9202	1.0806 0.9145	0.8703	Lin2	0.0254	0.9465							0.9930		0.9800
Perfluorodecane sulfonate (PFDS)	1.2939 1.0705	0.9032 1.0409	1.0195 1.0582	0.9715 0.8904	1.0543	Lin2	0.0449	0.9877							0.9900		0.9800
Perfluorodecane Sulfonic acid	1.2939 1.0705	0.9032 1.0409	1.0195 1.0582	0.9715 0.8904	1.0543	Lin2	0.0449	0.9877							0.9900		0.9800
Perfluoroundecanoic acid (PFUnA)	1.8620 1.3779	1.3933 1.3126	1.4864 1.2769	1.3636 1.1879	1.3125	Lin2	0.1097	1.2888							0.9960		0.9800
Perfluorododecanoic acid (PFDoA)	0.9676 1.0267	0.9513 0.9724	1.0241 0.9636	1.0077 0.9418	0.8911	Lin2	0	0.9720							0.9980		0.9800
Perfluorooctane Sulfonamide (FOSA)	1.1303 1.0382	1.0157 1.0241	1.1067 1.0111	1.0551 1.0625	1.0001	Lin2	0.0179	1.0317							0.9990		0.9800
Perfluorotridecanoic Acid (PFTriA)	1.6081 1.4218	1.2419 1.2644	1.4228 1.2662	1.3173 1.1435	1.2018	Lin2	0.0631	1.2587							0.9930		0.9800
Perfluorotetradecanoic acid (PFTeA)	1.2332 1.0023	0.9521 0.9922	1.0367 0.9862	1.0370 0.9147	0.9631	Lin2	0.0465	0.9672							0.9970		0.9800
13C8 PFOA	0.8563 0.7997	1.0405 0.8094	0.8013 0.7312	0.9409 0.6137	0.8735	Lin1	0.1590	0.6728							0.9860		0.9800
13C8 PFOS	0.8685 0.6111	0.6317 0.5956	0.6595 0.5652	0.6696 0.4699	0.5676	Lin2	0.0558	0.5689							0.9900		0.9800

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-87416-1 Analy Batch No.: 340408

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/01/2016 10:55 Calibration End Date: 09/01/2016 12:33 Calibration ID: 26894

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-340408/3	PC516I01016.d
Level 2	STD0005 280-340408/4	PC516I01017.d
Level 3	STD0010 280-340408/5	PC516I01018.d
Level 4	STD0020 280-340408/6	PC516I01019.d
Level 5	STD0050 280-340408/7	PC516I01020.d
Level 6	STD0100 280-340408/8	PC516I01021.d
Level 7	STD0200 280-340408/9	PC516I01022.d
Level 8	STD0500 280-340408/10	PC516I01023.d
Level 9	STD1250 280-340408/11	PC516I01024.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorobutanoic acid (PFBA)	BA	Lin2	259031 12895488	712107 24783380	1265156 63432662	2607159 154342797	6654790	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoropentanoic acid (PFPA)	HXA	Lin2	297189 10624114	640986 20937672	1071032 52082548	2195290 123787287	5467867	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorobutane Sulfonate (PFBS)	HXS	Lin2	126832 5156065	252687 10278122	679417 25102967	1141745 58702268	2685289	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorobutanesulfonic acid (PFBS)	HXS	Lin2	126832 5156065	252687 10278122	679417 25102967	1141745 58702268	2685289	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorohexanoic acid (PFHxA)	HXA	Lin2	217036 8402668	469372 16800712	921156 41635305	1862676 98976344	4495592	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoroheptanoic acid (PFHpA)	OA	Lin2	281748 12959988	628524 24713014	1454204 59774956	2768798 142918889	6648694	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorohexane Sulfonate (PFHxS)	HXS	Lin2	116129 5070334	285485 9727199	588104 23595828	1124374 52301837	2967617	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluorohexanesulfonic acid	HXS	Lin2	116129 5070334	285485 9727199	588104 23595828	1124374 52301837	2967617	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluoroheptane Sulfonate	PFOS	Lin2	85490 5121961	248542 9639164	521954 22770367	1083388 50154548	2541992	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluoroheptanesulfonic Acid (PFHpS)	PFOS	Lin2	85490 5121961	248542 9639164	521954 22770367	1083388 50154548	2541992	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluorooctanoic acid (PFOA)	OA	Lin2	454474 15706871	741430 29379405	1671542 71067411	3469106 157527806	8176935	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctanesulfonic acid (PFOS)	PFOS	Lin2	67459 4994005	186796 9140566	454948 21274119	1035672 46396532	2395297	0.191 9.55	0.478 19.1	0.955 47.8	1.91 119	4.78
Perfluorononanoic acid (PFNA)	NA	Lin2	239678 11860060	605760 22299666	1260645 53901822	2625464 122511662	6259116	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorodecanoic acid (PFDA)	DA	Lin2	244510 10395613	519575 20217922	1147452 48609515	2269609 118049050	5263939	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-87416-1 Analy Batch No.: 340408

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/01/2016 10:55 Calibration End Date: 09/01/2016 12:33 Calibration ID: 26894

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorodecane sulfonate (PFDS)	PFOS	Lin2	134803 4806013	219098 9218011	463863 21459219	963082 48688260	2646264	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluorodecane Sulfonic acid	PFOS	Lin2	134803 4806013	219098 9218011	463863 21459219	963082 48688260	2646264	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluoroundecanoic acid (PFUnA)	UNA	Lin2	249219 8601057	478266 16971733	997089 40165888	1832257 91112669	4589716	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorododecanoic acid (PFDoA)	DOA	Lin2	276106 13981225	694761 26732518	1440999 65559095	2908460 160800256	6879432	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctane Sulfonamide (FOSA)	FOSA	Lin2	398980 16605818	861583 32592976	1815022 77190935	3520358 173475638	8682703	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotridecanoic Acid (PFTriA)	DOA	Lin2	458869 19361463	906994 34759616	2002045 86143679	3801994 195237711	9277562	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotetradecanoic acid (PFTeA)	DOA	Lin2	351893 13647994	695346 27275322	1458639 67093348	2992817 156178707	7435175	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOA	OA	Lin1	275277 12063143	765475 23880169	1210205 53941464	2850136 121199928	7100681	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOS	PFOS	Lin2	89635 2717920	151819 5225135	297271 11353754	657593 25454631	1411484	0.191 9.56	0.478 19.1	0.956 47.8	1.91 120	4.78

Curve Type Legend:
Lin1 = Linear 1/conc ISTD
Lin2 = Linear 1/conc^2 ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01016.d
Lims ID: STD0002
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 01-Sep-2016 10:55:16 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0002, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:51:58 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:40:40

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	4.276	-0.275		14238181	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.030	4.276	-0.246	1.007	259031	0.1904			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.071	5.308	-0.237	0.896	297189	0.1957			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.194	5.421	-0.227	0.853	126832	0.1776			
298.9 > 98.9	5.194	5.421	-0.227	0.853	45049		2.82(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.194	5.421	-0.227	0.853	126832	0.1776			
298.9 > 98.9	5.194	5.421	-0.227	0.853	45049		2.82(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.657	5.885	-0.228		10012322	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.648	5.885	-0.237	0.998	217036	0.1968			
313.0 > 118.6	5.743	5.885	-0.142	1.015	2343		92.63(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.092	6.310	-0.218		1470639	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.111	6.301	-0.190	1.003	116129	0.1818			
398.9 > 98.9	6.092	6.301	-0.209	1.000	51110		2.27(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.301	-0.190	1.003	116129	0.1818			
398.9 > 98.9	6.092	6.301	-0.209	1.000	51110		2.27(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.083	6.301	-0.218	0.944	281748	0.1941			
363.0 > 168.9	6.102	6.301	-0.199	0.947	59241		4.76(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									M
449.0 > 79.9	6.403	6.631	-0.228	0.954	85490	0.1842			M
449.0 > 98.9	6.432	6.631	-0.199	0.958	52026		1.64(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									M
449.0 > 79.9	6.403	6.631	-0.228	0.954	85490	0.1842			M
449.0 > 98.9	6.432	6.631	-0.199	0.958	52026		1.64(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.641	-0.199	1.000	275277	0.0183			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.641	-0.199		16072729	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.641	-0.199	1.000	454474	0.2054			
413.0 > 169.0	6.442	6.641	-0.199	1.000	111414		4.08(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.704	6.903	-0.199	0.999	89635	0.1938			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.894	-0.180		5160421	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.715	6.904	-0.189	1.000	67459	0.1943			
498.9 > 98.9	6.696	6.904	-0.208	0.997	43669		1.54(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.725	6.914	-0.189		12221855	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.725	6.914	-0.189	1.000	239678	0.1969			R
463.0 > 218.9	6.753	6.914	-0.161	1.004	46532		5.15(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.969	7.149	-0.180		11381922	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.979	7.149	-0.170	1.001	244510	0.2001			R
513.0 > 219.0	6.998	7.149	-0.151	1.004	25108		9.74(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.148	7.328	-0.180	1.065	134803	0.2074			
598.9 > 99.0	7.167	7.328	-0.161	1.067	17739		7.60(2.84-2.84)		
25 Perfluorodecane Sulfonate									R
598.9 > 79.9	7.148	7.328	-0.180	1.065	134803	0.2074			R
598.9 > 99.0	7.167	7.328	-0.161	1.067	17739		7.60(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.347	-0.161	1.001	249219	0.2038			R
563.0 > 268.9	7.196	7.347	-0.151	1.003	33490		7.44(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.177	7.357	-0.180		6692250	10.0			
29 Perfluorododecanoic acid									R
613.0 > 568.9	7.375	7.526	-0.151	1.001	276106	0.1992			R
613.0 > 168.9	7.356	7.526	-0.170	0.999	14735		18.74(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.526	-0.161		14267832	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.516	7.668	-0.152	1.021	458869	0.2054			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.700	-0.189	0.999	398980	0.2018			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.699	-0.180		17648728	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.639	7.800	-0.161	1.037	351893	0.2070			
712.9 > 169.0	7.649	7.800	-0.151	1.038	82285		4.28(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	10.00	Units: uL

Report Date: 02-Sep-2016 11:51:59 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01016.d

Injection Date: 01-Sep-2016 10:55:16 Instrument ID: LC_LCMS5

Lims ID: STD0002

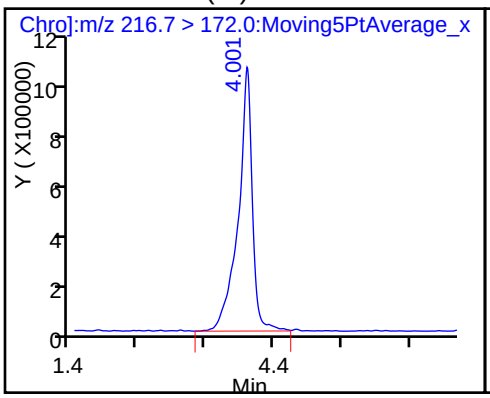
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

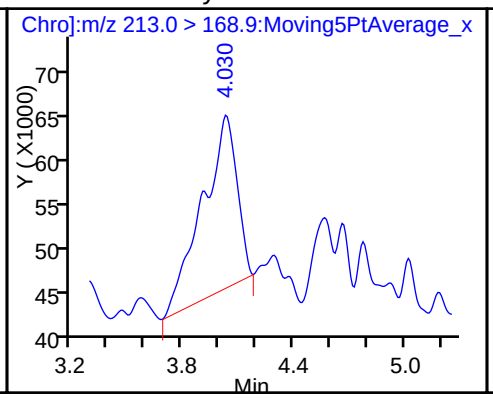
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

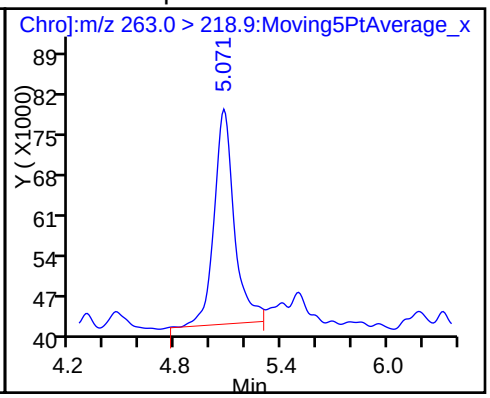
* 1 13C4 PFBA (IS)



2 Perfluorobutyric acid



3 Perfluoropentanoic acid



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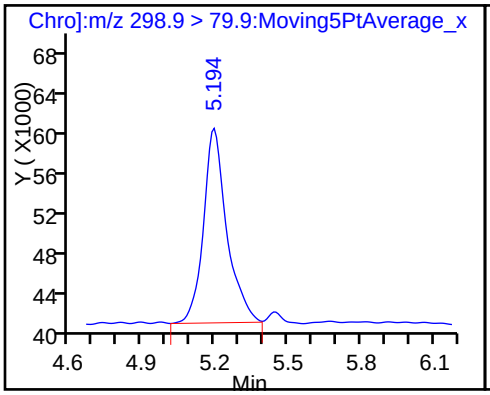
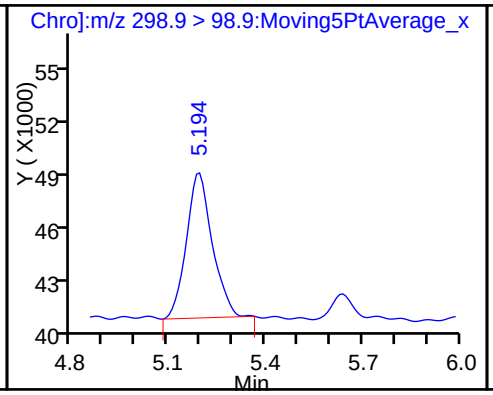
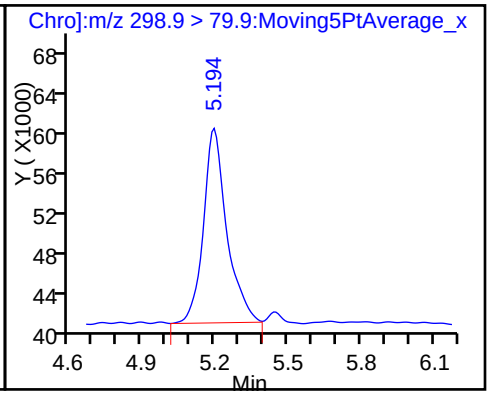


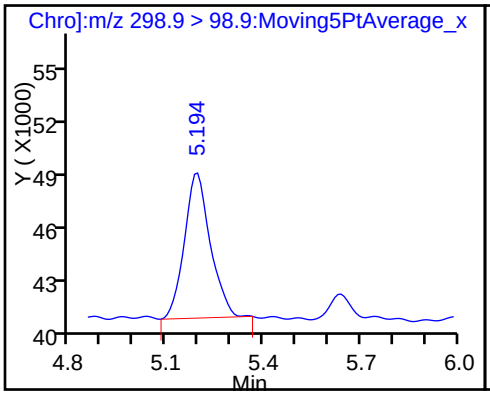
4 Perfluorobutane Sulfonate



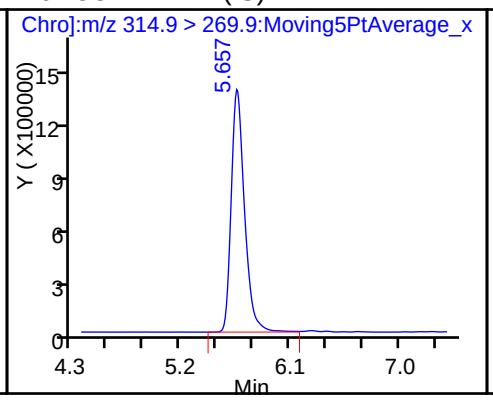
5 Perfluorobutanesulfonic acid



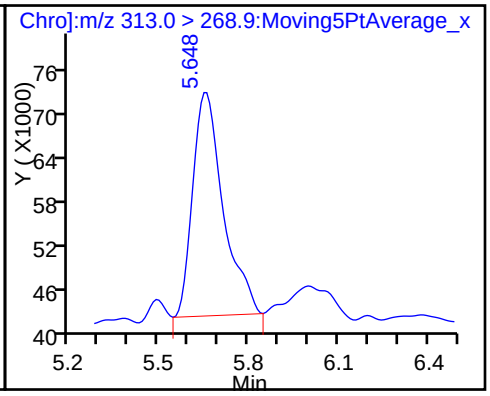
5 Perfluorobutanesulfonic acid



* 6 13C2 PFHxA (IS)



7 Perfluorohexanoic acid



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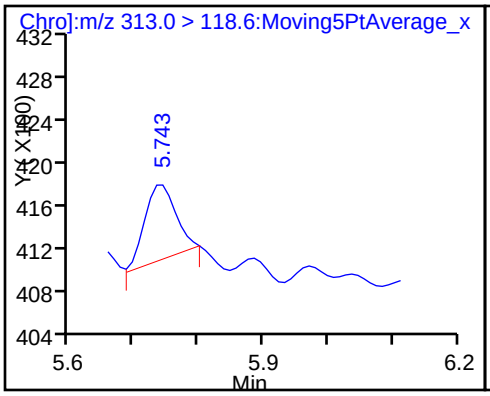
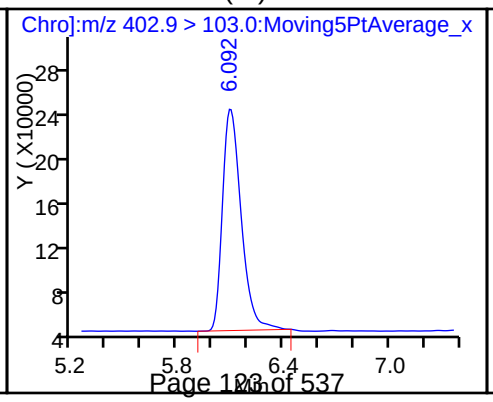
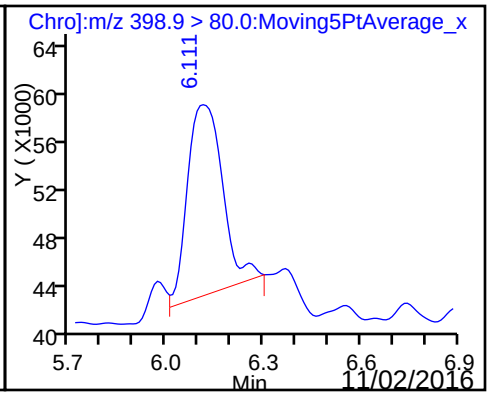


* 9 18O2 PFHxS (IS)



10 Perfluorohexane Sulfonate



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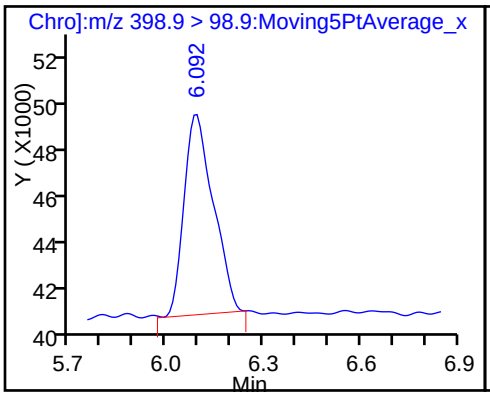
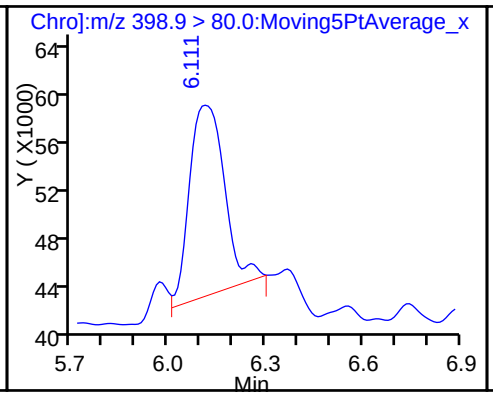
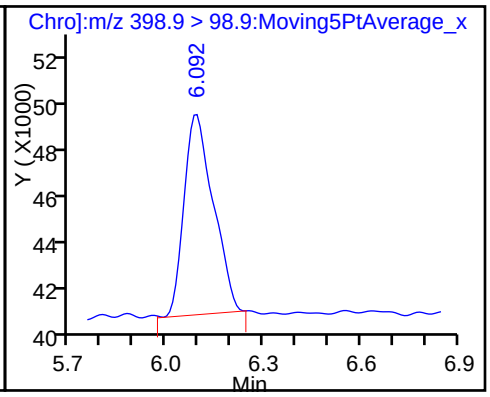


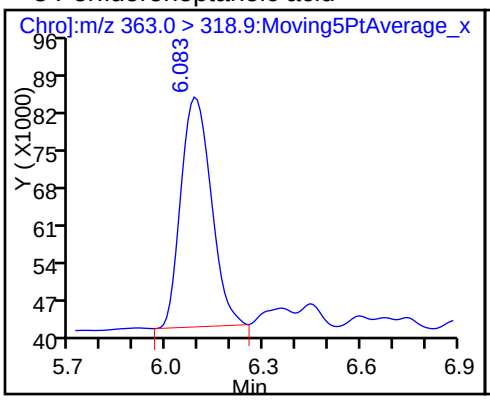
11 Perfluorohexanesulfonic acid



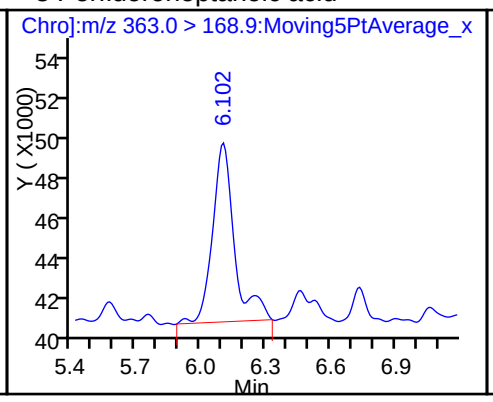
11 Perfluorohexanesulfonic acid



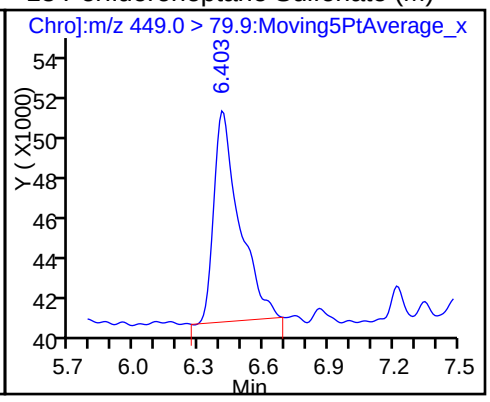
8 Perfluoroheptanoic acid



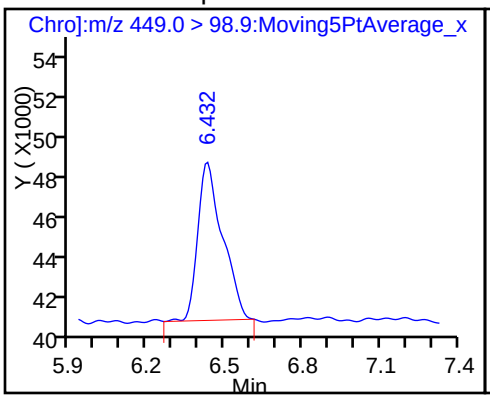
8 Perfluoroheptanoic acid



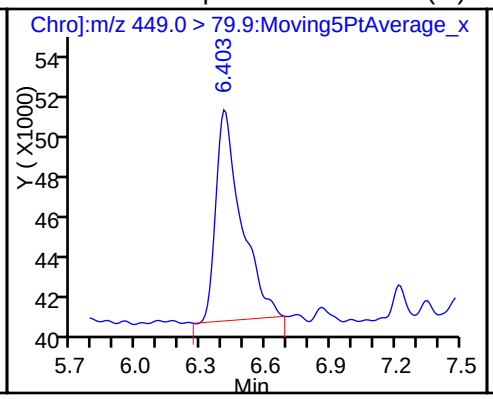
13 Perfluoroheptane Sulfonate (M)



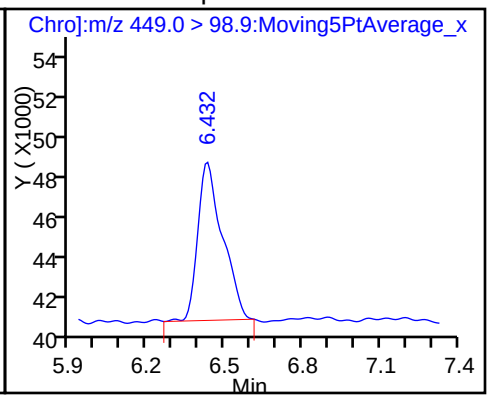
13 Perfluoroheptane Sulfonate



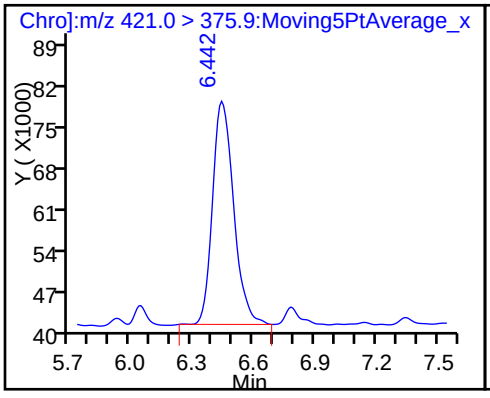
12 Perfluoroheptanesulfonic Acid (M)



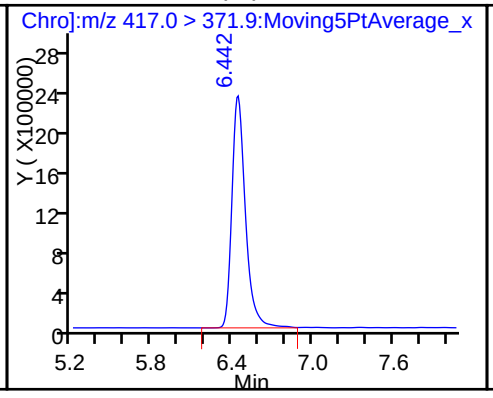
12 Perfluoroheptanesulfonic Acid



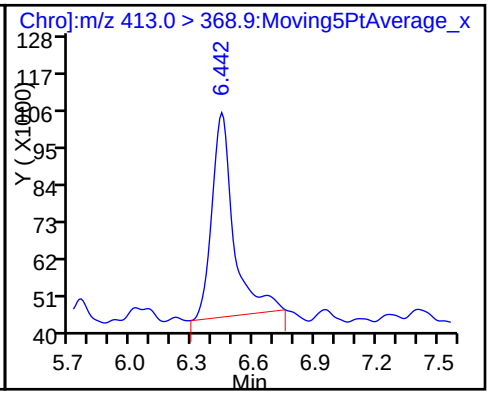
$ 14 13C8 PFOA



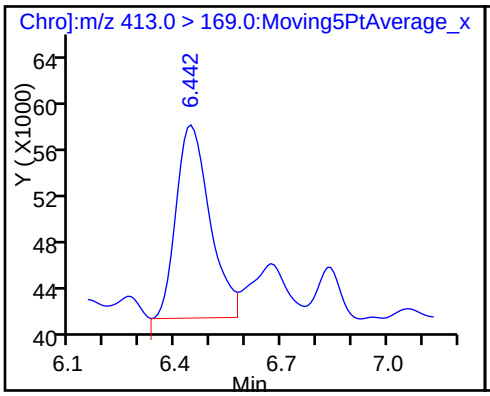
* 15 13C4 PFOA (IS)



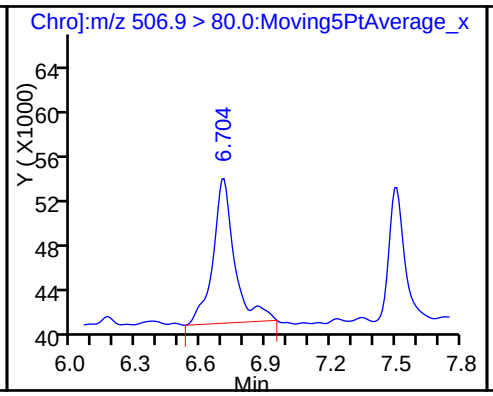
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid



$ 18 13C8 PFOS



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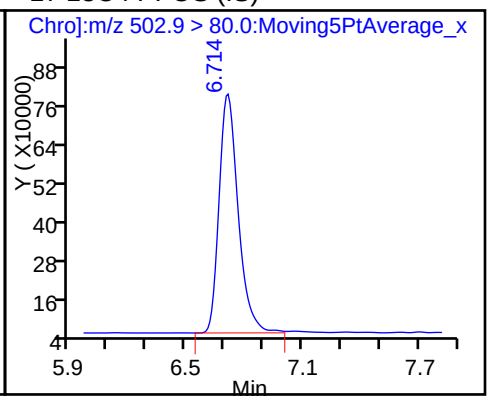
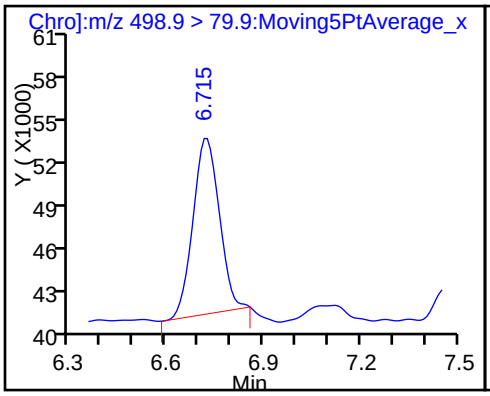
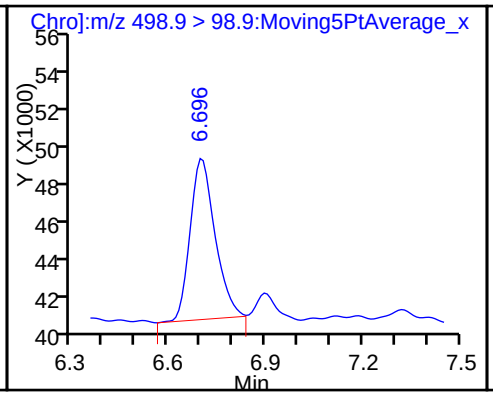


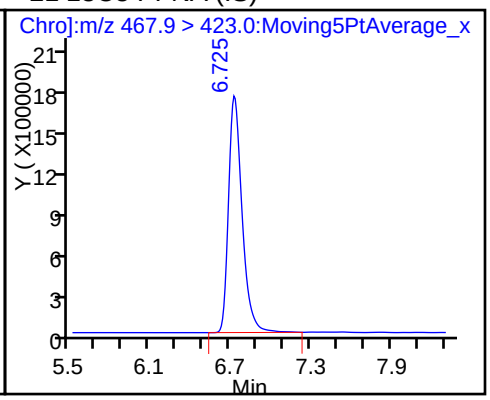
19 Perfluorooctane sulfonic acid



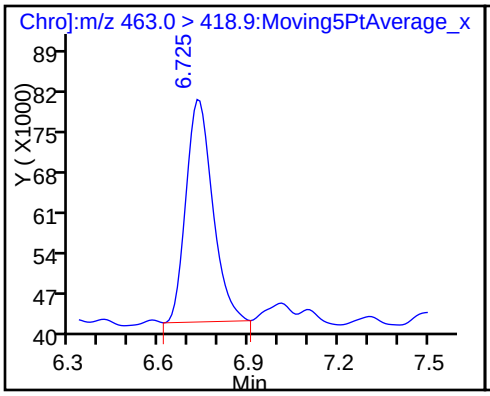
19 Perfluorooctane sulfonic acid



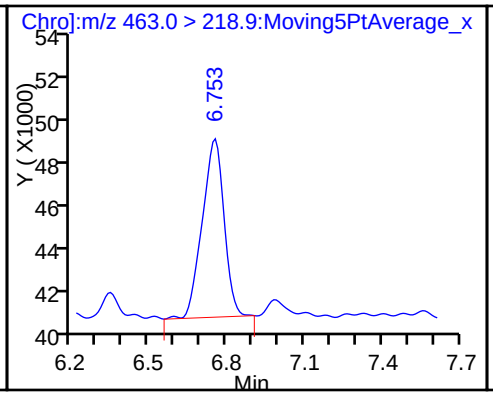
* 21 13C5 PFNA (IS)



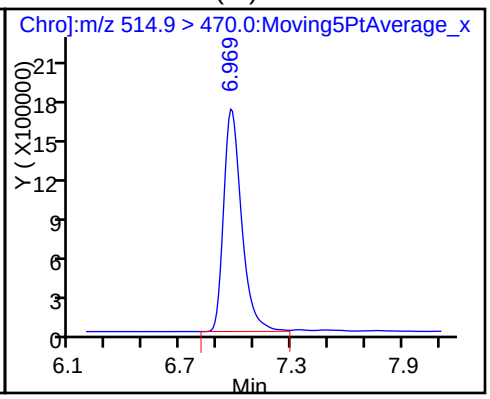
20 Perfluorononanoic acid



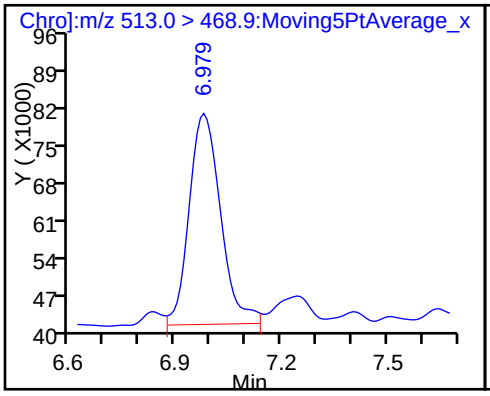
20 Perfluorononanoic acid



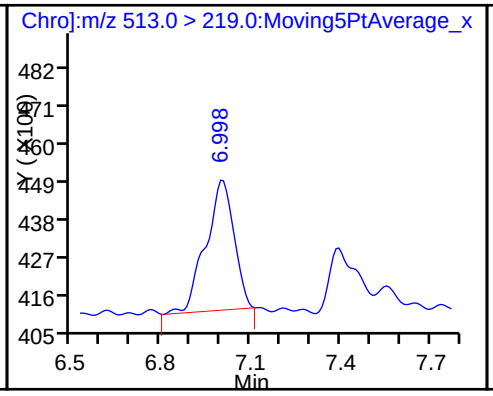
* 22 13C2 PFDA (IS)



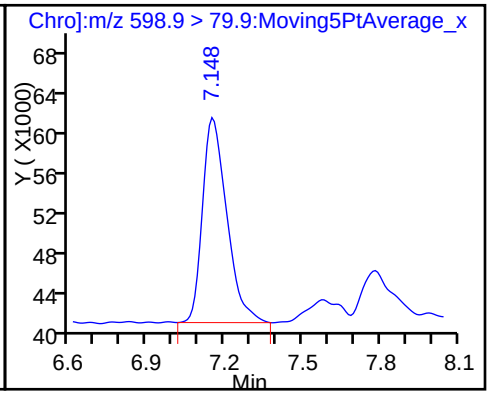
23 Perfluorodecanoic acid



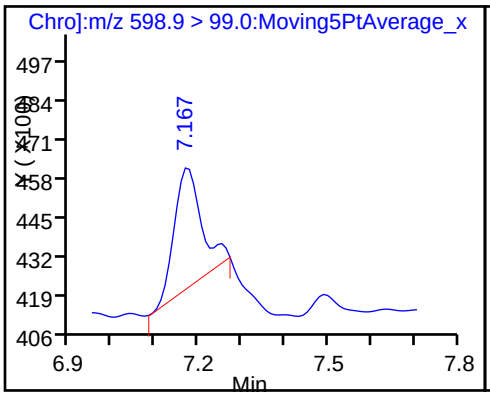
23 Perfluorodecanoic acid



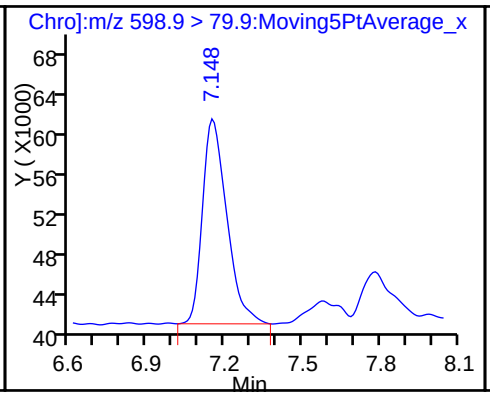
24 Perfluorodecane Sulfonic acid



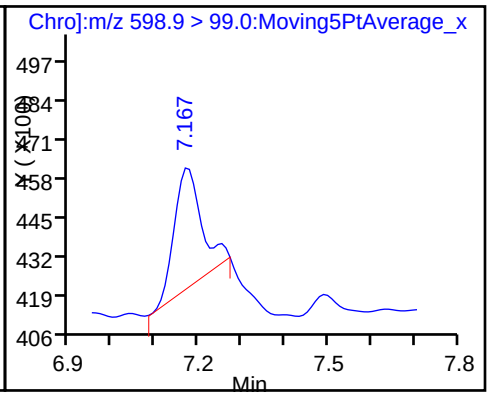
24 Perfluorodecane Sulfonic acid



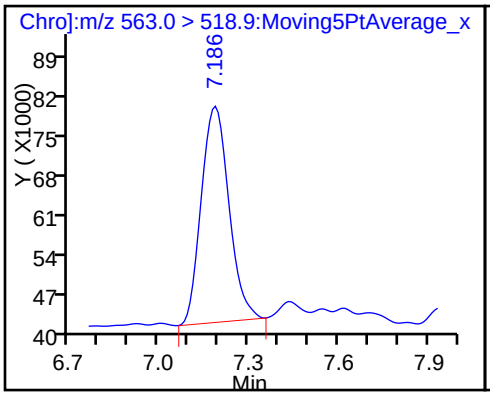
25 Perfluorodecane Sulfonate



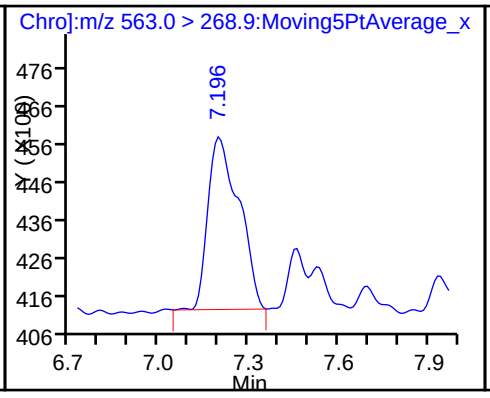
25 Perfluorodecane Sulfonate



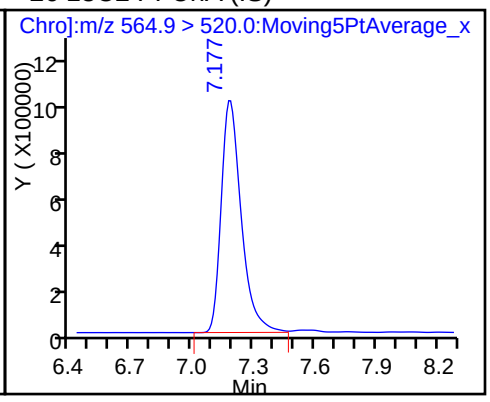
27 Perfluoroundecanoic acid



27 Perfluoroundecanoic acid



* 26 13C2 PFUnA (IS)



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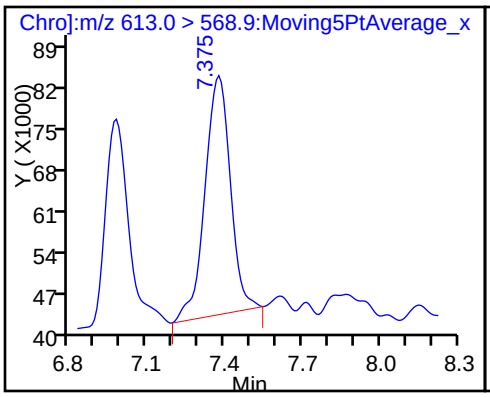

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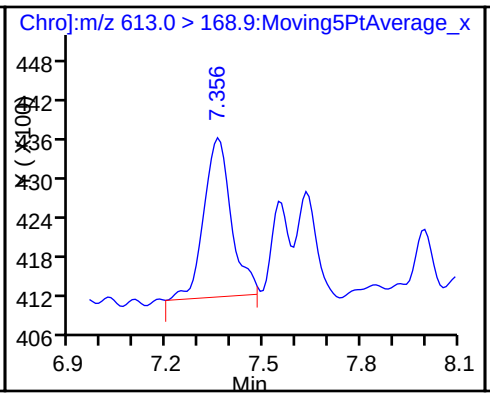
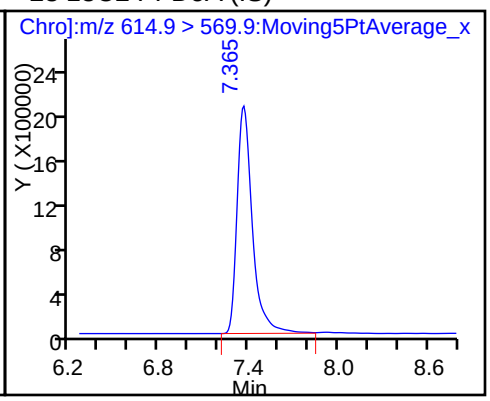
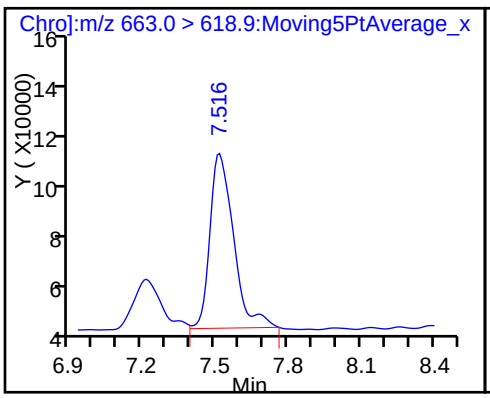


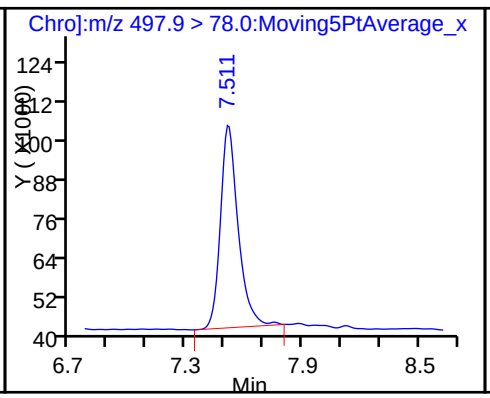
* 28 13C2 PFDoA (IS)



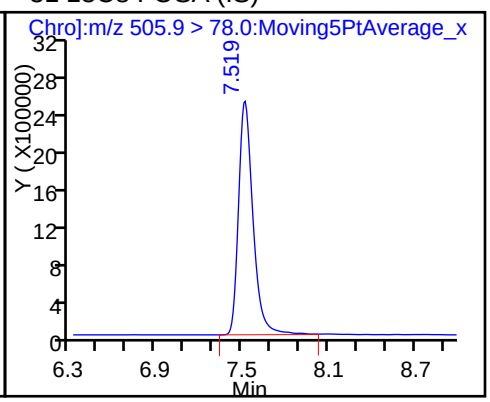
30 Perfluorotridecanoic acid



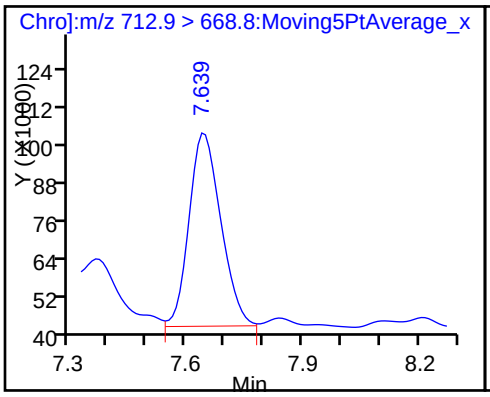
32 Perfluorooctane Sulfonamide



* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



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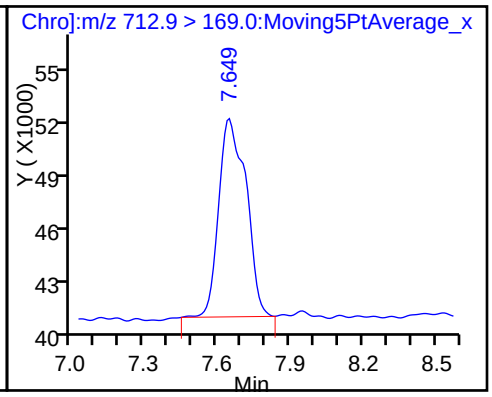


Manual Integration/User Assign Peak Report

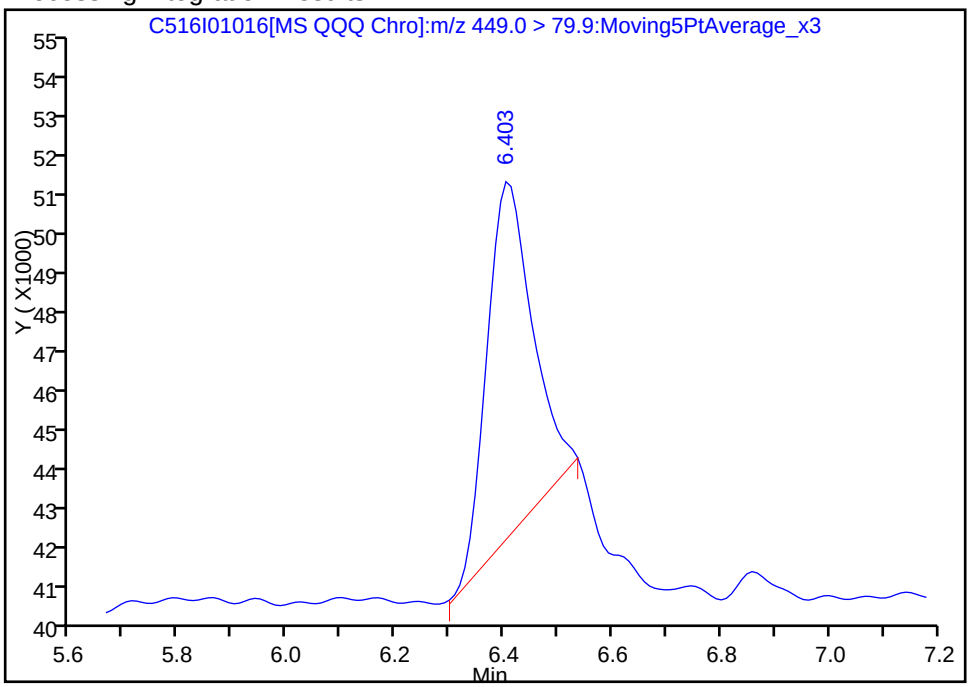
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01016.d
Injection Date: 01-Sep-2016 10:55:16 Instrument ID: LC_LCMS5
Lims ID: STD0002
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

13 Perfluoroheptane Sulfonate, CAS: STL01836

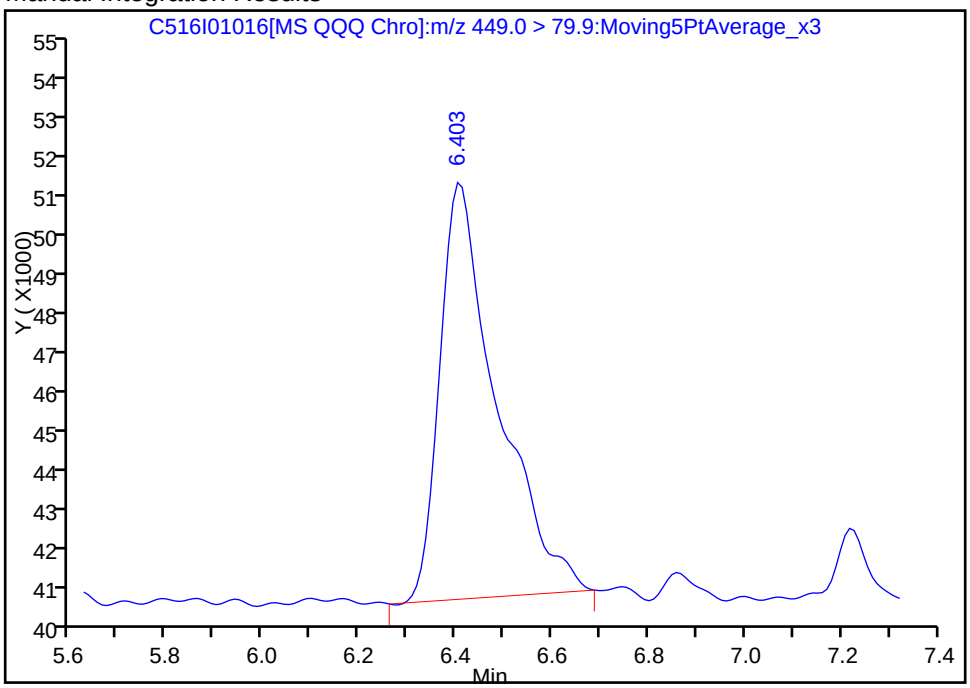
Processing Integration Results

RT: 6.40
Area: 51838
Amount: 0.176553
Amount Units: ug/L



Manual Integration Results

RT: 6.40
Area: 85490
Amount: 0.184250
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 10:40:40
Audit Action: Manually Integrated
Audit Reason: Baseline

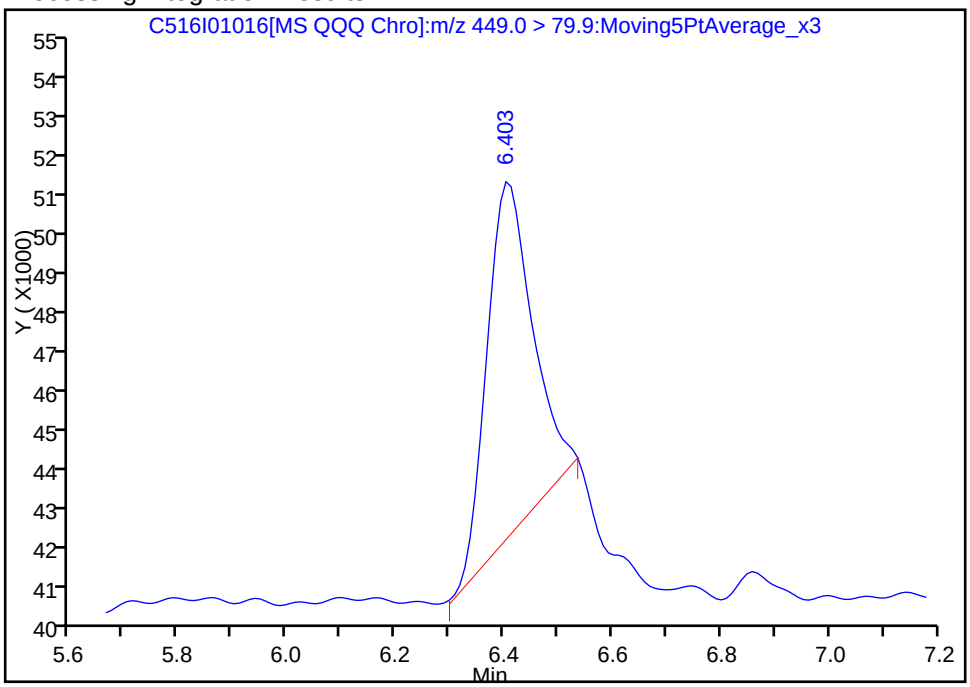
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01016.d
Injection Date: 01-Sep-2016 10:55:16 Instrument ID: LC_LCMS5
Lims ID: STD0002
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

12 Perfluoroheptanesulfonic Acid, CAS: 375-92-8

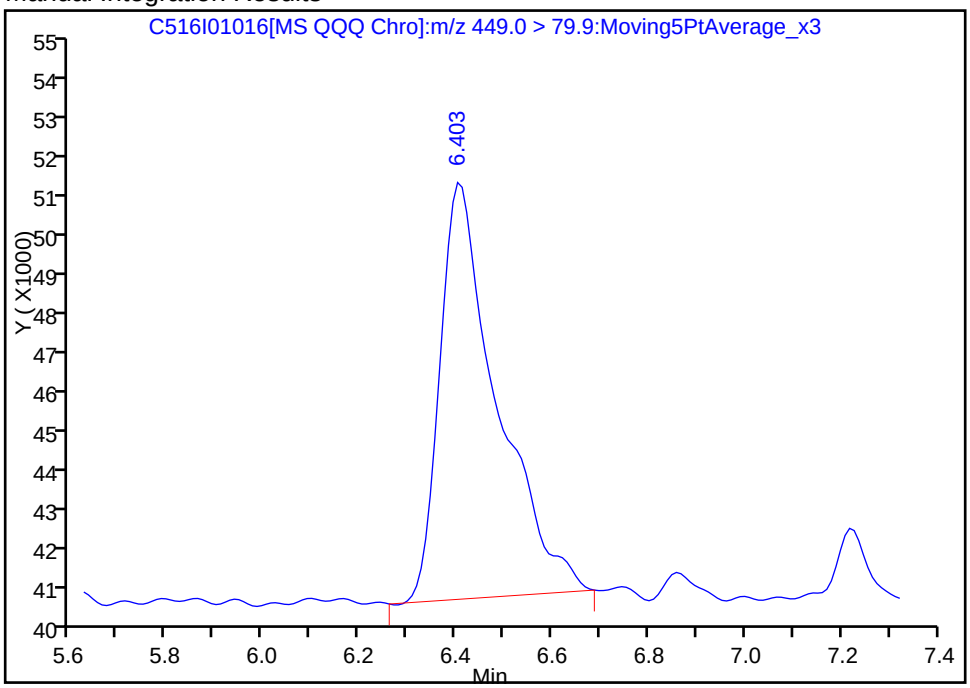
Processing Integration Results

RT: 6.40
Area: 51838
Amount: 0.176553
Amount Units: ug/L



Manual Integration Results

RT: 6.40
Area: 85490
Amount: 0.184250
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 10:40:40
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01017.d
Lims ID: STD0005
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 01-Sep-2016 11:07:35 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0005, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:03 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:40:56

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.010	4.276	-0.266		13102779	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.001	4.276	-0.275	0.998	712107	0.5653			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.090	5.308	-0.218	0.897	640986	0.5429			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.421	-0.208	0.853	252687	0.3850			
298.9 > 98.9	5.222	5.421	-0.199	0.855	84455		2.99(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.421	-0.208	0.853	252687	0.3850			
298.9 > 98.9	5.222	5.421	-0.199	0.855	84455		2.99(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.885	-0.209		9533787	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.885	-0.208	1.000	469372	0.5086			
313.0 > 118.6	5.667	5.885	-0.218	0.998	5271		89.05(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.301	-0.180	1.002	285485	0.4837			R
398.9 > 98.9	6.111	6.301	-0.190	1.000	105965		2.69(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.301	-0.180	1.002	285485	0.4837			
398.9 > 98.9	6.111	6.301	-0.190	1.000	105965		2.69(1.85-1.85)		
8 Perfluoroheptanoic acid									R
363.0 > 318.9	6.112	6.301	-0.189	0.947	628524	0.4945			R
363.0 > 168.9	6.102	6.301	-0.199	0.946	193719		3.24(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.310	-0.199		1382618	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.432	6.631	-0.199	0.957	248542	0.4894			
449.0 > 98.9	6.422	6.631	-0.209	0.955	89910		2.76(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.432	6.631	-0.199	0.957	248542	0.4894			
449.0 > 98.9	6.422	6.631	-0.209	0.955	89910		2.76(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.451	6.641	-0.190	1.000	765475	0.5369			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.641	-0.190		14714193	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.641	-0.180	1.002	741430	0.4332			
413.0 > 169.0	6.452	6.641	-0.189	1.000	250920		2.95(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.894	-0.170		4806425	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.903	-0.180	1.000	151819	0.4327			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.734	6.904	-0.170	1.001	186796	0.4344			
498.9 > 98.9	6.705	6.904	-0.199	0.997	91945		2.03(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.914	-0.170		11641683	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.914	-0.170	1.000	605760	0.5031			
463.0 > 218.9	6.725	6.914	-0.189	0.997	76667		7.90(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	7.149	-0.171		11230363	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.979	7.149	-0.170	1.000	519575	0.4619			R
513.0 > 219.0	6.979	7.149	-0.170	1.000	57823		8.99(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.328	-0.161	1.066	219098	0.3957			
598.9 > 99.0	7.176	7.328	-0.152	1.067	69579		3.15(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.328	-0.161	1.066	219098	0.3957			
598.9 > 99.0	7.176	7.328	-0.152	1.067	69579		3.15(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.347	-0.161	1.000	478266	0.4554			R
563.0 > 268.9	7.196	7.347	-0.151	1.001	61710		7.75(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.357	-0.171		6865207	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.526	-0.161		14606940	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.526	-0.161	1.000	694761	0.4895			
613.0 > 168.9	7.394	7.526	-0.132	1.004	69726		9.96(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.535	7.668	-0.133	1.023	906994	0.4432			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.699	-0.180		16964643	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.700	-0.180	1.000	861583	0.4749			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.658	7.800	-0.142	1.040	695346	0.4441			
712.9 > 169.0	7.658	7.800	-0.142	1.040	99455		6.99(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	25.00	Units: uL

Report Date: 02-Sep-2016 11:52:04 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01017.d

Injection Date: 01-Sep-2016 11:07:35 Instrument ID: LC_LCMS5

Lims ID: STD0005

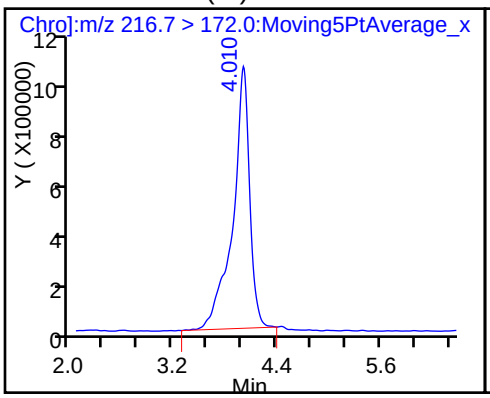
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4

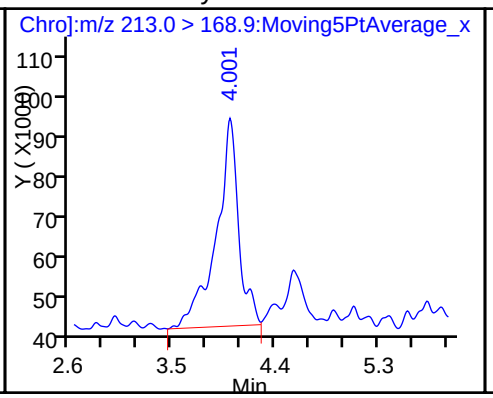
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

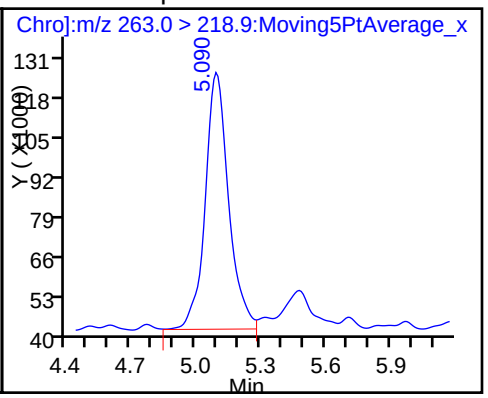
* 1 13C4 PFBA (IS)



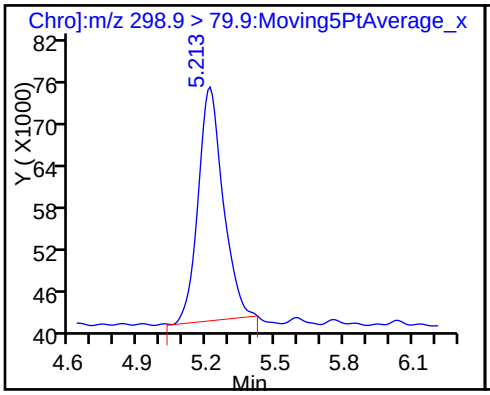
2 Perfluorobutyric acid



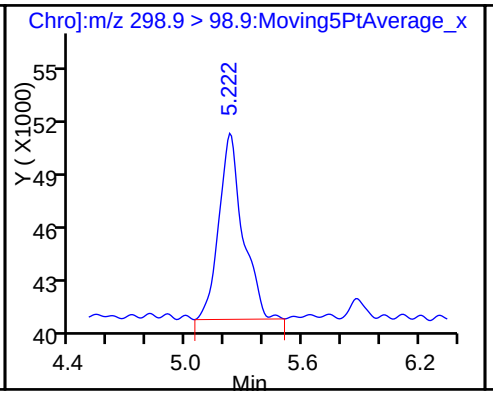
3 Perfluoropentanoic acid



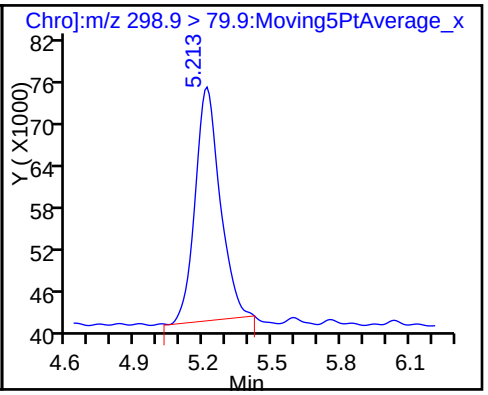
4 Perfluorobutane Sulfonate



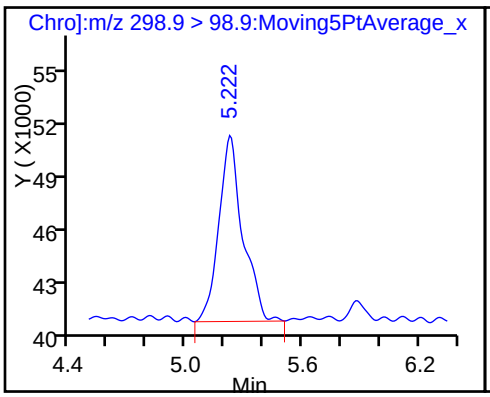
4 Perfluorobutane Sulfonate



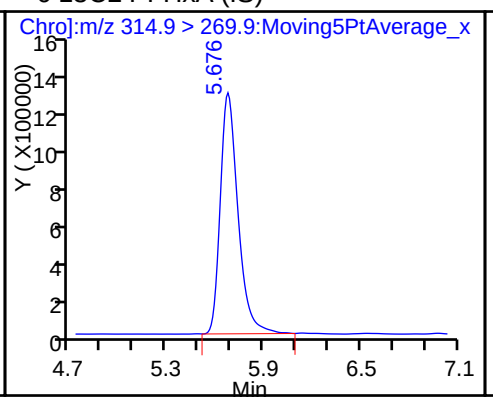
5 Perfluorobutanesulfonic acid



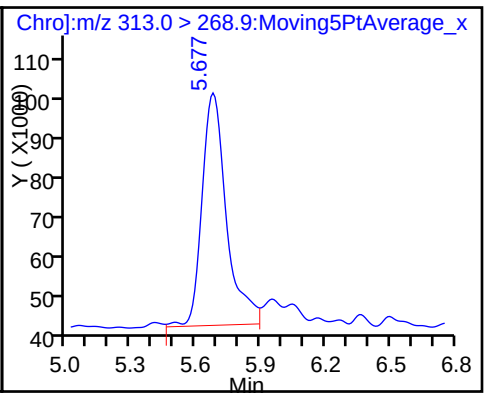
5 Perfluorobutanesulfonic acid



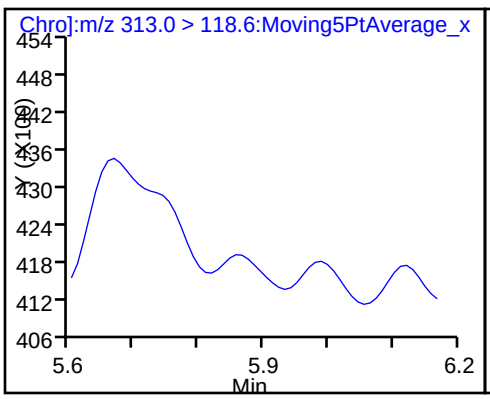
* 6 13C2 PFHxA (IS)



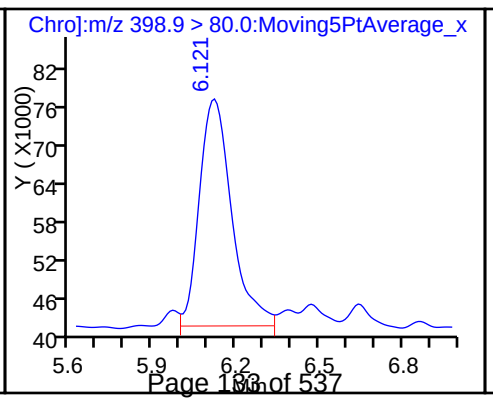
7 Perfluorohexanoic acid



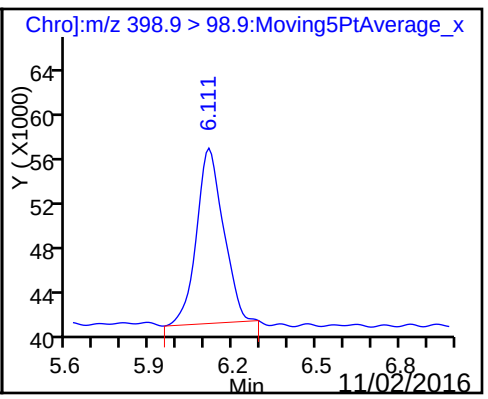
7 Perfluorohexanoic acid



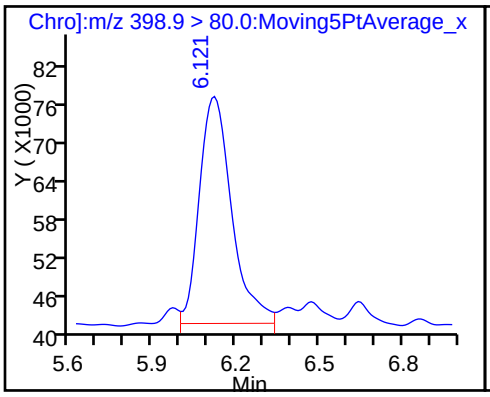
10 Perfluorohexane Sulfonate



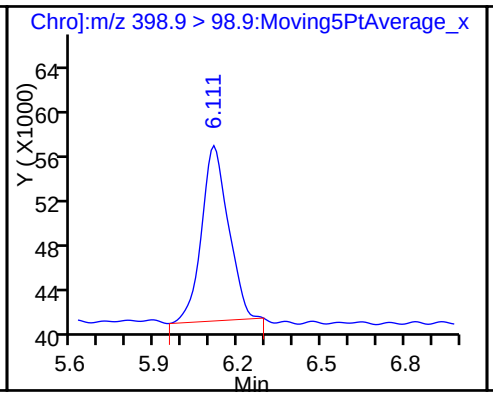
10 Perfluorohexane Sulfonate



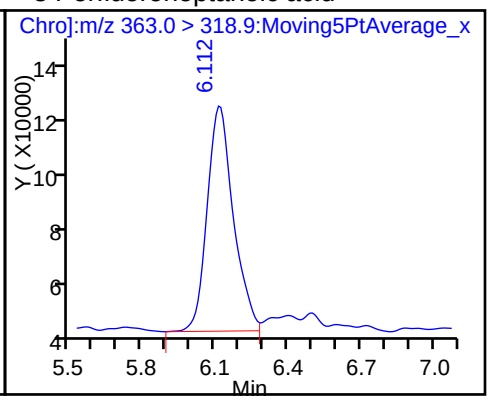
11 Perfluorohexanesulfonic acid



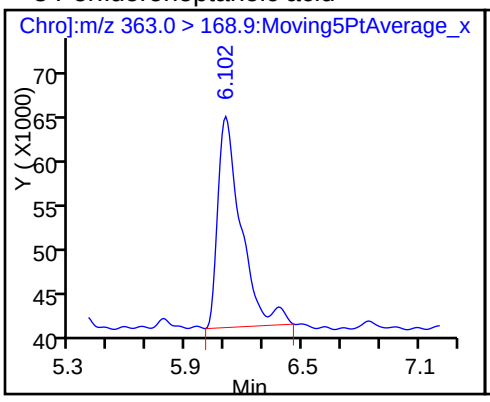
11 Perfluorohexanesulfonic acid



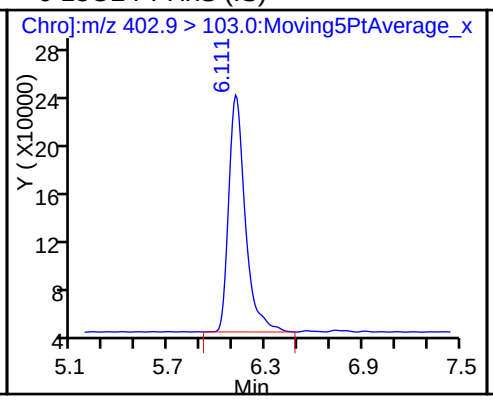
8 Perfluoroheptanoic acid



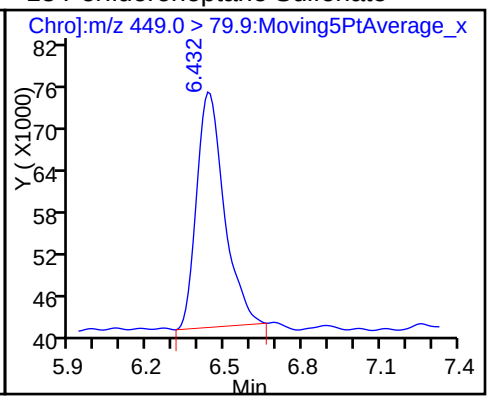
8 Perfluoroheptanoic acid



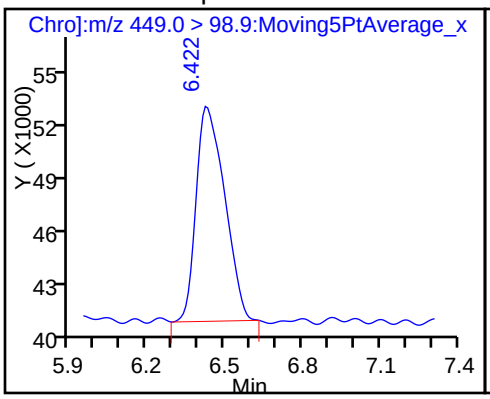
* 9 18O2 PFHxS (IS)



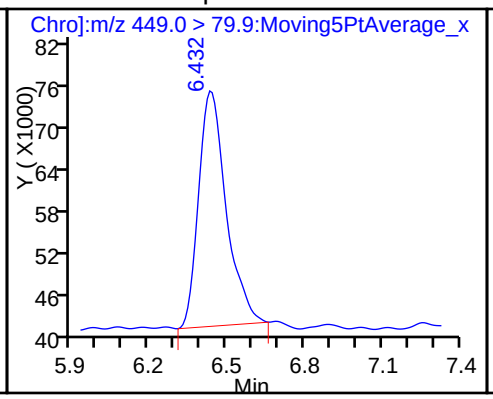
13 Perfluoroheptane Sulfonate



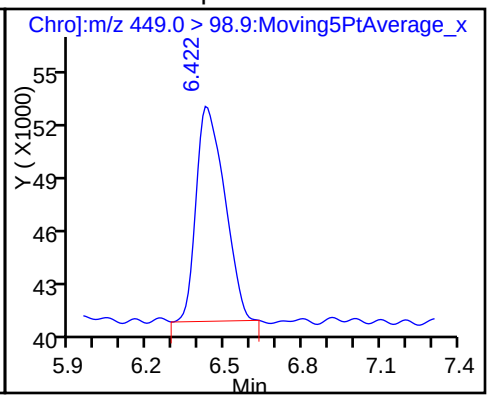
13 Perfluoroheptane Sulfonate



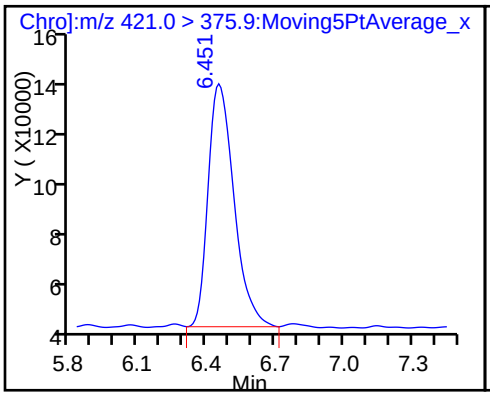
12 Perfluoroheptanesulfonic Acid



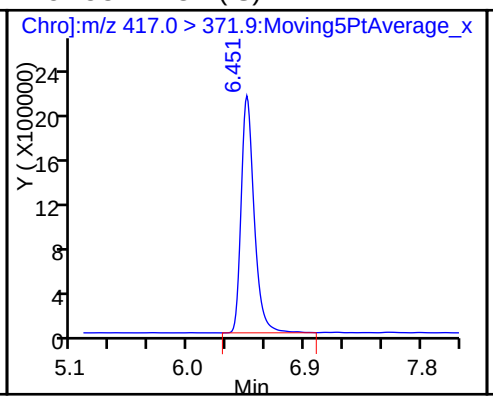
12 Perfluoroheptanesulfonic Acid



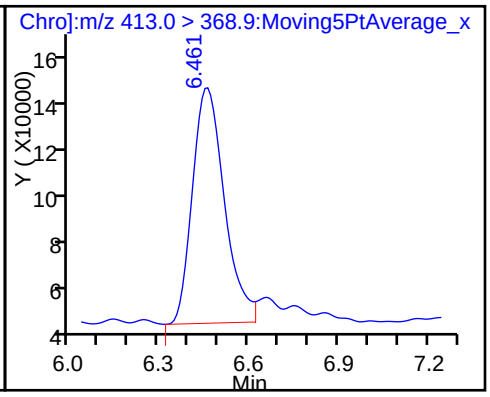
$ 14 13C8 PFOA



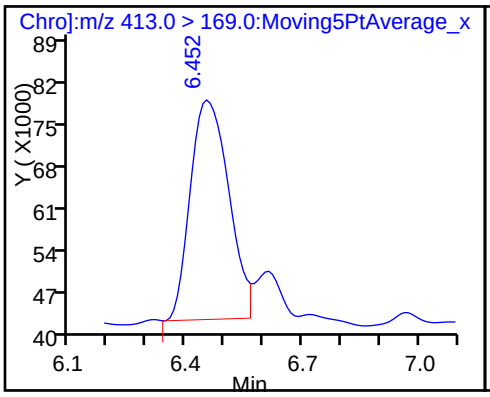
* 15 13C4 PFOA (IS)



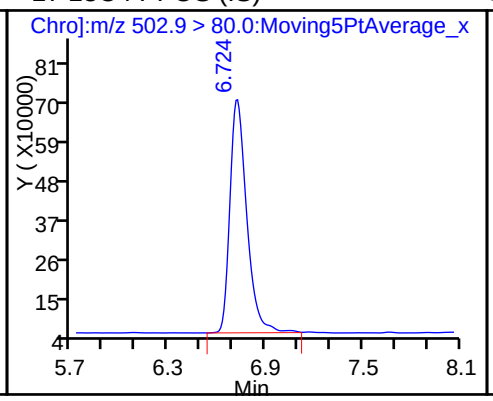
16 Perfluorooctanoic acid



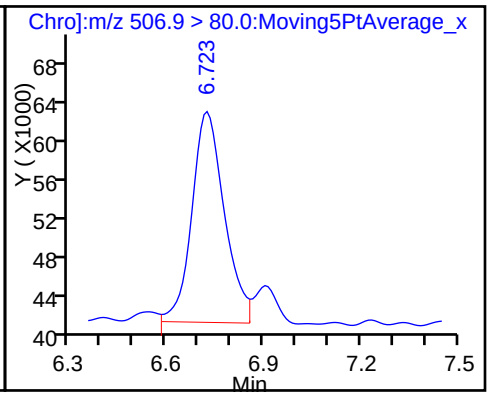
16 Perfluorooctanoic acid



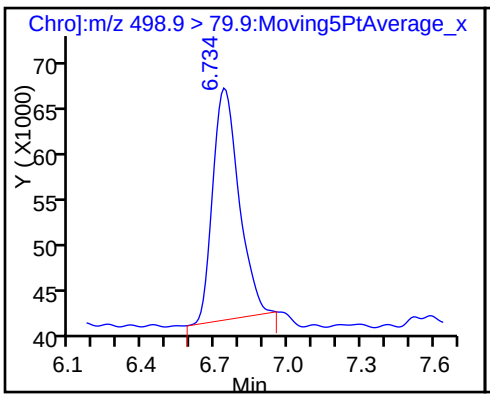
* 17 13C4 PFOS (IS)



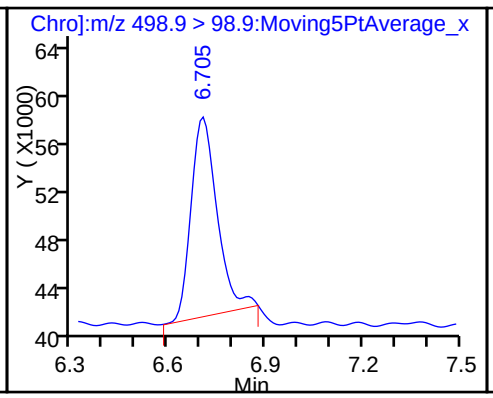
$ 18 13C8 PFOS



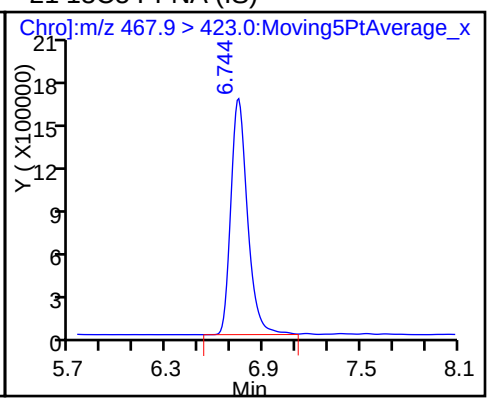
19 Perfluorooctane sulfonic acid



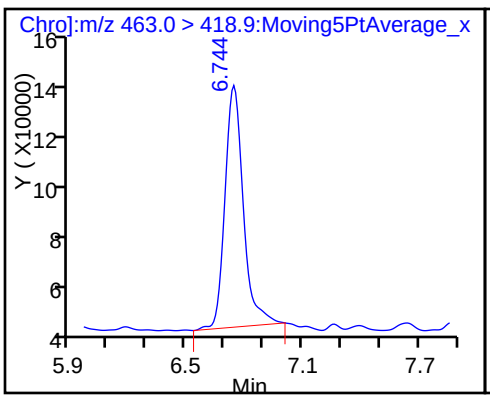
19 Perfluorooctane sulfonic acid



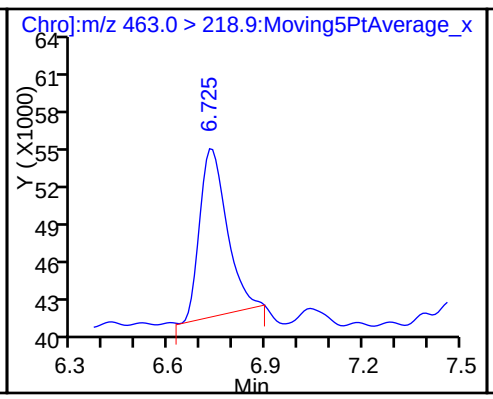
* 21 13C5 PFNA (IS)



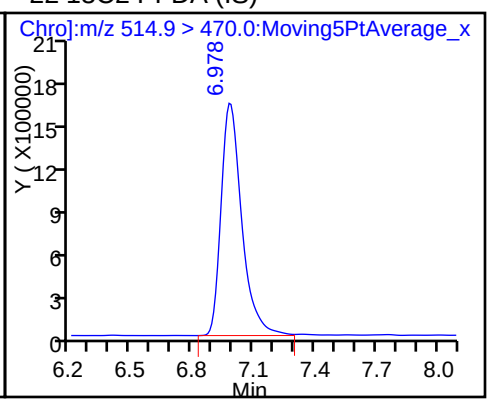
20 Perfluorononanoic acid



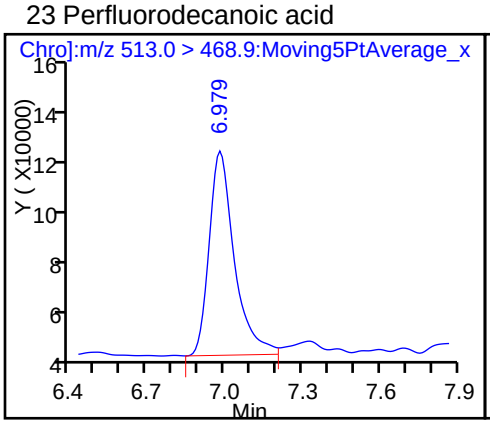
20 Perfluorononanoic acid



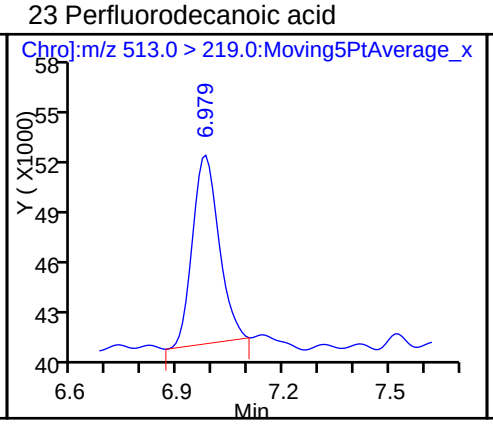
* 22 13C2 PFDA (IS)



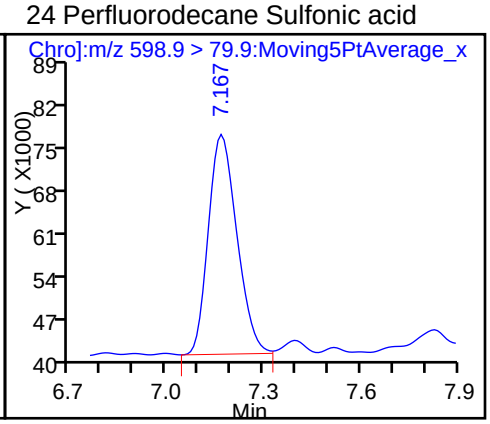
23 Perfluorodecanoic acid



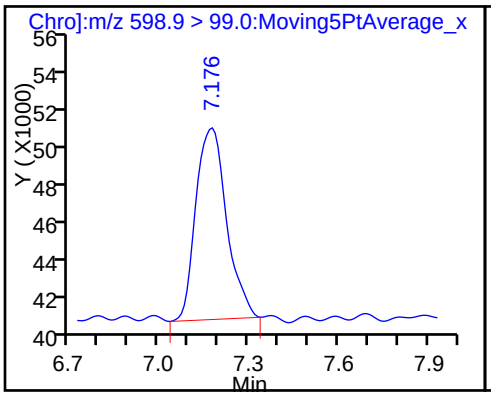
23 Perfluorodecanoic acid



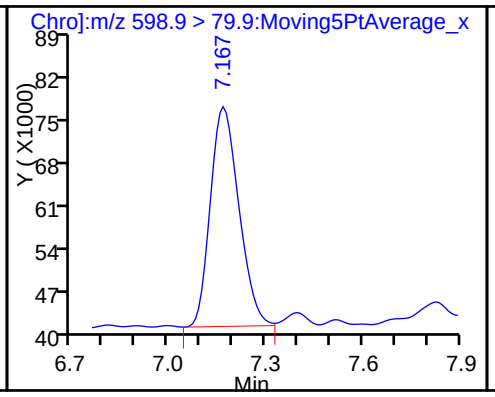
24 Perfluorodecane Sulfonic acid



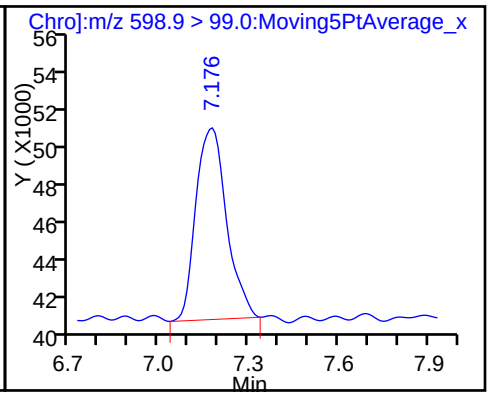
24 Perfluorodecane Sulfonic acid



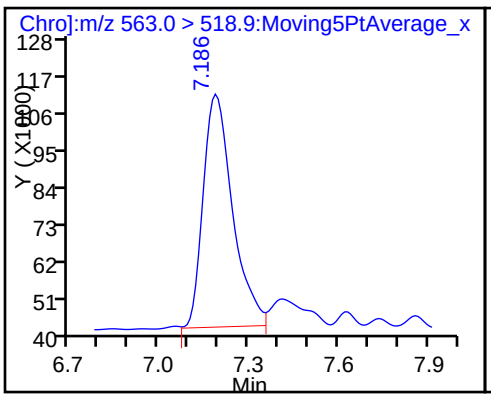
25 Perfluorodecane Sulfonate



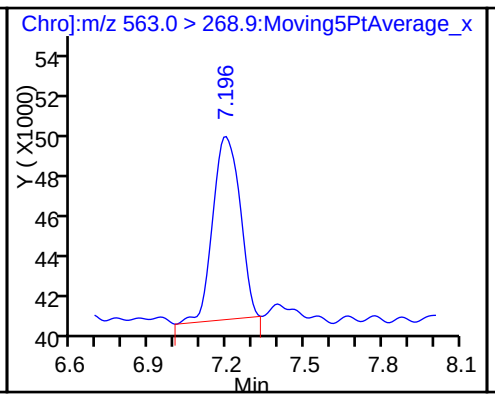
25 Perfluorodecane Sulfonate



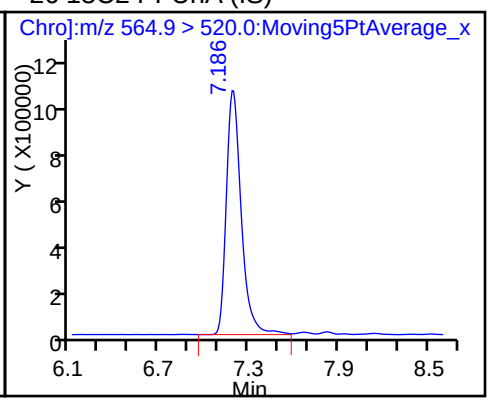
27 Perfluoroundecanoic acid



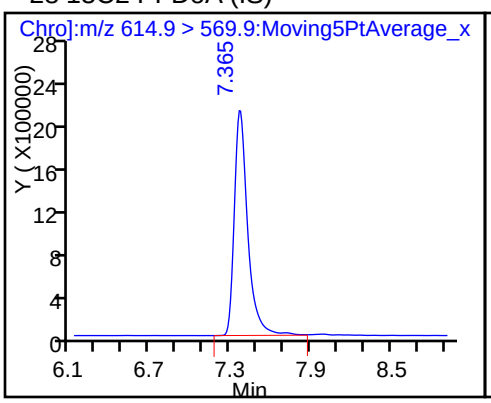
27 Perfluoroundecanoic acid



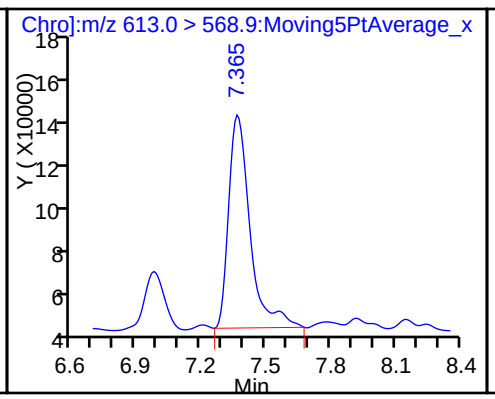
* 26 13C2 PFUnA (IS)



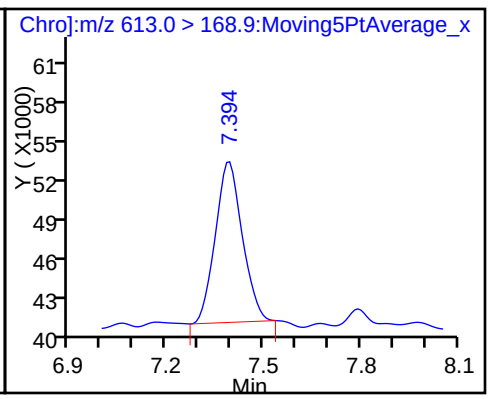
* 28 13C2 PFDoA (IS)



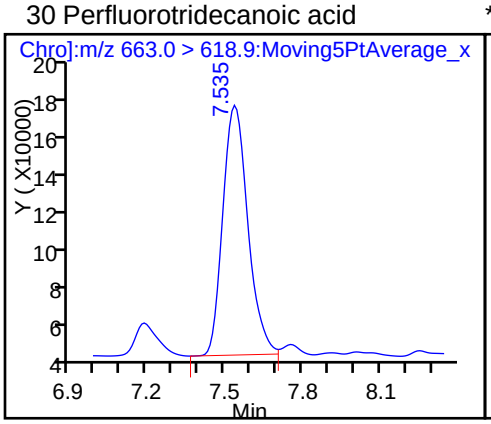
29 Perfluorododecanoic acid



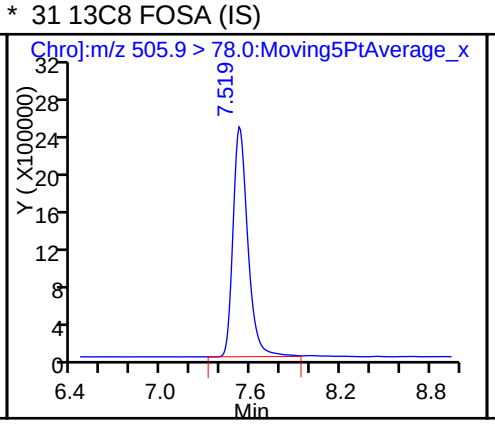
29 Perfluorododecanoic acid



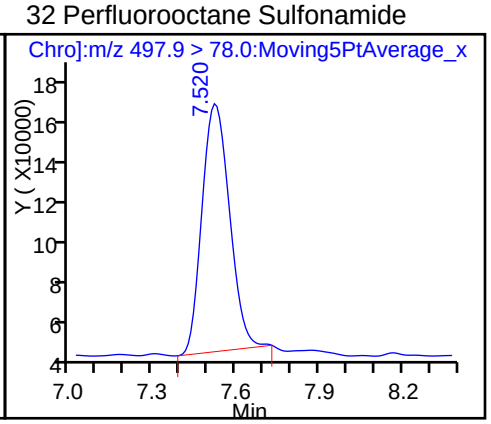
30 Perfluorotridecanoic acid



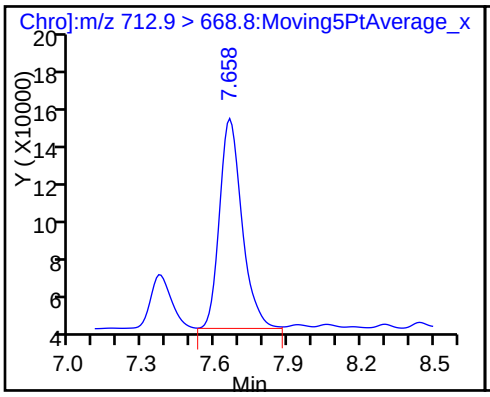
* 31 13C8 FOSA (IS)



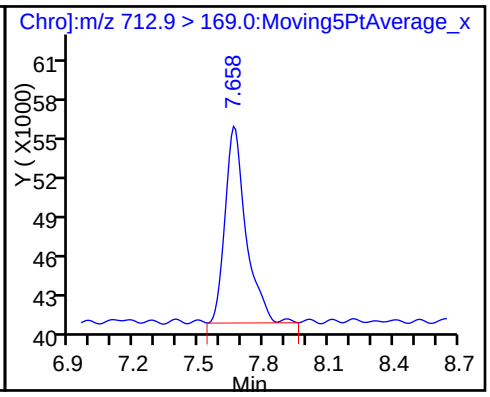
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01018.d
Lims ID: STD0010
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 01-Sep-2016 11:19:54 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0010, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:08 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:41:13

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	4.276	-0.275		13414046	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.020	4.276	-0.256	1.005	1265156	0.9798			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.081	5.308	-0.227	0.897	1071032	0.9496			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.203	5.421	-0.218	0.851	679417	1.13			R
298.9 > 98.9	5.194	5.421	-0.227	0.850	163746		4.15(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.203	5.421	-0.218	0.851	679417	1.13			
298.9 > 98.9	5.194	5.421	-0.227	0.850	163746		4.15(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.667	5.885	-0.218		9629040	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.667	5.885	-0.218	1.000	921156	1.03			
313.0 > 118.6	5.648	5.885	-0.237	0.997	33579		27.43(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.301	-0.190	1.000	588104	1.08			R
398.9 > 98.9	6.121	6.301	-0.180	1.002	196665		2.99(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.301	-0.190	1.000	588104	1.08			
398.9 > 98.9	6.121	6.301	-0.180	1.002	196665		2.99(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.301	-0.199	0.947	1454204	1.13			
363.0 > 168.9	6.102	6.301	-0.199	0.947	316681		4.59(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.310	-0.199		1285155	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.631	-0.190	0.958	521954	1.05			
449.0 > 98.9	6.441	6.631	-0.190	0.958	126728		4.12(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.631	-0.190	0.958	521954	1.05			
449.0 > 98.9	6.441	6.631	-0.190	0.958	126728		4.12(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.641	-0.199	1.000	1210205	0.9547			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.641	-0.199		15102988	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.641	-0.199	1.000	1671542	1.05			
413.0 > 169.0	6.452	6.641	-0.189	1.002	553449		3.02(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.894	-0.170		4507368	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.903	-0.180	1.000	297271	1.01			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.904	-0.189	0.999	454948	1.01			R
498.9 > 98.9	6.715	6.904	-0.189	0.999	132448		3.43(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.914	-0.180		11597515	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.914	-0.180	1.000	1260645	1.04			
463.0 > 218.9	6.744	6.914	-0.170	1.001	133894		9.42(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	7.149	-0.161		10724470	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.979	7.149	-0.170	0.999	1147452	1.10			
513.0 > 219.0	6.979	7.149	-0.170	0.999	99662		11.51(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.328	-0.161	1.066	463863	0.9506			
598.9 > 99.0	7.167	7.328	-0.161	1.066	142806		3.25(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.328	-0.161	1.066	463863	0.9506			
598.9 > 99.0	7.167	7.328	-0.161	1.066	142806		3.25(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.196	7.347	-0.151	1.000	997089	1.07			R
563.0 > 268.9	7.186	7.347	-0.161	0.999	119149		8.37(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.196	7.357	-0.161		6708290	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.375	7.526	-0.151		14070682	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.526	-0.161	0.999	1440999	1.05			
613.0 > 168.9	7.365	7.526	-0.161	0.999	145760		9.89(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.526	7.668	-0.142	1.021	2002045	1.08			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.699	-0.170		16399751	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.700	-0.180	0.999	1815022	1.06			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.658	7.800	-0.142	1.038	1458639	1.02			
712.9 > 169.0	7.668	7.800	-0.132	1.040	221447		6.59(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	50.00	Units: uL

Report Date: 02-Sep-2016 11:52:09 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01018.d

Injection Date: 01-Sep-2016 11:19:54 Instrument ID: LC_LCMS5

Lims ID: STD0010

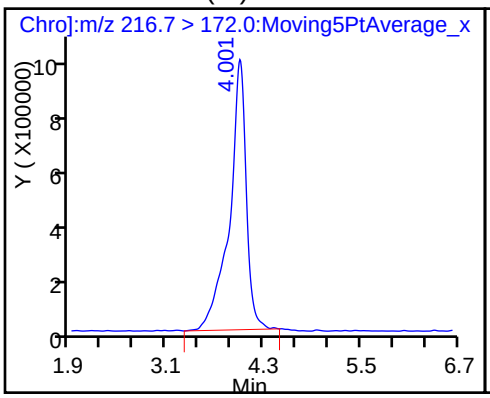
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

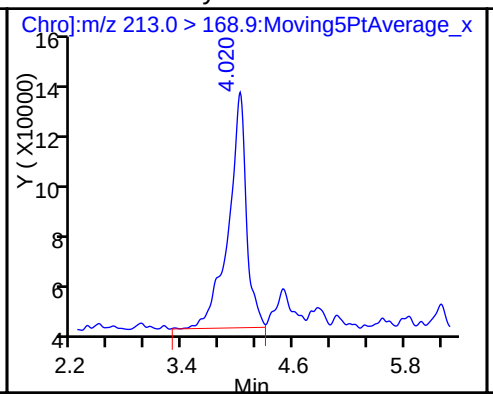
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

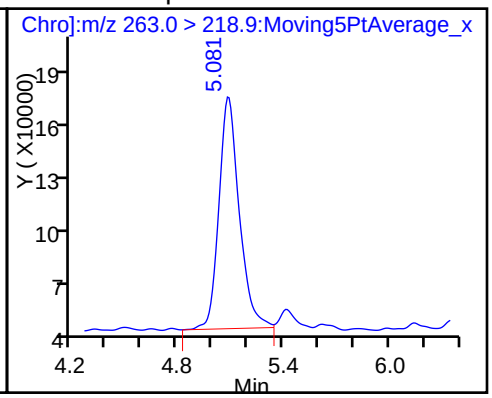
* 1 13C4 PFBA (IS)



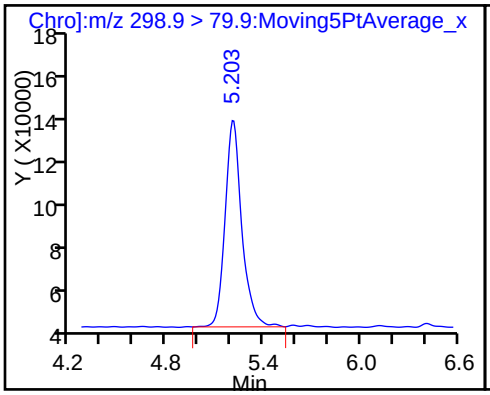
2 Perfluorobutyric acid



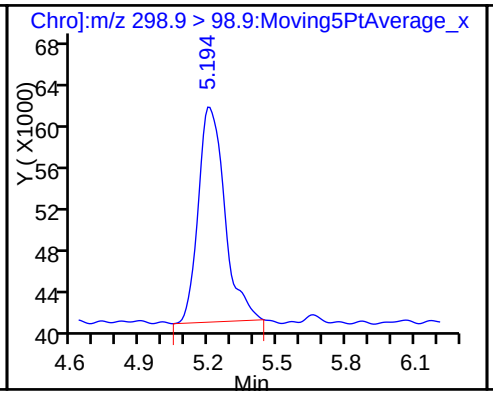
3 Perfluoropentanoic acid



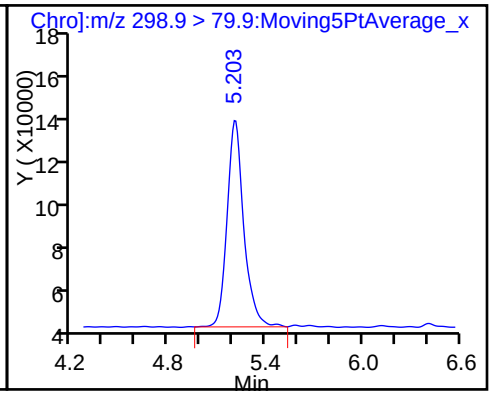
4 Perfluorobutane Sulfonate



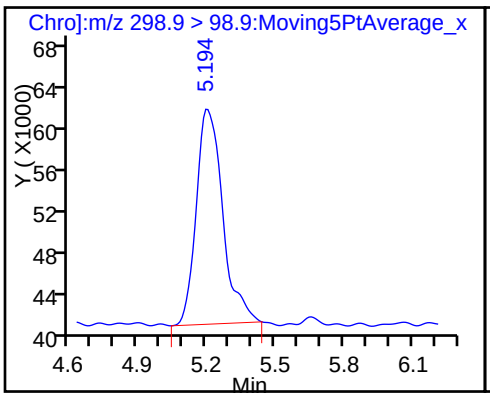
4 Perfluorobutane Sulfonate



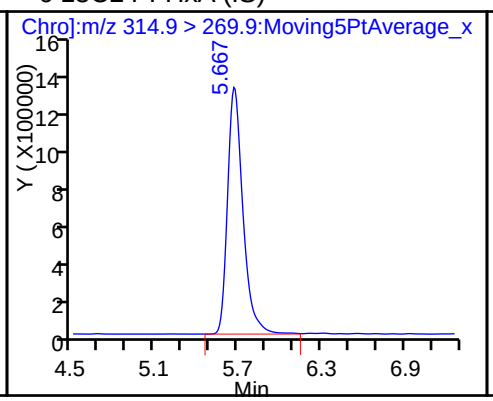
5 Perfluorobutanesulfonic acid



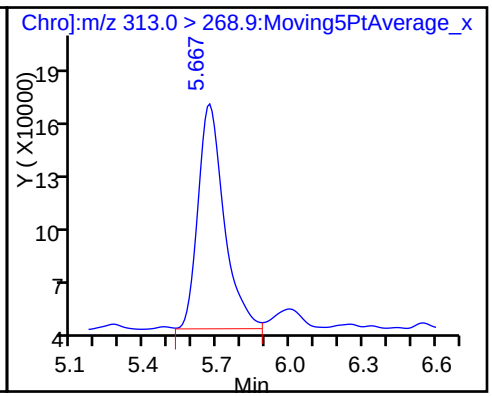
5 Perfluorobutanesulfonic acid



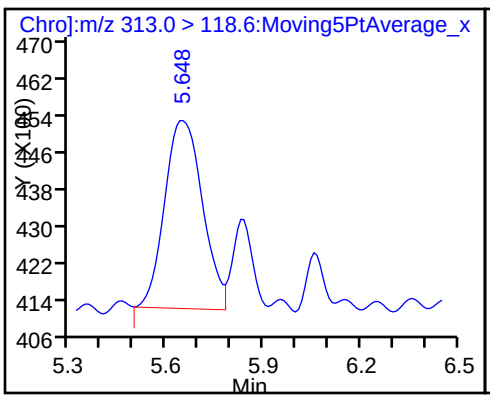
* 6 13C2 PFHxA (IS)



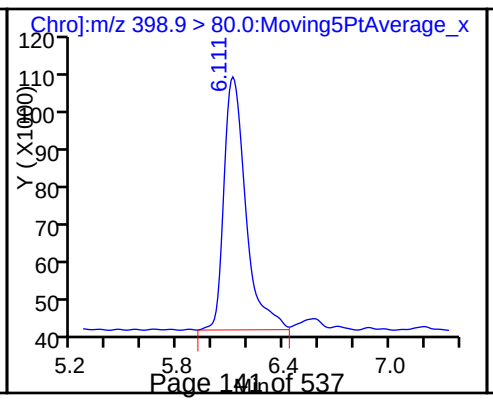
7 Perfluorohexanoic acid



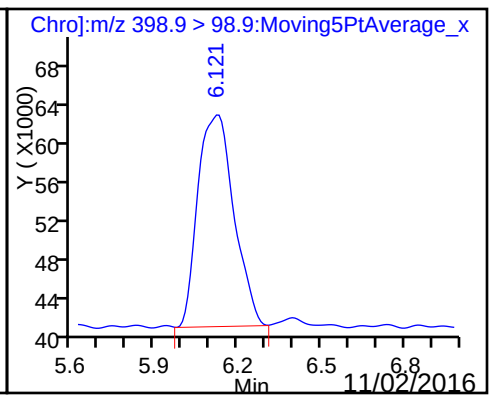
7 Perfluorohexanoic acid



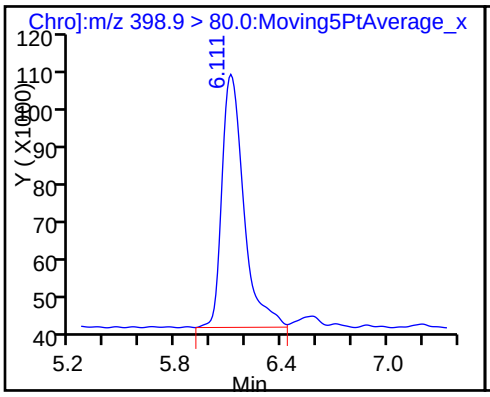
10 Perfluorohexane Sulfonate



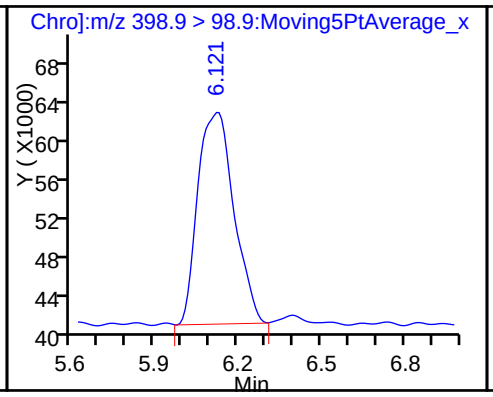
10 Perfluorohexane Sulfonate



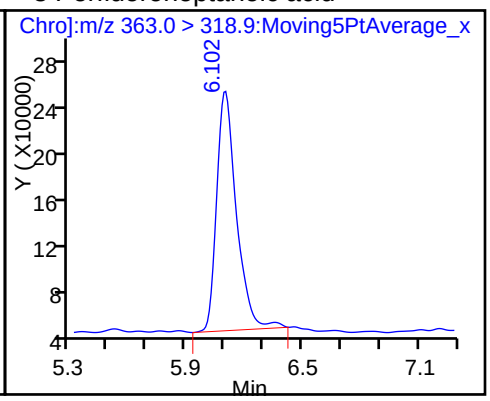
11 Perfluorohexanesulfonic acid



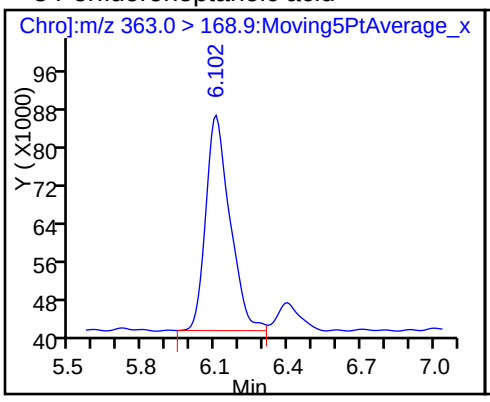
11 Perfluorohexanesulfonic acid



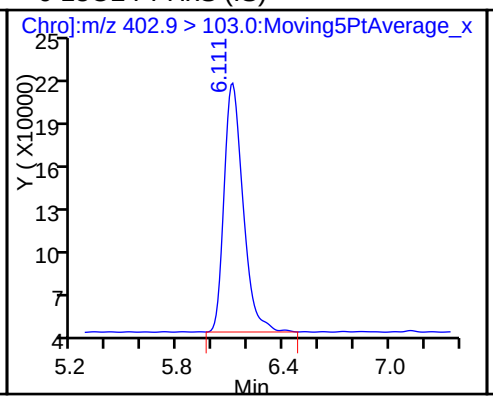
8 Perfluoroheptanoic acid



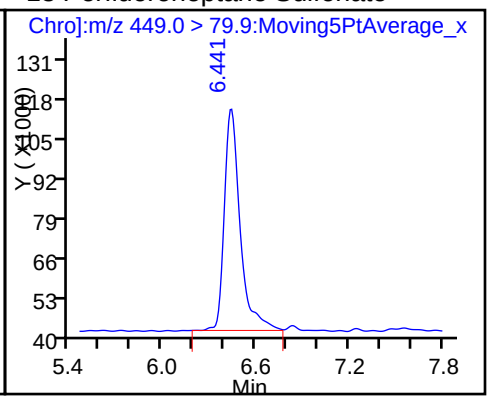
8 Perfluoroheptanoic acid



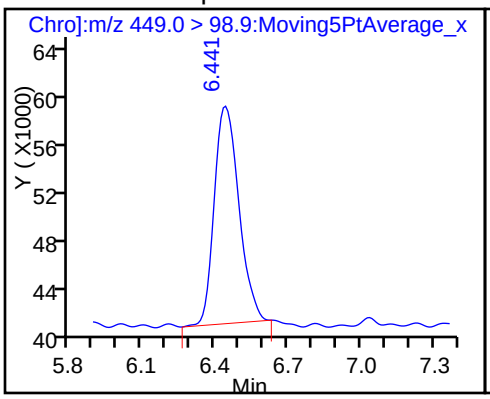
* 9 18O2 PFHxS (IS)



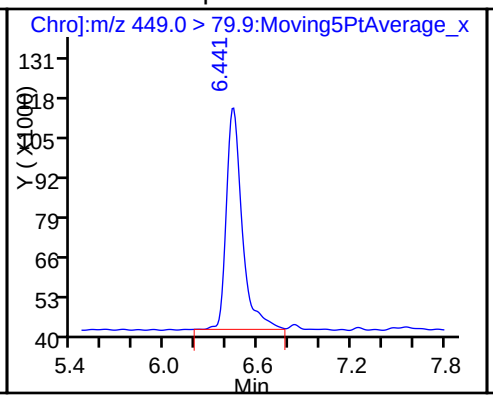
13 Perfluoroheptane Sulfonate



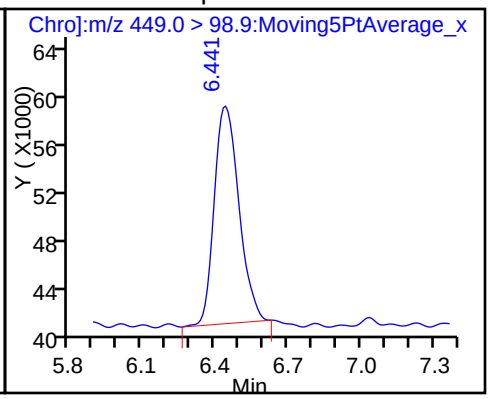
13 Perfluoroheptane Sulfonate



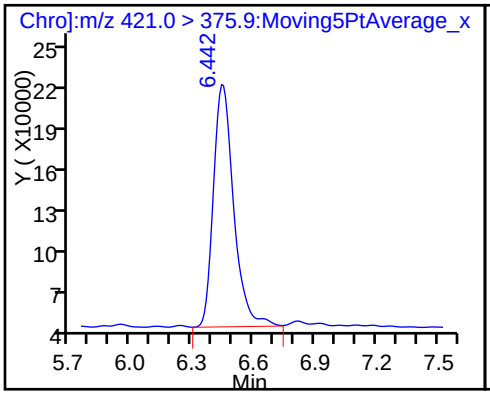
12 Perfluoroheptanesulfonic Acid



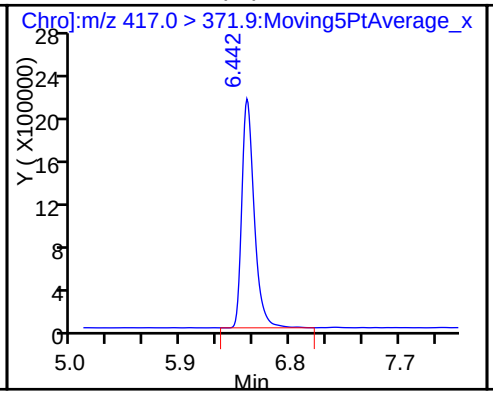
12 Perfluoroheptanesulfonic Acid



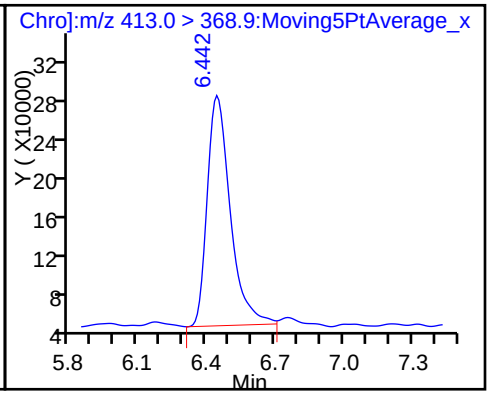
$ 14 13C8 PFOA



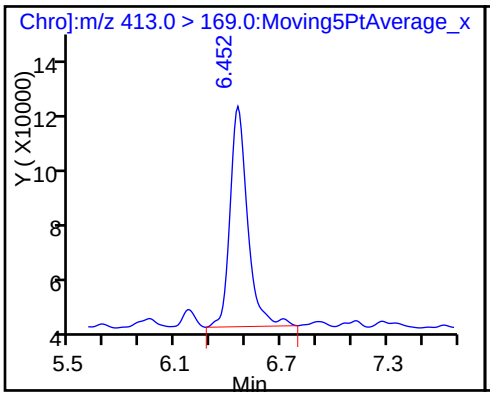
* 15 13C4 PFOA (IS)



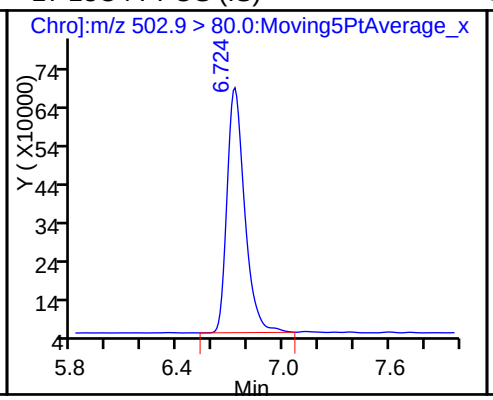
16 Perfluorooctanoic acid



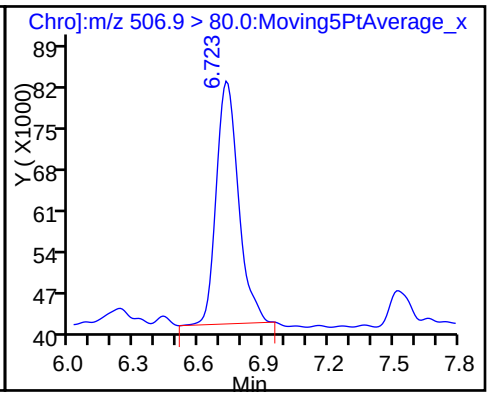
16 Perfluorooctanoic acid



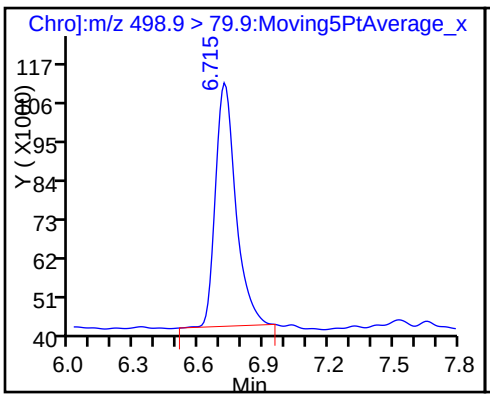
* 17 13C4 PFOS (IS)



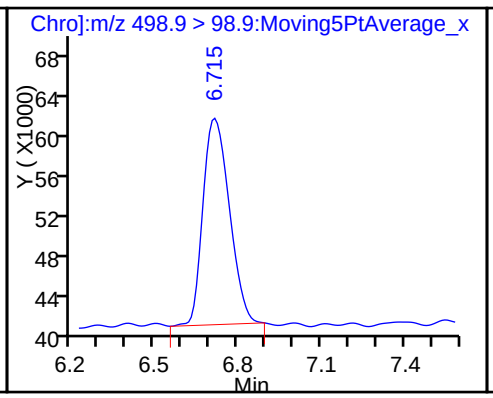
$ 18 13C8 PFOS



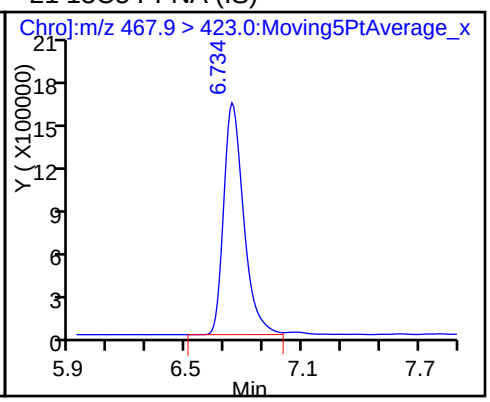
19 Perfluorooctane sulfonic acid



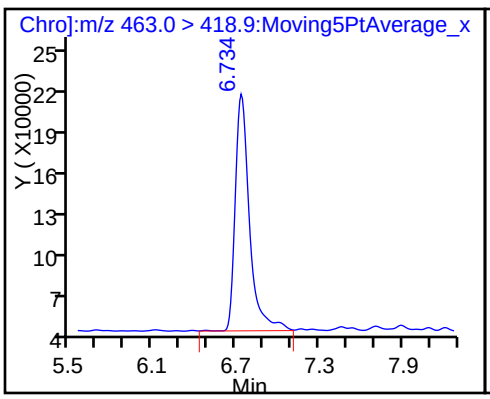
19 Perfluorooctane sulfonic acid



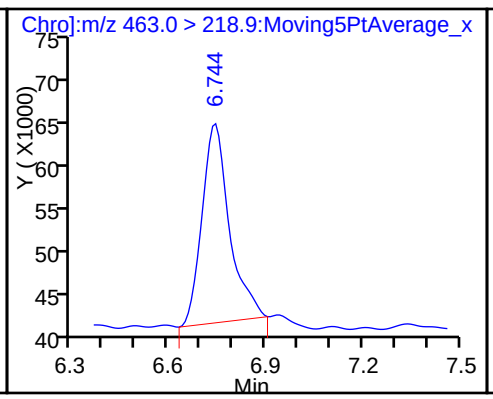
* 21 13C5 PFNA (IS)



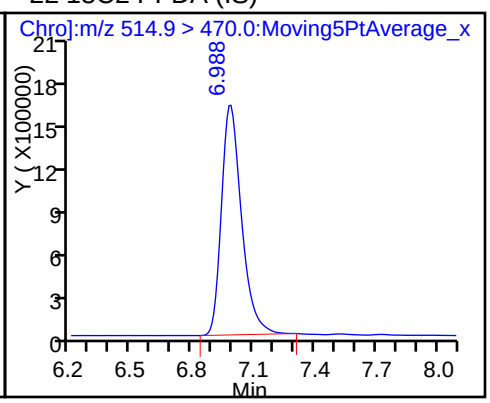
20 Perfluorononanoic acid



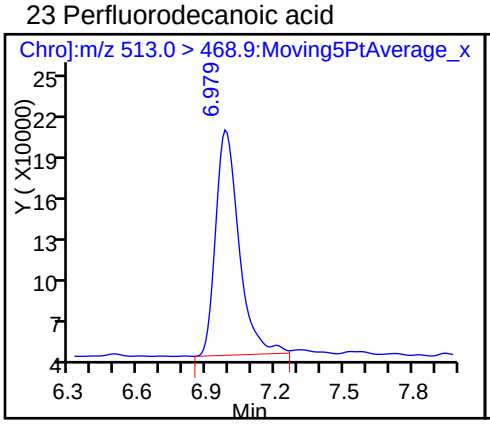
20 Perfluorononanoic acid



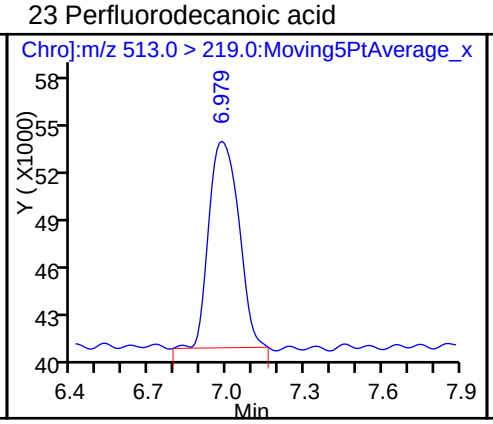
* 22 13C2 PFDA (IS)



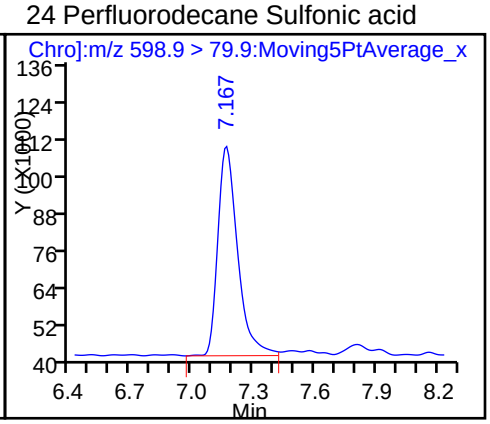
23 Perfluorodecanoic acid



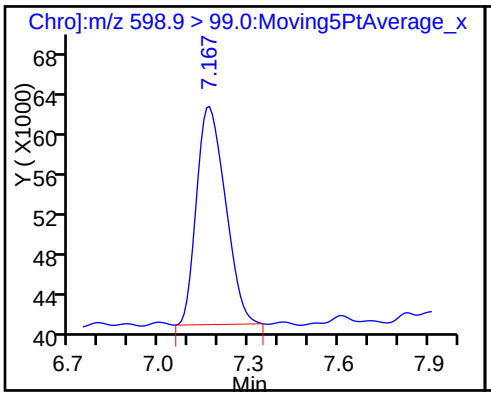
23 Perfluorodecanoic acid



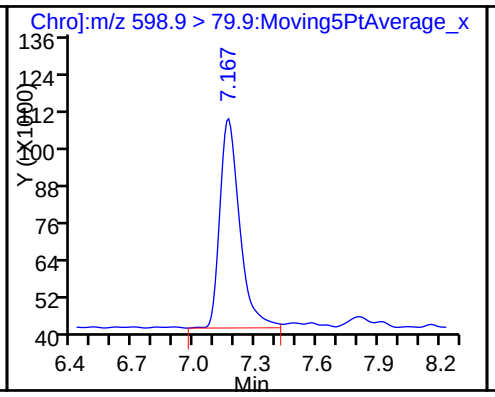
24 Perfluorodecane Sulfonic acid



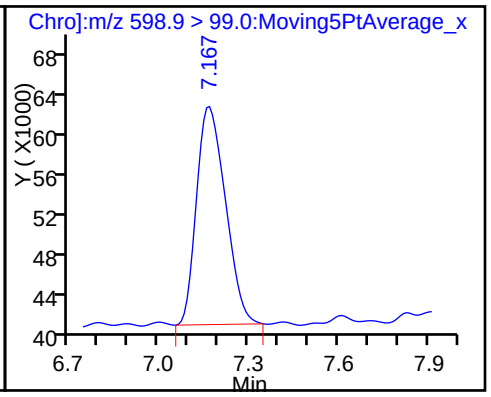
24 Perfluorodecane Sulfonic acid



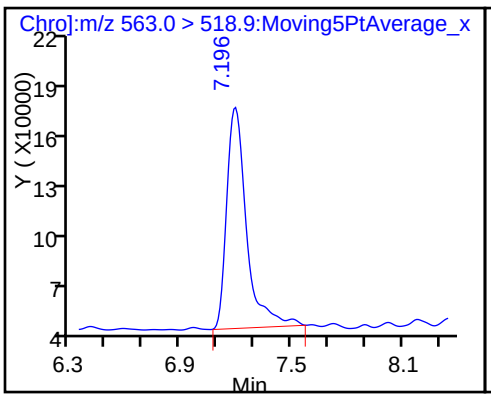
25 Perfluorodecane Sulfonate



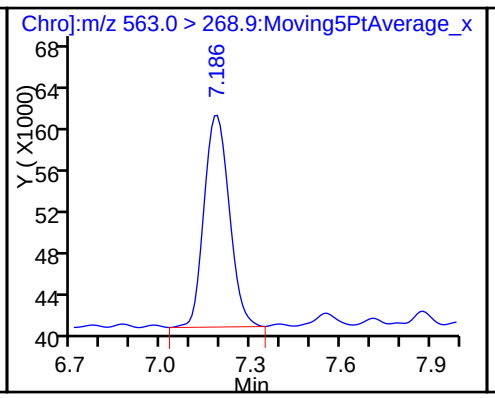
25 Perfluorodecane Sulfonate



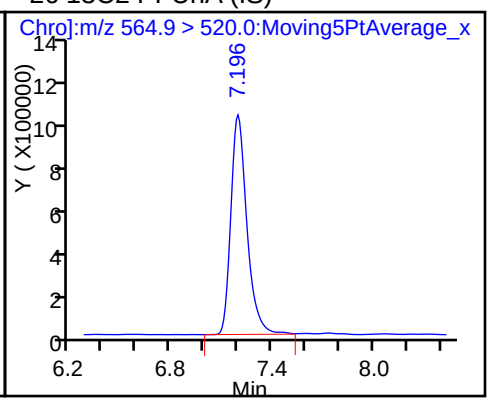
27 Perfluoroundecanoic acid



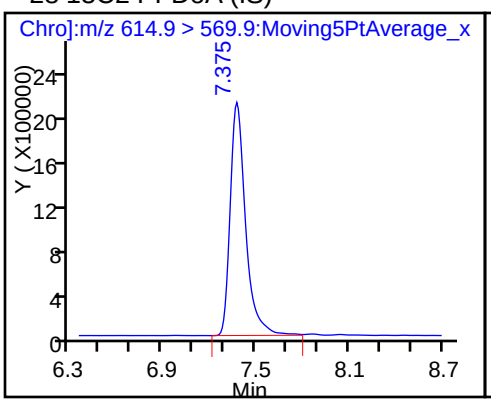
27 Perfluoroundecanoic acid



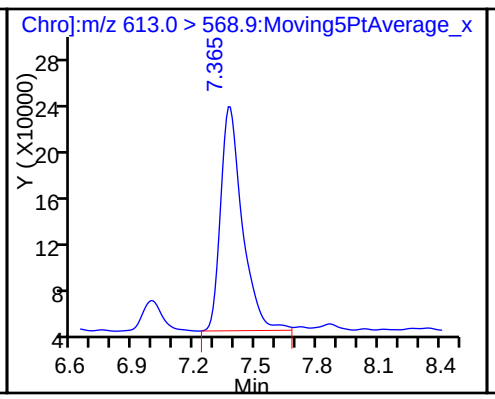
* 26 13C2 PFUnA (IS)



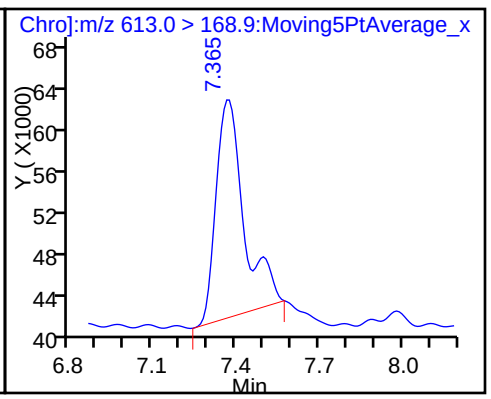
* 28 13C2 PFDoA (IS)



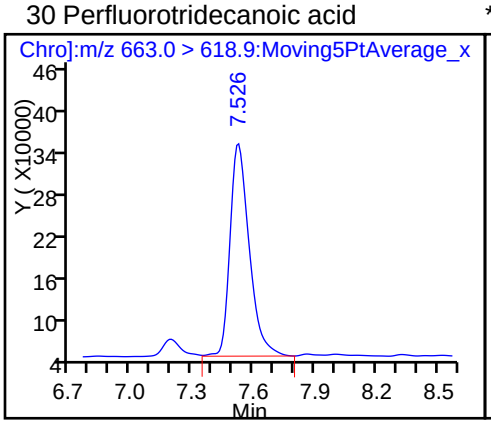
29 Perfluorododecanoic acid



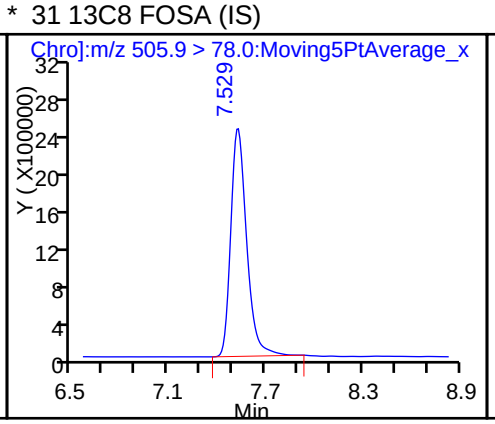
29 Perfluorododecanoic acid



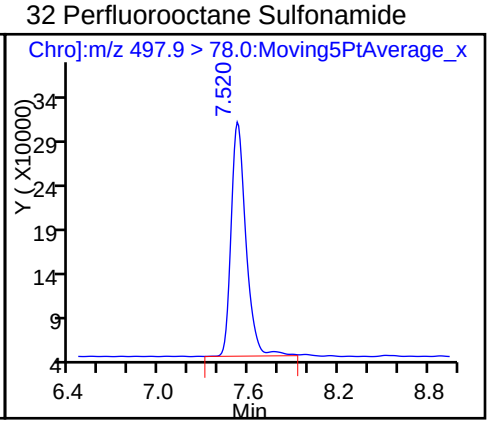
30 Perfluorotridecanoic acid



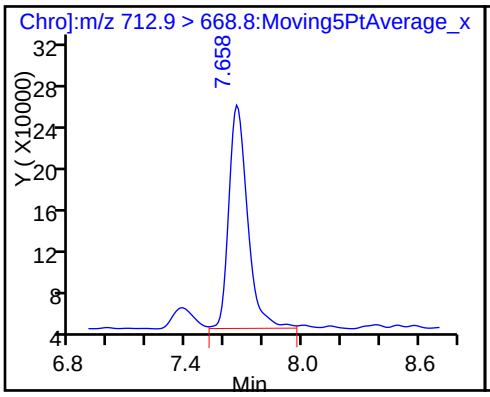
* 31 13C8 FOSA (IS)



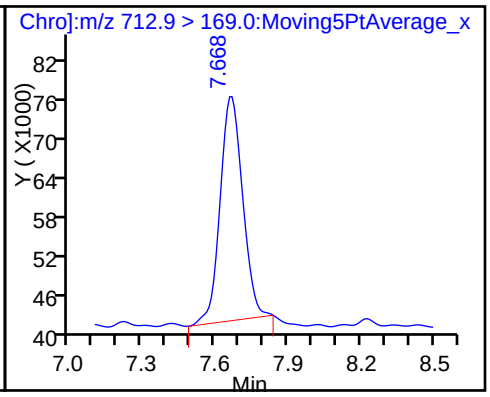
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

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Lims ID: STD0020
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 01-Sep-2016 11:32:13 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0020, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:12 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:38:08

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.058	0.0		13271971	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.068	4.068	0.0	1.002	2607159	2.04			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.109	0.0	0.900	2195290	1.99			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.232	5.232	0.0	0.856	1141745	1.74			R
298.9 > 98.9	5.232	5.232	0.0	0.856	337088		3.39(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.232	5.232	0.0	0.856	1141745	1.74			
298.9 > 98.9	5.232	5.232	0.0	0.856	337088		3.39(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		9825525	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.686	0.0	1.002	1862676	2.10			
313.0 > 118.6	5.686	5.686	0.0	1.002	55895		33.32(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	1.000	1124374	1.89			R
398.9 > 98.9	6.111	6.111	0.0	1.000	435694		2.58(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	1.000	1124374	1.89			
398.9 > 98.9	6.111	6.111	0.0	1.000	435694		2.58(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.947	2768798	2.17			
363.0 > 168.9	6.112	6.102	0.010	0.949	763432		3.63(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		1404962	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.441	0.0	0.959	1083388	1.96			
449.0 > 98.9	6.441	6.441	0.0	0.959	298008		3.64(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.441	0.0	0.959	1083388	1.96			
449.0 > 98.9	6.441	6.441	0.0	0.959	298008		3.64(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.442	0.0	1.000	2850136	2.56			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.442	0.0		15146582	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.442	0.0	1.000	3469106	2.27			
413.0 > 169.0	6.442	6.442	0.0	1.000	946611		3.66(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.714	0.0		4910565	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.723	0.0	1.001	657593	2.15			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.715	0.0	1.000	1035672	2.04			R
498.9 > 98.9	6.724	6.715	0.009	1.001	417634		2.48(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.734	0.0		11578122	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.734	0.0	1.000	2625464	2.15			
463.0 > 218.9	6.734	6.734	0.0	1.000	297270		8.83(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	6.978	0.0		10502012	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.979	6.979	0.0	1.000	2269609	2.26			
513.0 > 219.0	6.979	6.979	0.0	1.000	211522		10.73(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.167	0.0	1.067	963082	1.85			
598.9 > 99.0	7.167	7.167	0.0	1.067	285702		3.37(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.167	0.0	1.067	963082	1.85			
598.9 > 99.0	7.167	7.167	0.0	1.067	285702		3.37(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.186	0.0	1.000	1832257	2.03			R
563.0 > 268.9	7.186	7.186	0.0	1.000	279143		6.56(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.186	0.0		6718665	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.365	0.0		14430674	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.365	0.0	1.000	2908460	2.07			
613.0 > 168.9	7.375	7.365	0.010	1.001	349377		8.32(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.516	7.516	0.0	1.021	3801994	2.04			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.519	0.0		16682451	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.511	0.0	0.999	3520358	2.03			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.649	7.649	0.0	1.038	2992817	2.10			
712.9 > 169.0	7.649	7.649	0.0	1.038	513709		5.83(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_CAL_stock_00033	Amount Added: 100.00	Units: uL

Report Date: 02-Sep-2016 11:52:13 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01019.d

Injection Date: 01-Sep-2016 11:32:13 Instrument ID: LC_LCMS5

Lims ID: STD0020

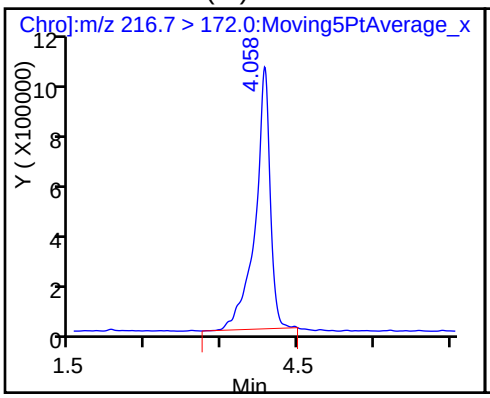
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6

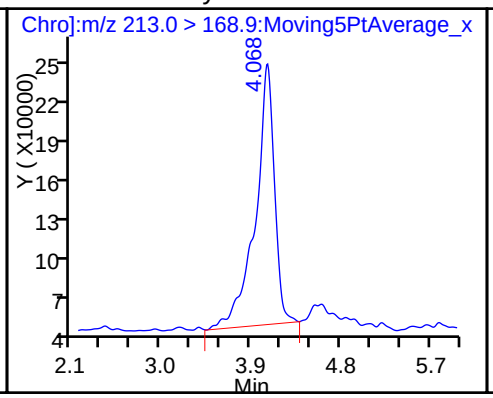
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

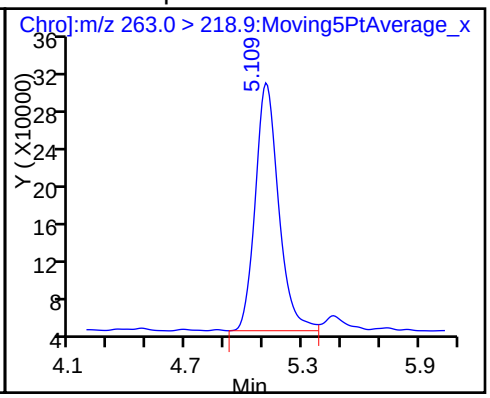
* 1 13C4 PFBA (IS)



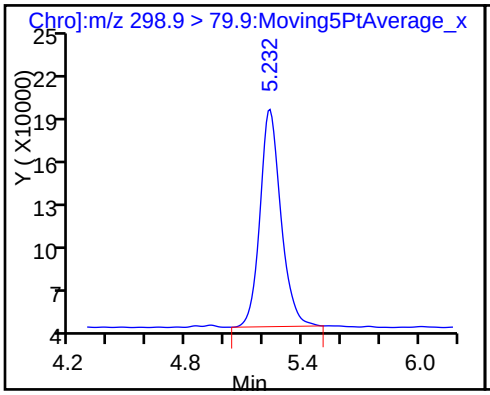
2 Perfluorobutyric acid



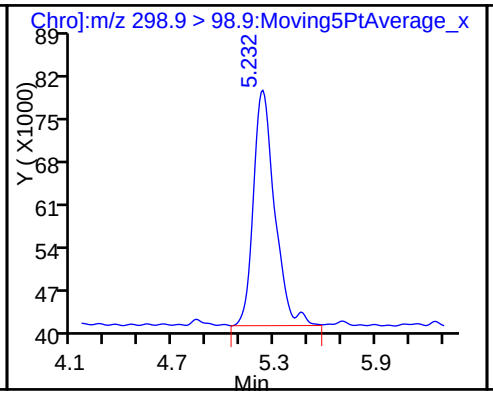
3 Perfluoropentanoic acid



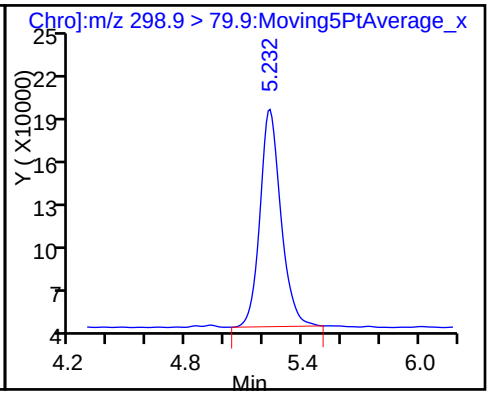
4 Perfluorobutane Sulfonate



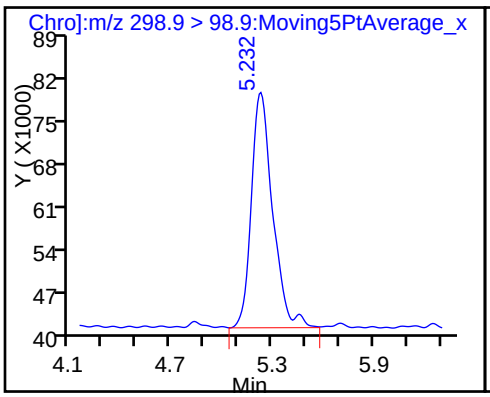
4 Perfluorobutane Sulfonate



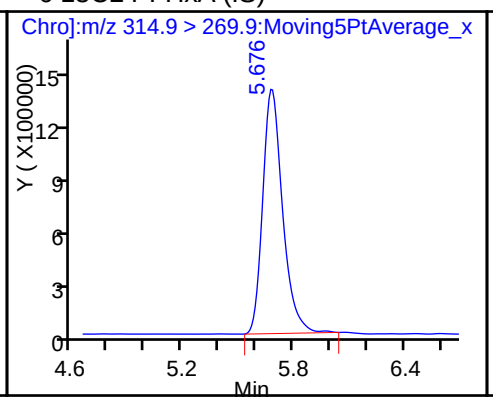
5 Perfluorobutanesulfonic acid



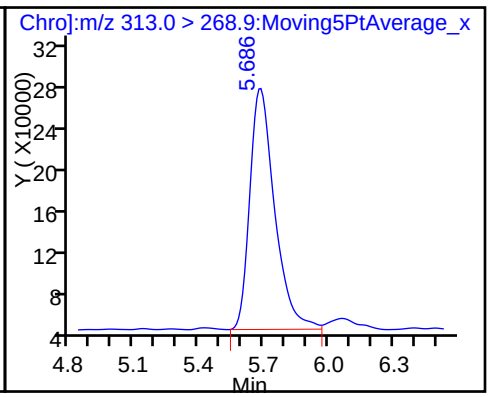
5 Perfluorobutanesulfonic acid



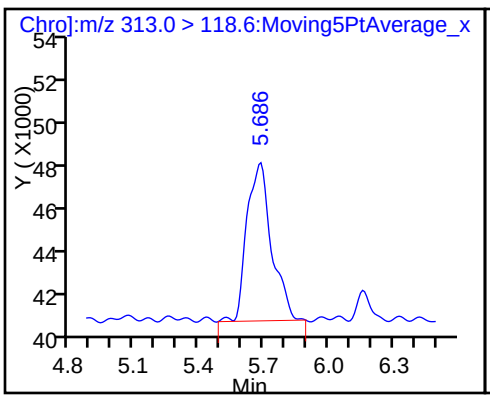
* 6 13C2 PFHxA (IS)



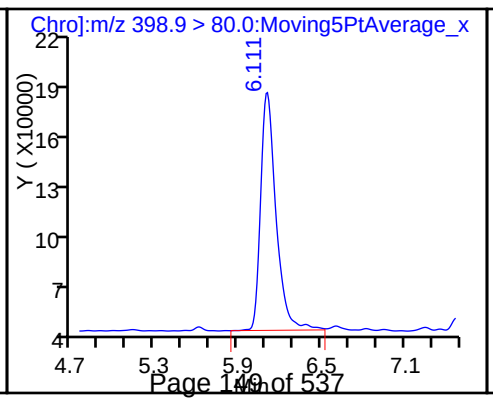
7 Perfluorohexanoic acid



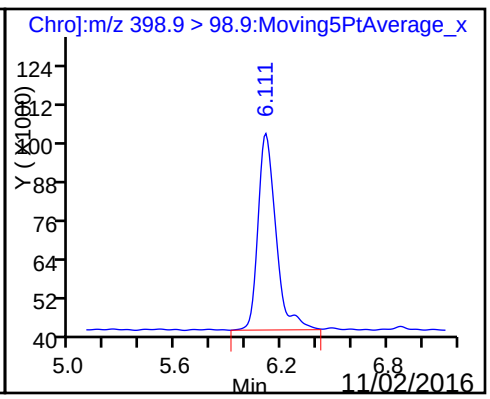
7 Perfluorohexanoic acid



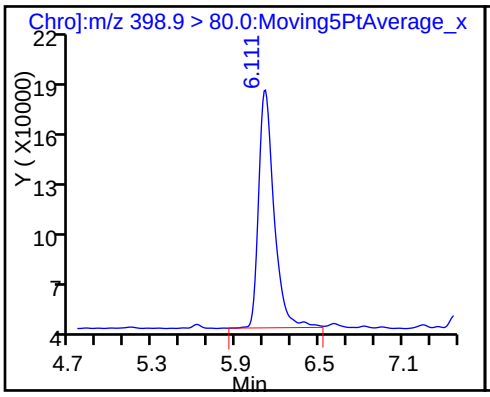
10 Perfluorohexane Sulfonate



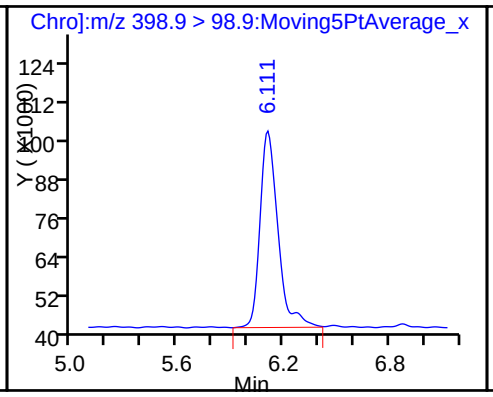
10 Perfluorohexane Sulfonate



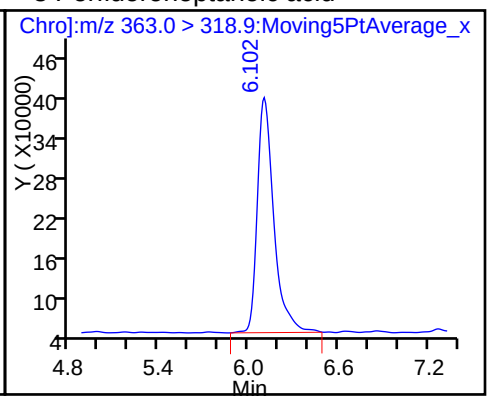
11 Perfluorohexanesulfonic acid



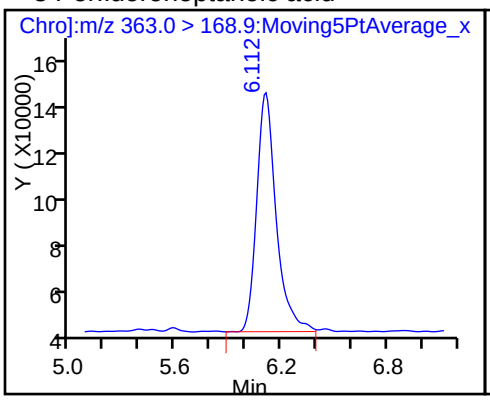
11 Perfluorohexanesulfonic acid



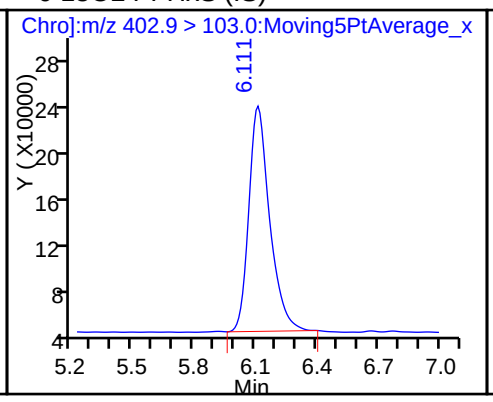
8 Perfluoroheptanoic acid



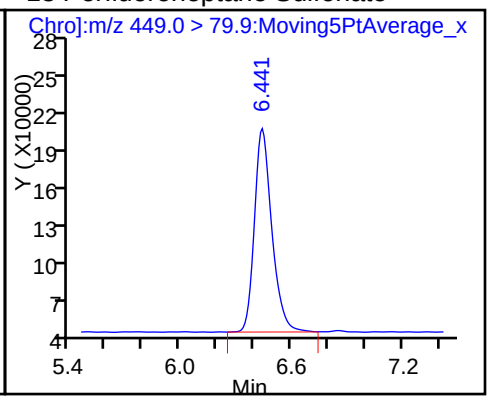
8 Perfluoroheptanoic acid



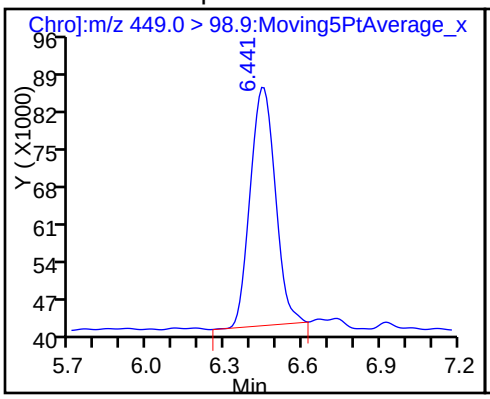
* 9 18O2 PFHxS (IS)



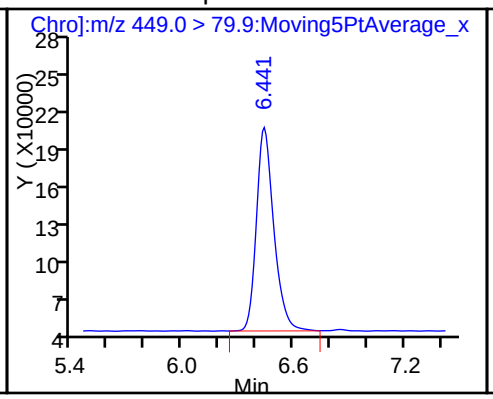
13 Perfluoroheptane Sulfonate



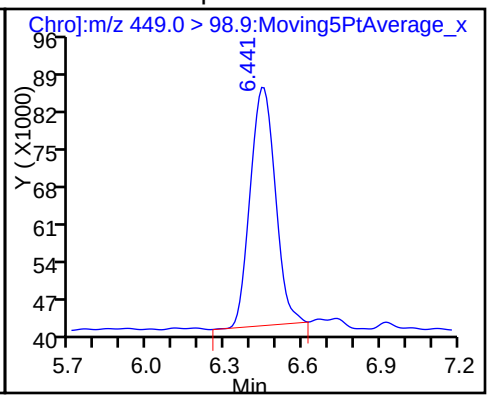
13 Perfluoroheptane Sulfonate



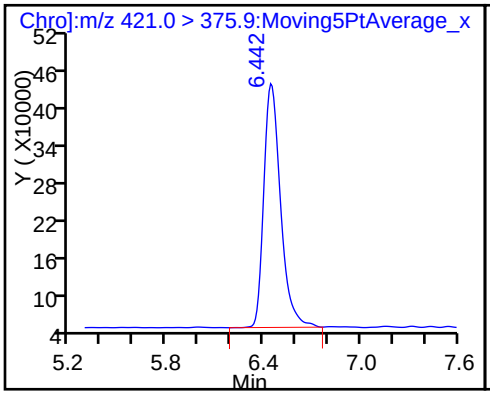
12 Perfluoroheptanesulfonic Acid



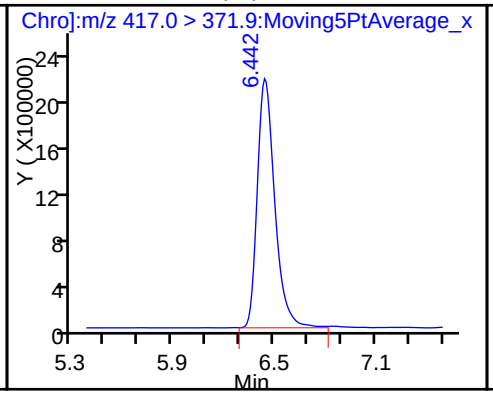
12 Perfluoroheptanesulfonic Acid



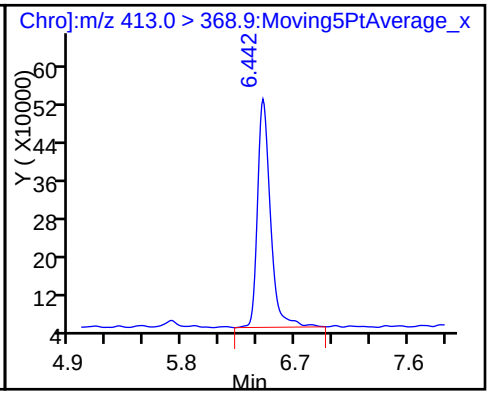
$ 14 13C8 PFOA



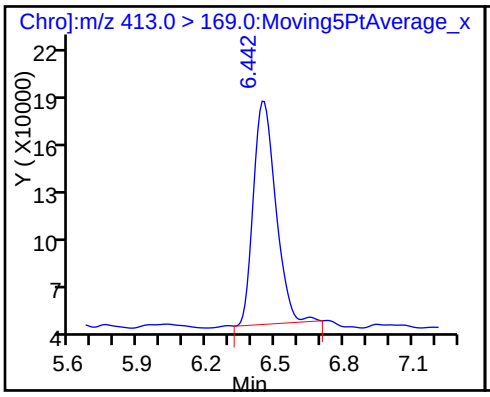
* 15 13C4 PFOA (IS)



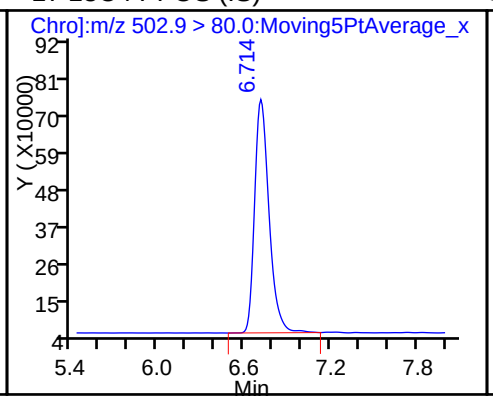
16 Perfluorooctanoic acid



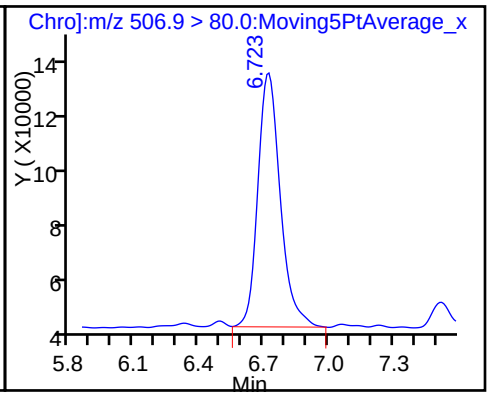
16 Perfluorooctanoic acid



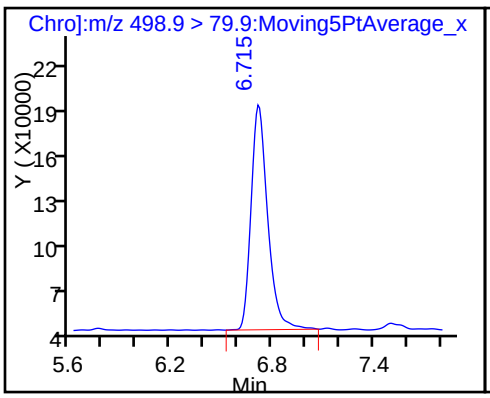
* 17 13C4 PFOS (IS)



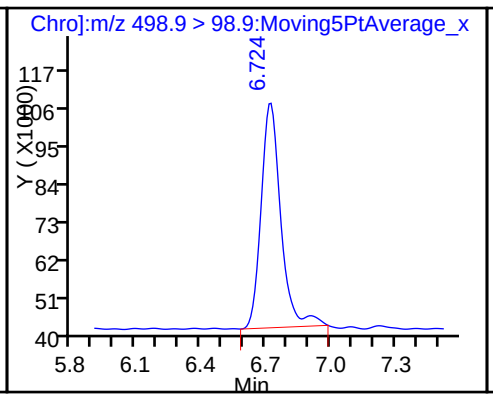
$ 18 13C8 PFOS



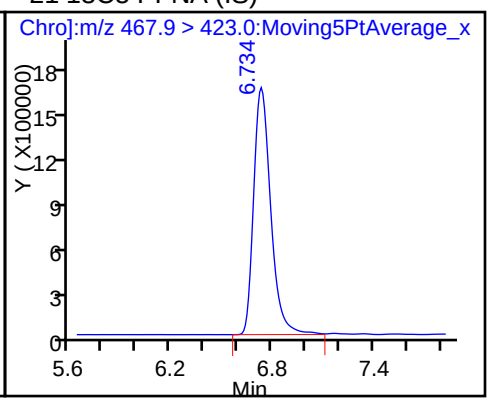
19 Perfluorooctane sulfonic acid



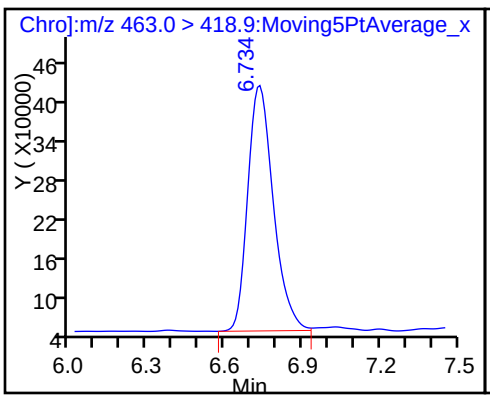
19 Perfluorooctane sulfonic acid



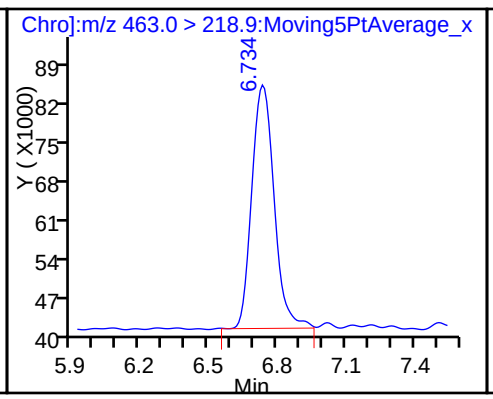
* 21 13C5 PFNA (IS)



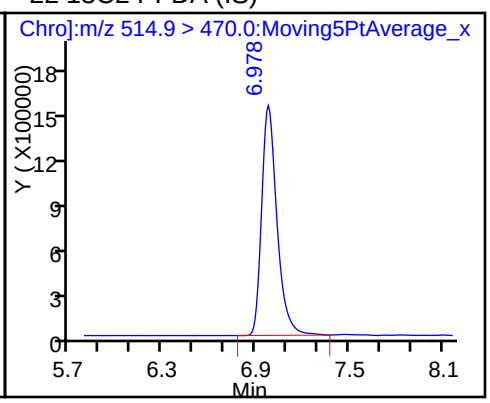
20 Perfluorononanoic acid



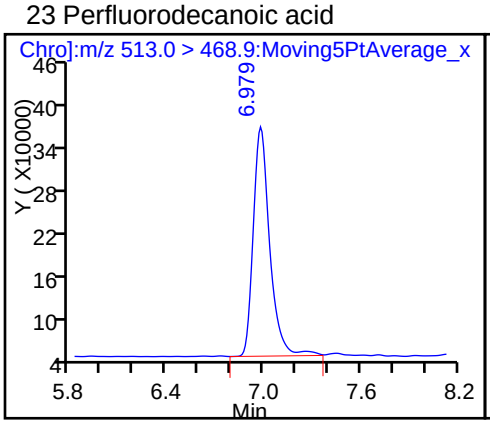
20 Perfluorononanoic acid



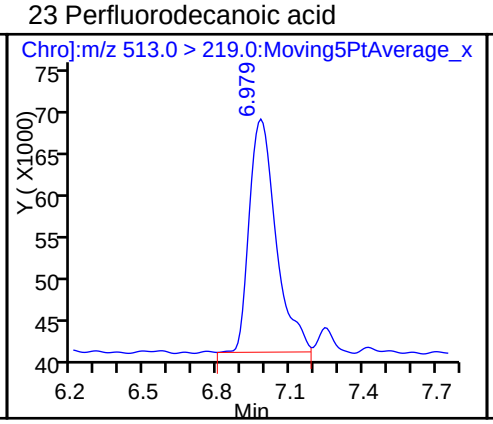
* 22 13C2 PFDA (IS)



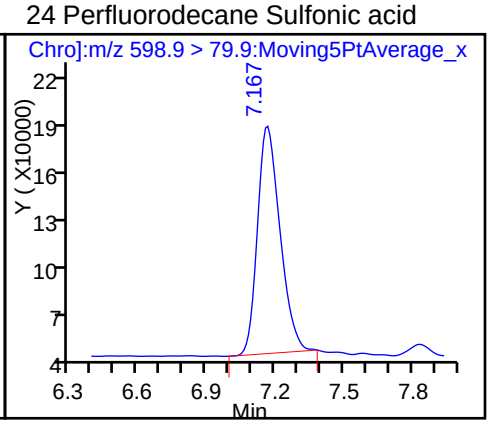
23 Perfluorodecanoic acid



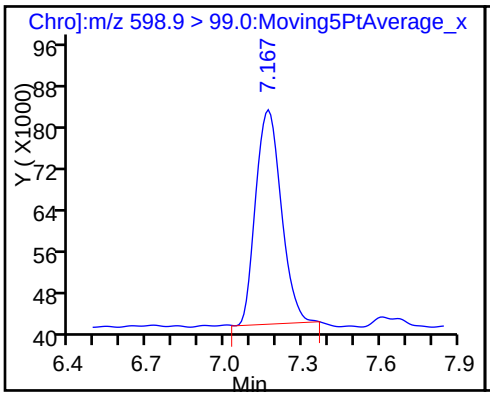
23 Perfluorodecanoic acid



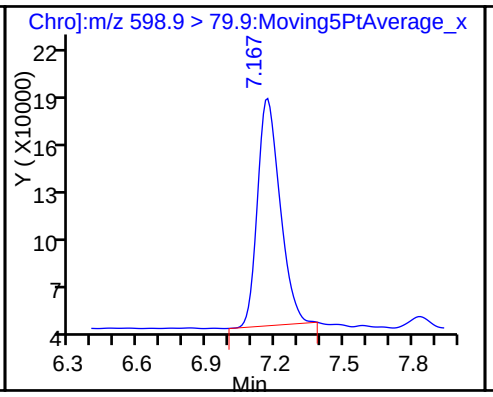
24 Perfluorodecane Sulfonic acid



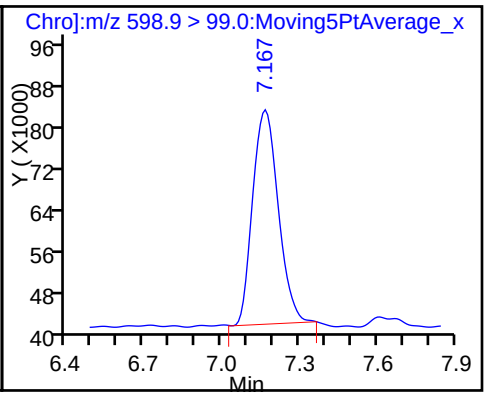
24 Perfluorodecane Sulfonic acid



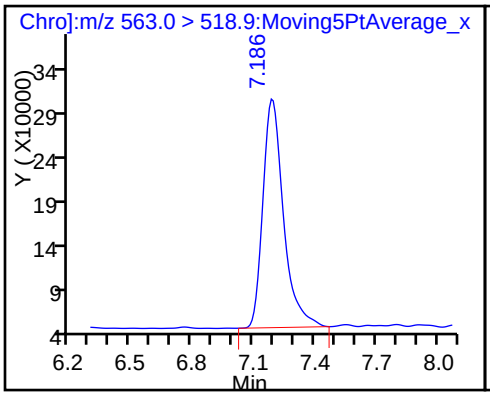
25 Perfluorodecane Sulfonate



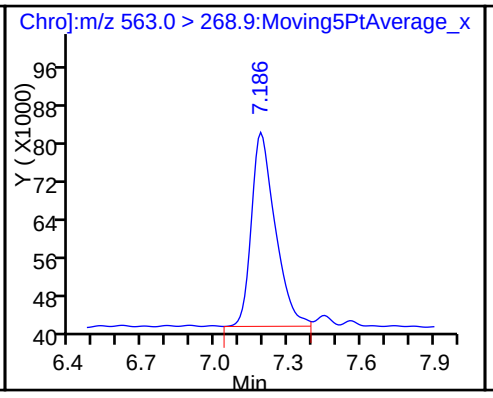
25 Perfluorodecane Sulfonate



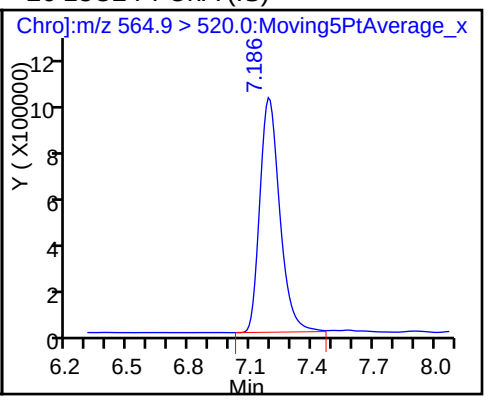
27 Perfluoroundecanoic acid



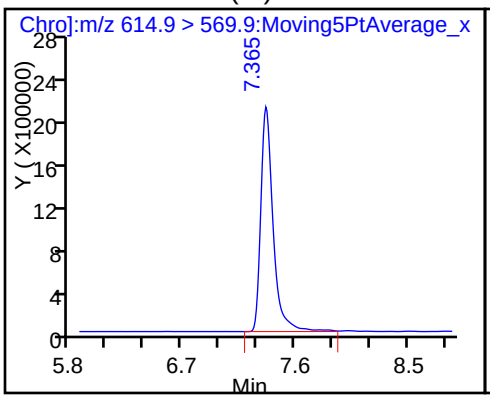
27 Perfluoroundecanoic acid



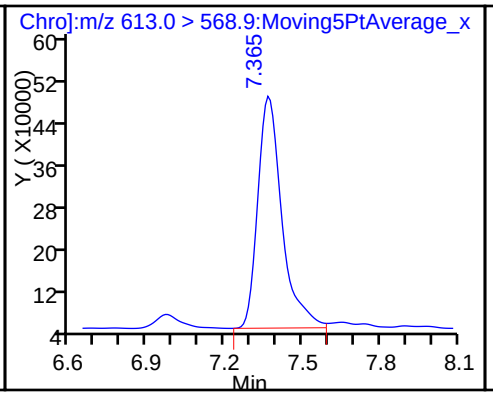
* 26 13C2 PFUnA (IS)



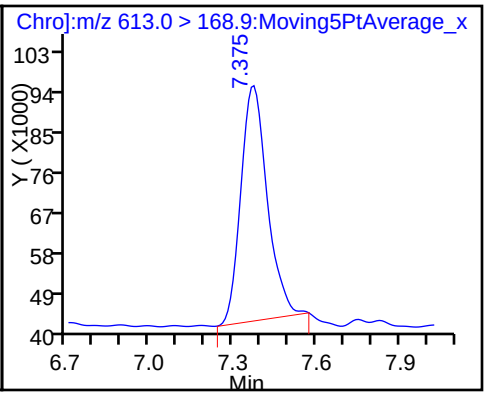
* 28 13C2 PFDoA (IS)



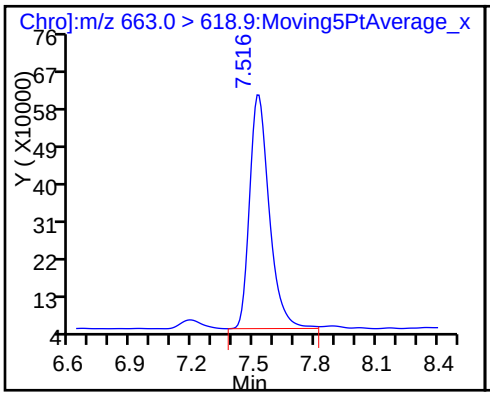
29 Perfluorododecanoic acid



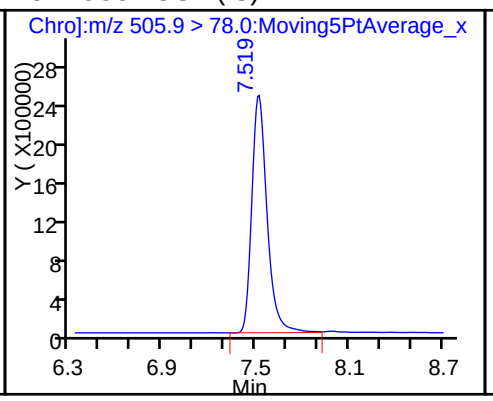
29 Perfluorododecanoic acid



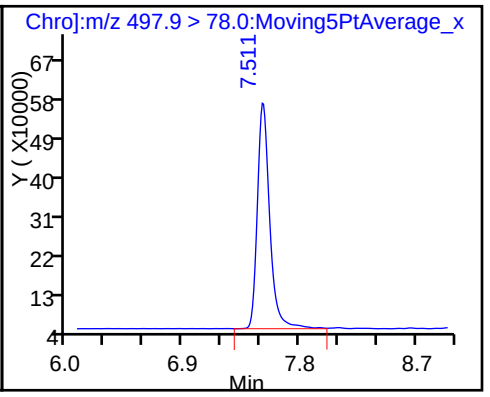
30 Perfluorotridecanoic acid



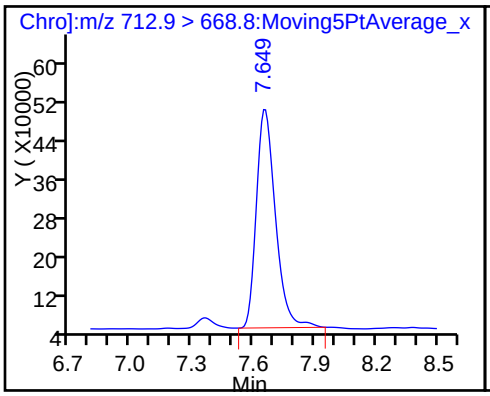
* 31 13C8 FOSA (IS)



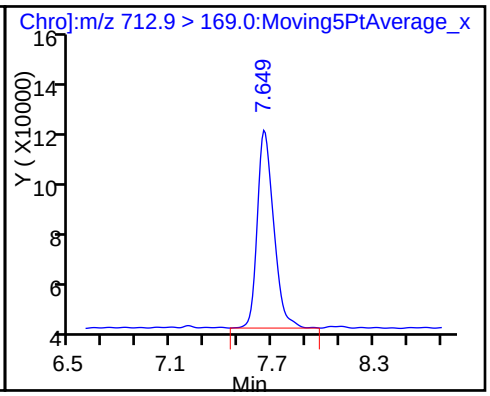
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01020.d
Lims ID: STD0050
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 01-Sep-2016 11:44:32 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0050, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:16 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:38:22

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.048	4.058	-0.010		14615072	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.049	4.068	-0.019	1.000	6654790	4.72			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.100	5.109	-0.009	0.898	5467867	4.70			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.222	5.232	-0.010	0.855	2685289	3.94			
298.9 > 98.9	5.213	5.232	-0.019	0.853	832704		3.22(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.222	5.232	-0.010	0.855	2685289	3.94			
298.9 > 98.9	5.213	5.232	-0.019	0.853	832704		3.22(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		10583415	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.667	5.686	-0.019	0.998	4495592	4.76			
313.0 > 118.6	5.677	5.686	-0.009	1.000	87114		51.61(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	1.000	2967617	4.80			R
398.9 > 98.9	6.102	6.111	-0.009	0.998	864038		3.43(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	1.000	2967617	4.80			
398.9 > 98.9	6.102	6.111	-0.009	0.998	864038		3.43(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.947	6648694	4.86			
363.0 > 168.9	6.102	6.102	0.0	0.947	1664645		3.99(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		1461737	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.441	0.0	0.959	2541992	4.48			
449.0 > 98.9	6.441	6.441	0.0	0.959	841893		3.02(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.441	0.0	0.959	2541992	4.48			
449.0 > 98.9	6.441	6.441	0.0	0.959	841893		3.02(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.442	0.0	1.000	7100681	6.26			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.442	0.0		16257567	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.442	0.0	1.000	8176935	5.09			
413.0 > 169.0	6.442	6.442	0.0	1.000	2790561		2.93(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.714	0.0		4973154	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.714	6.723	-0.009	1.000	1411484	4.67			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.724	6.715	0.009	1.001	2395297	4.56			R
498.9 > 98.9	6.724	6.715	0.009	1.001	972437		2.46(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.734	0.0		12401277	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.734	0.0	1.000	6259116	4.78			
463.0 > 218.9	6.725	6.734	-0.009	0.999	872767		7.17(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	6.978	0.0		12096712	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.979	6.979	0.0	1.000	5263939	4.57			
513.0 > 219.0	6.969	6.979	-0.010	0.999	476117		11.06(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.167	0.0	1.067	2646264	5.10			
598.9 > 99.0	7.167	7.167	0.0	1.067	866457		3.05(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.167	0.0	1.067	2646264	5.10			
598.9 > 99.0	7.167	7.167	0.0	1.067	866457		3.05(1.99-3.69)		
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.186	0.0	1.000	4589716	5.01			R
563.0 > 268.9	7.186	7.186	0.0	1.000	508858		9.02(3.47-6.45)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.186	0.0		6993794	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.365	0.0		15439495	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.365	0.0	1.000	6879432	4.58			
613.0 > 168.9	7.365	7.365	0.0	1.000	844226		8.15(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.526	7.516	0.010	1.022	9277562	4.72			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.519	-0.009		17363615	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.511	0.0	1.000	8682703	4.83			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.649	7.649	0.0	1.038	7435175	4.93			
712.9 > 169.0	7.649	7.649	0.0	1.038	1184746		6.28(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00084	Amount Added:	10.00	Units: uL

Report Date: 02-Sep-2016 11:52:16 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01020.d

Injection Date: 01-Sep-2016 11:44:32 Instrument ID: LC_LCMS5

Lims ID: STD0050

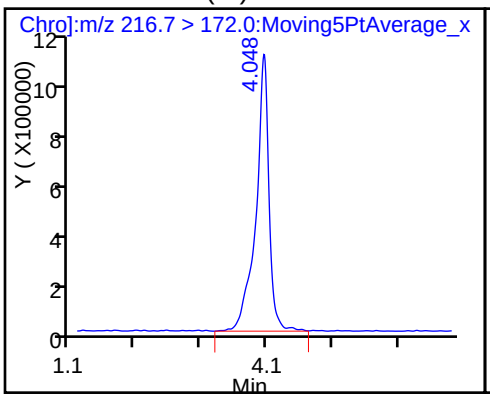
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 7

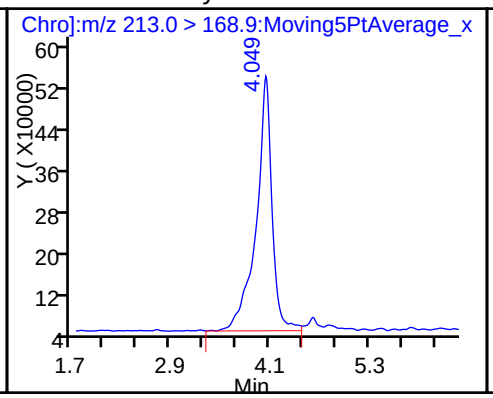
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

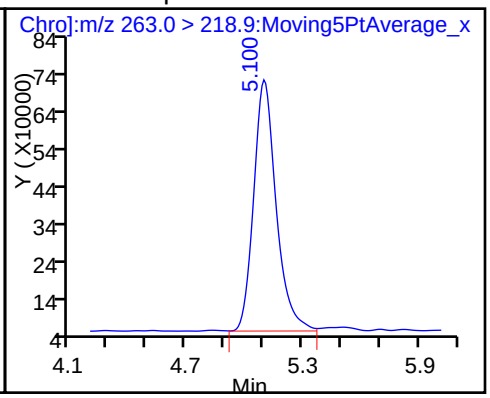
* 1 13C4 PFBA (IS)



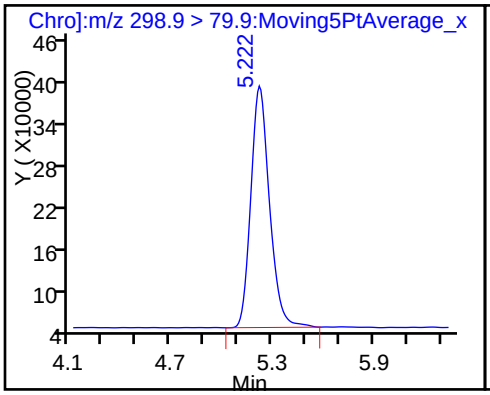
2 Perfluorobutyric acid



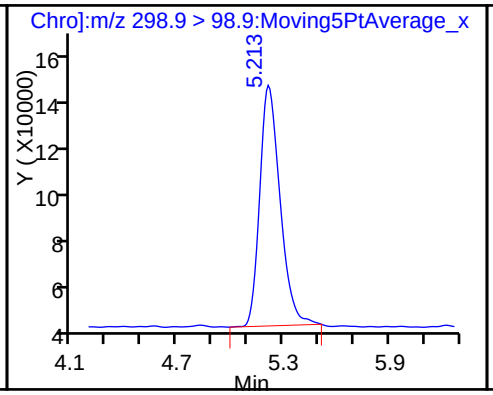
3 Perfluoropentanoic acid



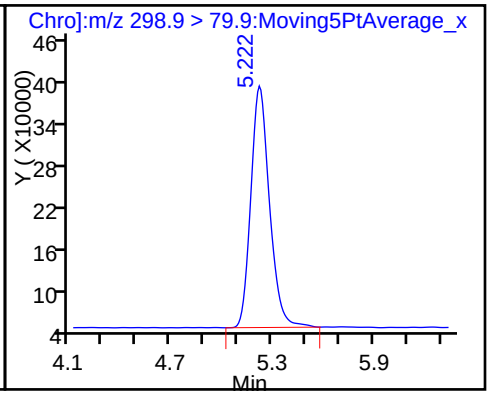
4 Perfluorobutane Sulfonate



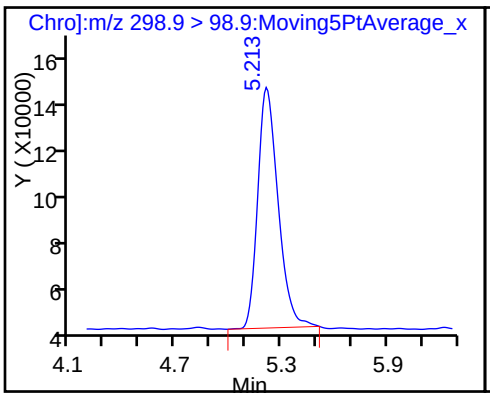
4 Perfluorobutane Sulfonate



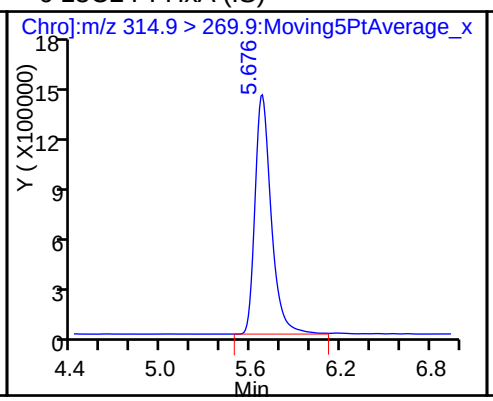
5 Perfluorobutanesulfonic acid



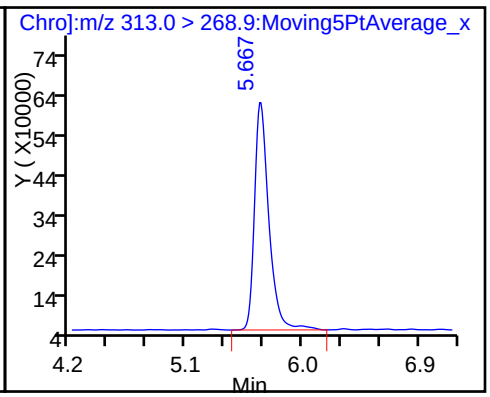
5 Perfluorobutanesulfonic acid



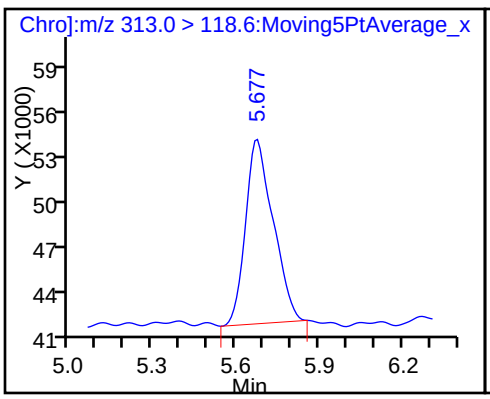
* 6 13C2 PFHxA (IS)



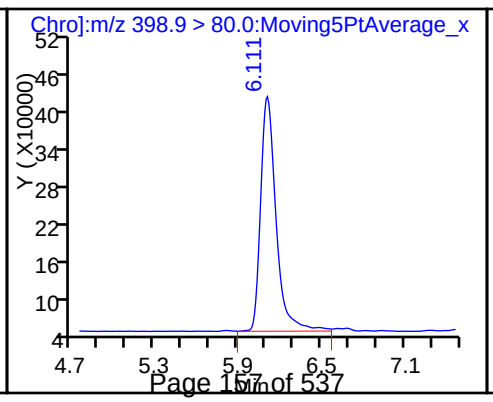
7 Perfluorohexanoic acid



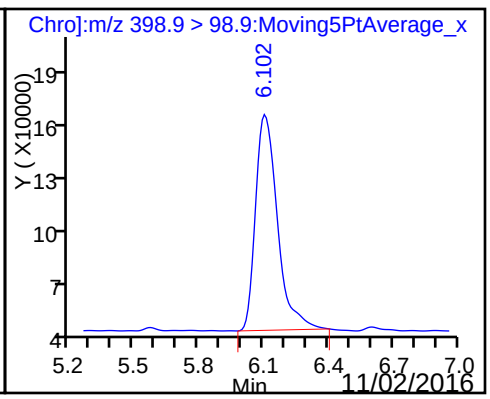
7 Perfluorohexanoic acid



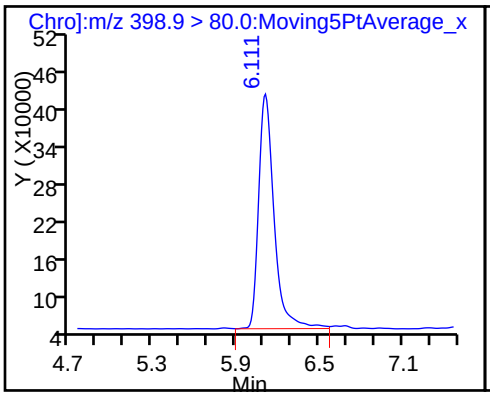
10 Perfluorohexane Sulfonate



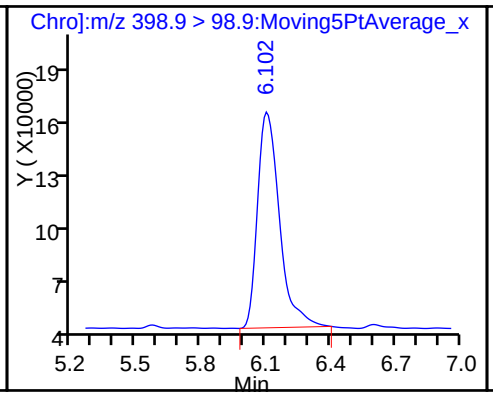
10 Perfluorohexane Sulfonate



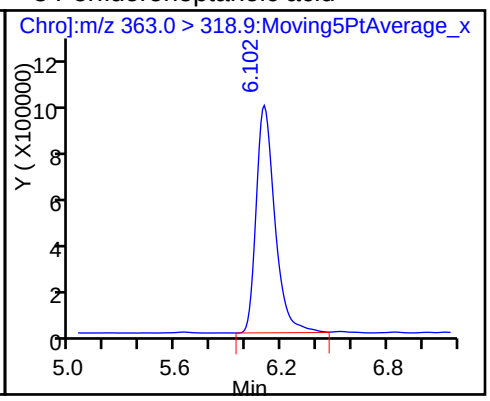
11 Perfluorohexanesulfonic acid



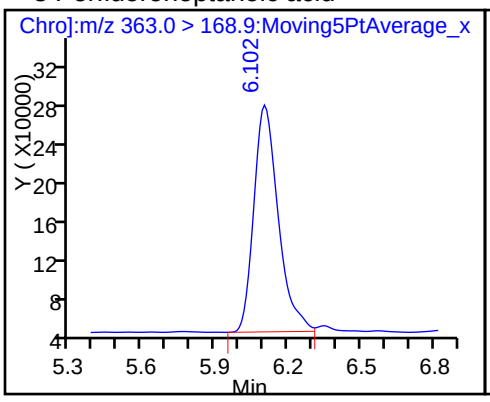
11 Perfluorohexanesulfonic acid



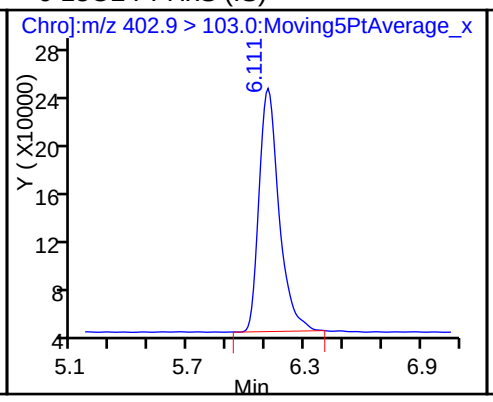
8 Perfluoroheptanoic acid



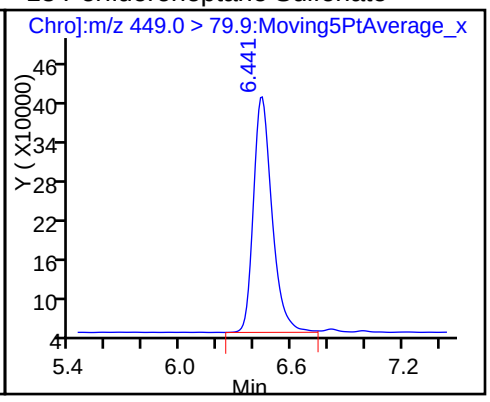
8 Perfluoroheptanoic acid



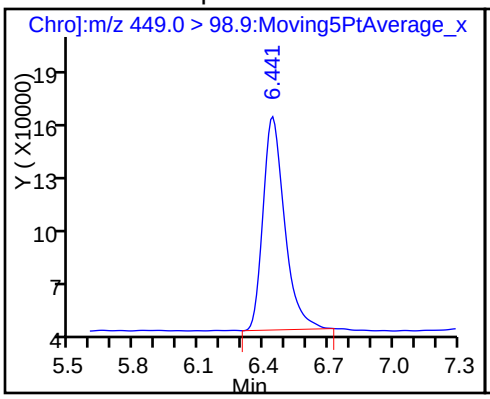
* 9 18O2 PFHxS (IS)



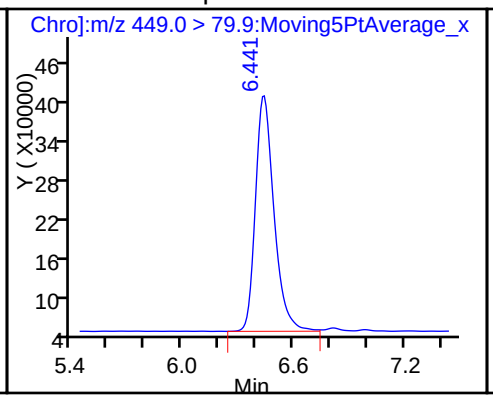
13 Perfluoroheptane Sulfonate



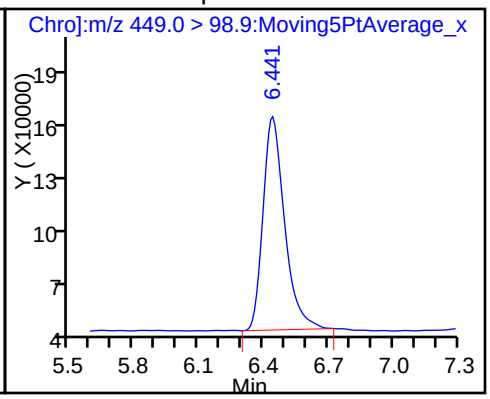
13 Perfluoroheptane Sulfonate



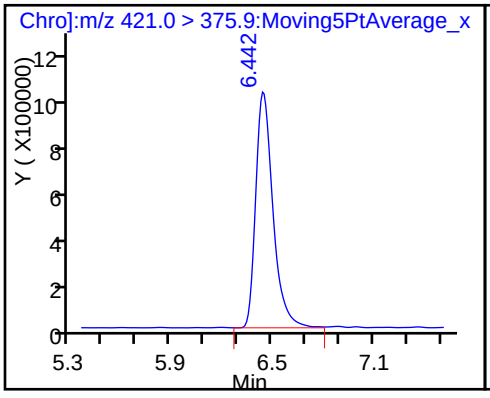
12 Perfluoroheptanesulfonic Acid



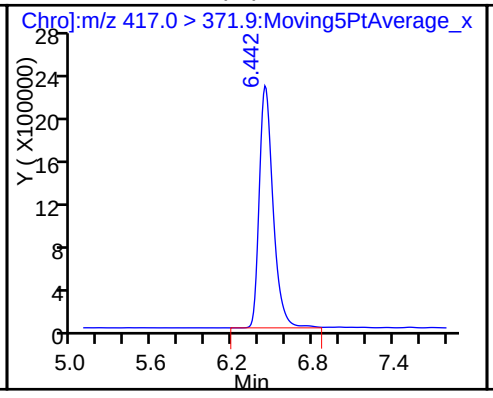
12 Perfluoroheptanesulfonic Acid



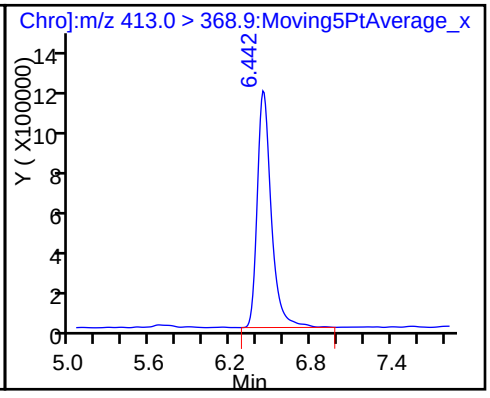
$ 14 13C8 PFOA



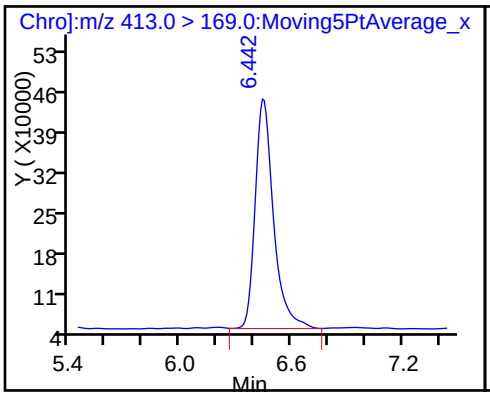
* 15 13C4 PFOA (IS)



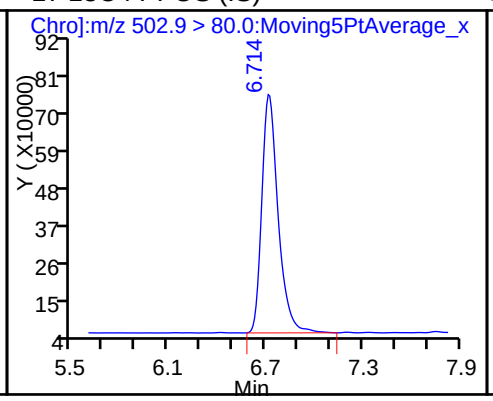
16 Perfluorooctanoic acid



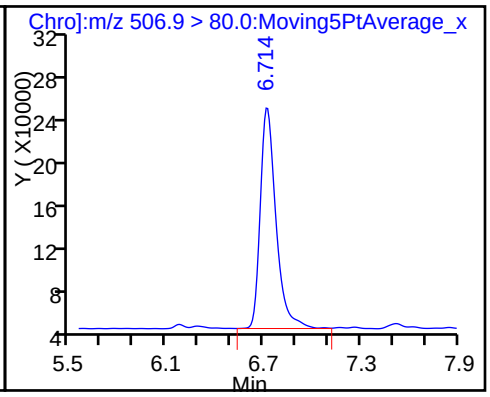
16 Perfluorooctanoic acid



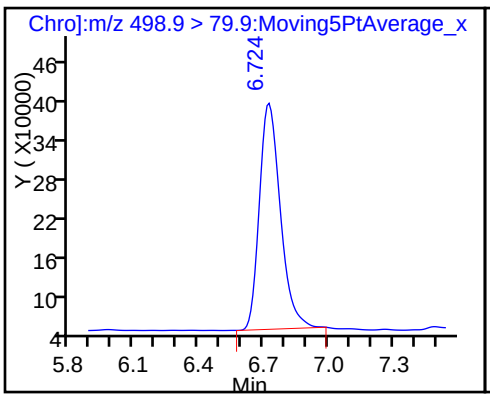
* 17 13C4 PFOS (IS)



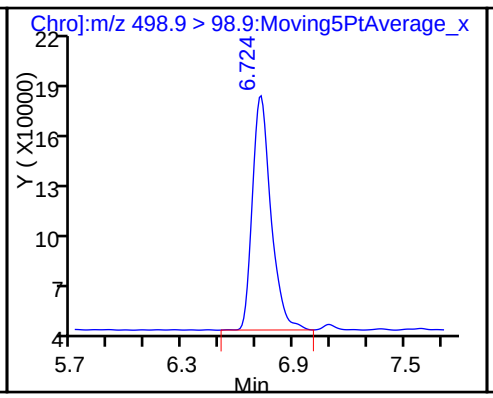
$ 18 13C8 PFOS



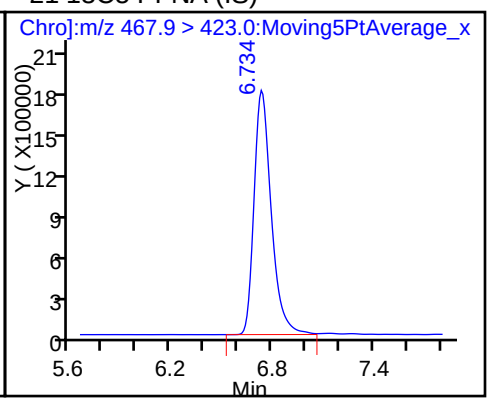
19 Perfluorooctane sulfonic acid



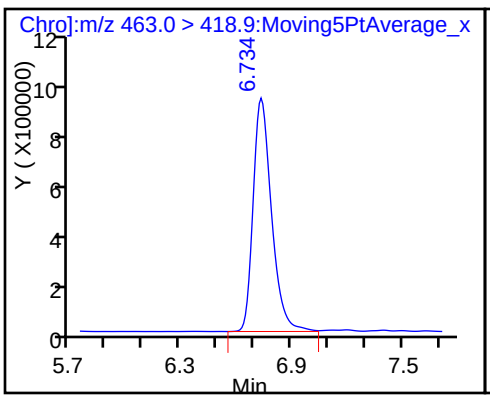
19 Perfluorooctane sulfonic acid



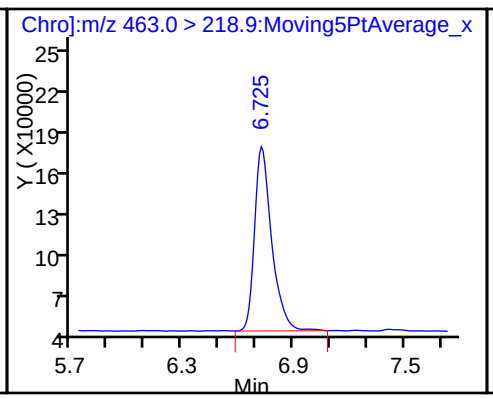
* 21 13C5 PFNA (IS)



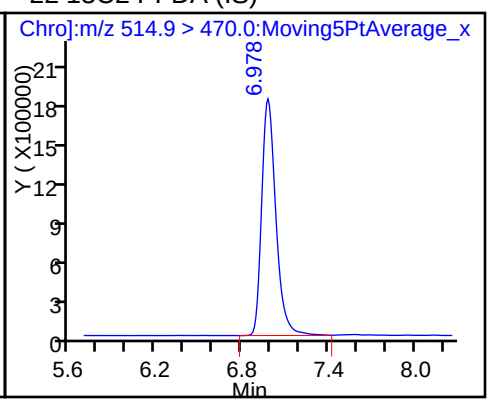
20 Perfluorononanoic acid



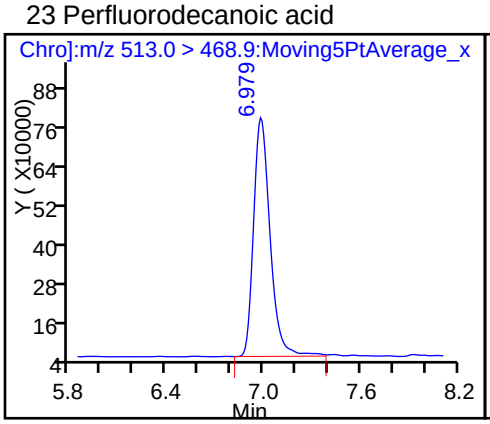
20 Perfluorononanoic acid



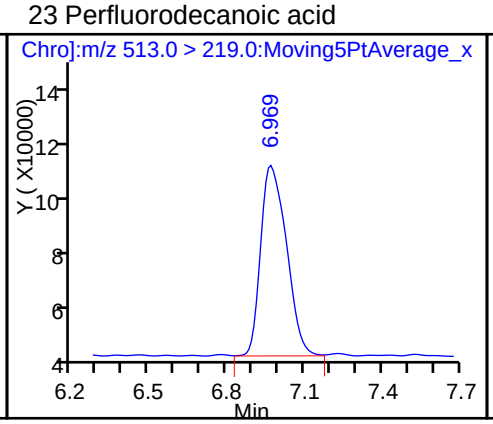
* 22 13C2 PFDA (IS)



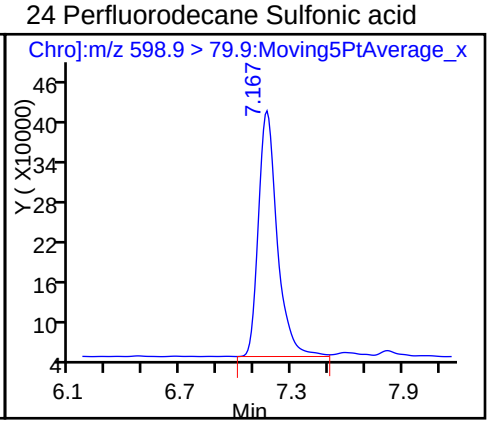
23 Perfluorodecanoic acid



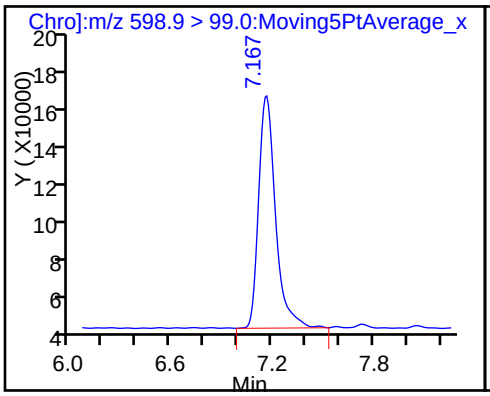
23 Perfluorodecanoic acid



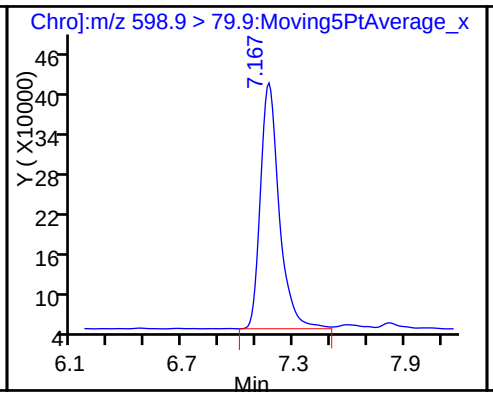
24 Perfluorodecane Sulfonic acid



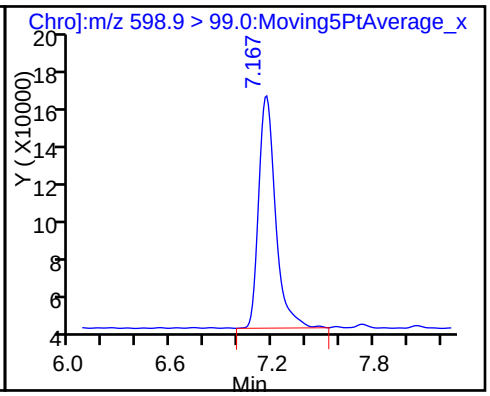
24 Perfluorodecane Sulfonic acid



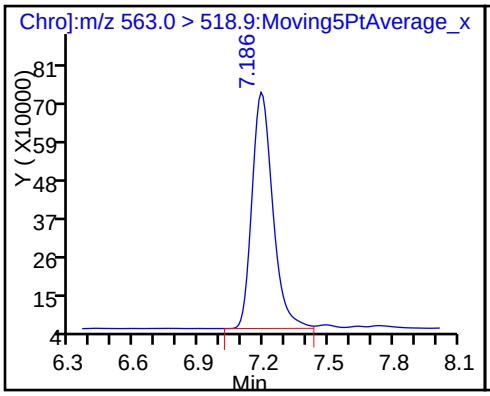
25 Perfluorodecane Sulfonate



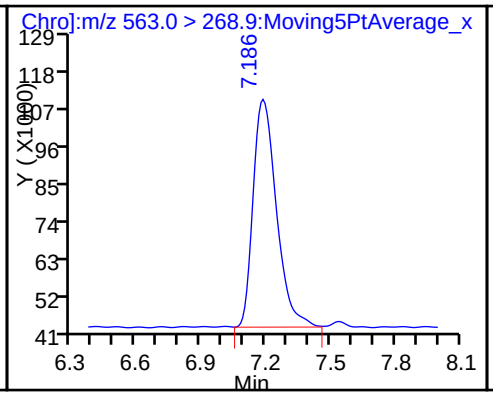
25 Perfluorodecane Sulfonate



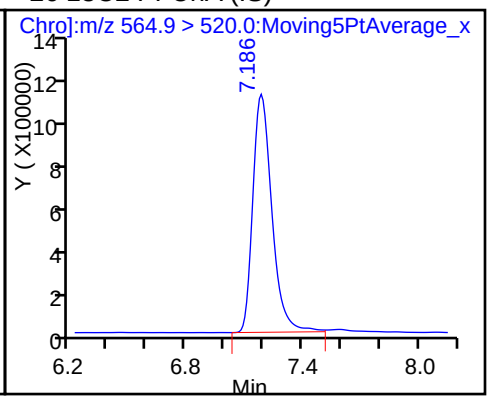
27 Perfluoroundecanoic acid



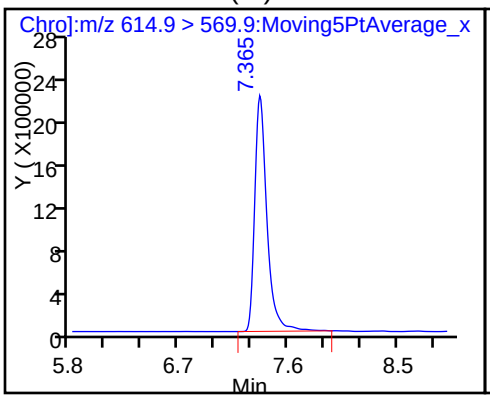
27 Perfluoroundecanoic acid



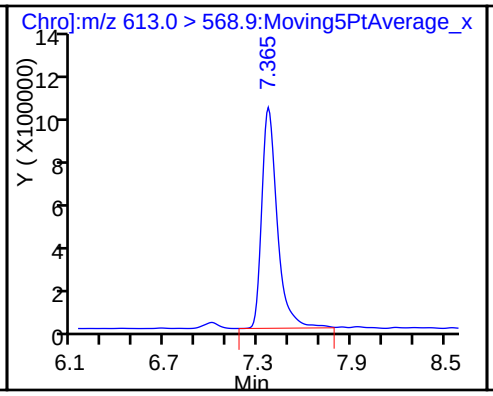
* 26 13C2 PFUnA (IS)



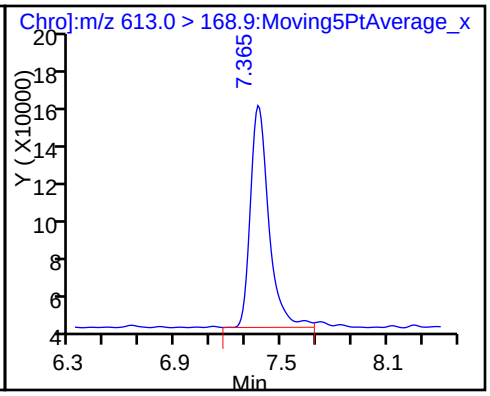
* 28 13C2 PFDoA (IS)



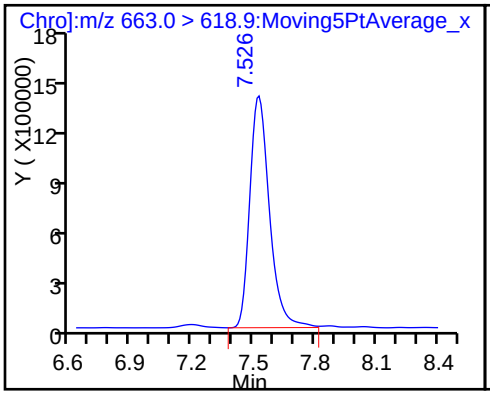
29 Perfluorododecanoic acid



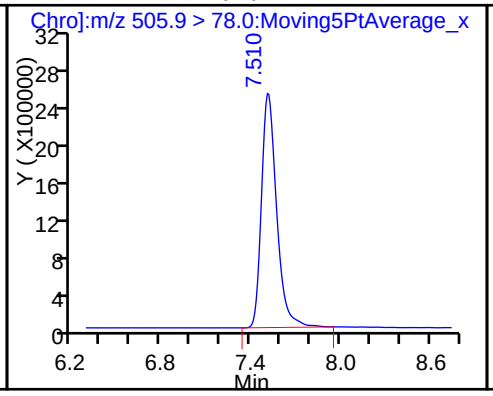
29 Perfluorododecanoic acid



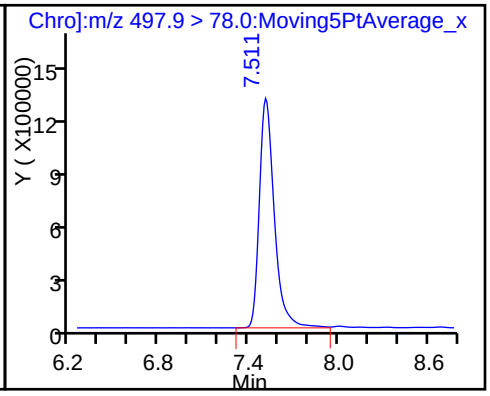
30 Perfluorotridecanoic acid



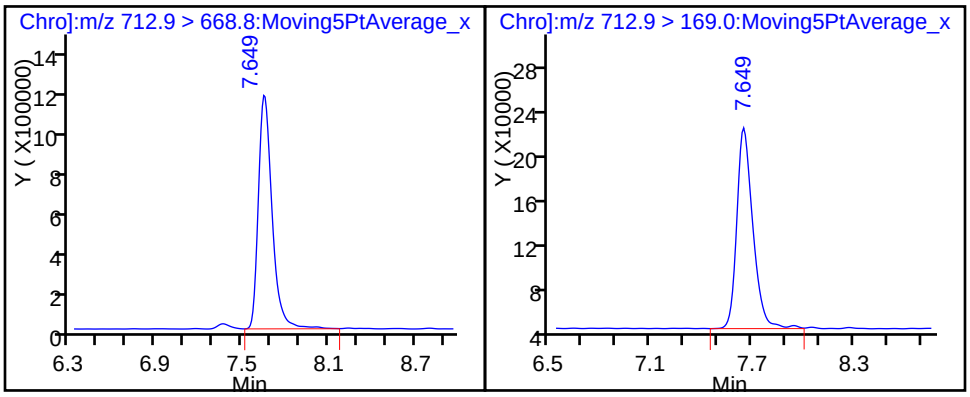
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01021.d
Lims ID: STD0100
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 01-Sep-2016 11:56:50 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0100, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:19 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:38:54

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.058	0.0		13287469	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.058	4.068	-0.010	1.000	12895488	10.1			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.100	5.109	-0.009	0.898	10624114	10.0			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.222	5.232	-0.010	0.855	5156065	8.94			R
298.9 > 98.9	5.222	5.232	-0.010	0.855	1465260		3.52(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.222	5.232	-0.010	0.855	5156065	8.94			
298.9 > 98.9	5.222	5.232	-0.010	0.855	1465260		3.52(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		9731927	10.0			
7 Perfluorohexanoic acid									M
313.0 > 268.9	5.677	5.686	-0.009	1.000	8402668	9.72			M
313.0 > 118.6	5.677	5.686	-0.009	1.000	277320		30.30(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.947	12959988	10.2			
363.0 > 168.9	6.102	6.102	0.0	0.947	3602885		3.60(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		1238740	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.102	6.111	-0.009	0.998	5070334	9.68			
398.9 > 98.9	6.102	6.111	-0.009	0.998	1697643		2.99(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.102	6.111	-0.009	0.998	5070334	9.68			R
398.9 > 98.9	6.102	6.111	-0.009	0.998	1697643		2.99(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.432	6.441	-0.009	0.958	5121961	10.0			
449.0 > 98.9	6.432	6.441	-0.009	0.958	1501560		3.41(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.432	6.441	-0.009	0.958	5121961	10.0			
449.0 > 98.9	6.432	6.441	-0.009	0.958	1501560		3.41(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.442	0.0	1.000	12063143	11.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.442	0.0		15084454	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.442	0.0	1.000	15706871	10.6			
413.0 > 169.0	6.442	6.442	0.0	1.000	5172395		3.04(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.714	0.0		4447527	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.715	0.0	1.000	4994005	10.5			R
498.9 > 98.9	6.715	6.715	0.0	1.000	1846470		2.70(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.714	6.723	-0.009	1.000	2717920	10.2			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.734	0.0		11257567	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.734	0.0	1.000	11860060	9.96			
463.0 > 218.9	6.734	6.734	0.0	1.000	1537033		7.72(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	6.978	0.0		10926044	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.979	6.979	0.0	1.000	10395613	10.0			R
513.0 > 219.0	6.979	6.979	0.0	1.000	1048609		9.91(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.167	0.0	1.067	4806013	10.4			
598.9 > 99.0	7.167	7.167	0.0	1.067	1641410		2.93(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.167	0.0	1.067	4806013	10.4			
598.9 > 99.0	7.167	7.167	0.0	1.067	1641410		2.93(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.186	0.0		6242370	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.186	0.0	1.000	8601057	10.6			R
563.0 > 268.9	7.186	7.186	0.0	1.000	1013974		8.48(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.365	7.365	0.0		13617248	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.365	0.0	1.000	13981225	10.6			
613.0 > 168.9	7.375	7.365	0.010	1.001	1567261		8.92(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.511	0.0	1.000	16605818	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.526	7.516	0.010	1.022	19361463	11.2			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.519	-0.009		15995364	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.658	7.649	0.009	1.040	13647994	10.3			
712.9 > 169.0	7.658	7.649	0.009	1.040	2124933		6.42(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC-LCS_00084	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL

Report Date: 02-Sep-2016 11:52:20 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01021.d

Injection Date: 01-Sep-2016 11:56:50 Instrument ID: LC_LCMS5

Lims ID: STD0100

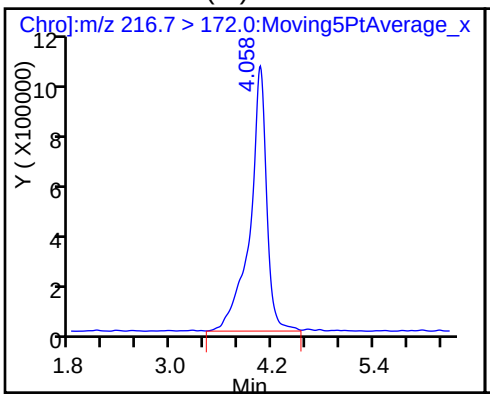
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8

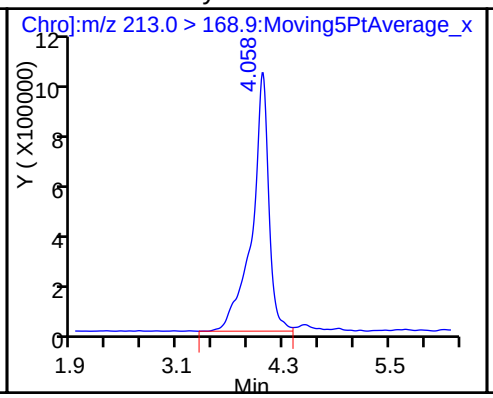
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

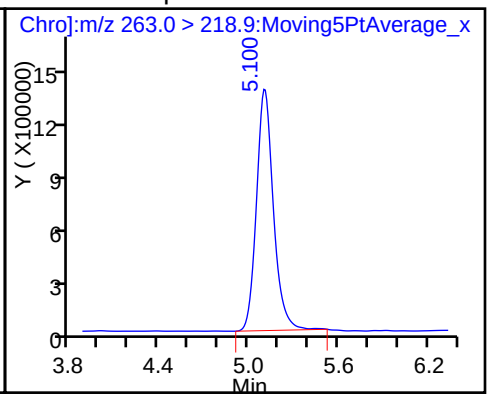
* 1 13C4 PFBA (IS)



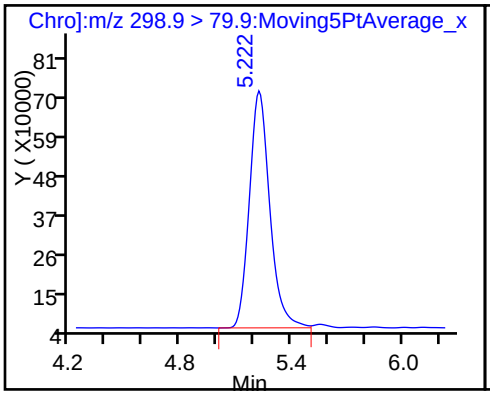
2 Perfluorobutyric acid



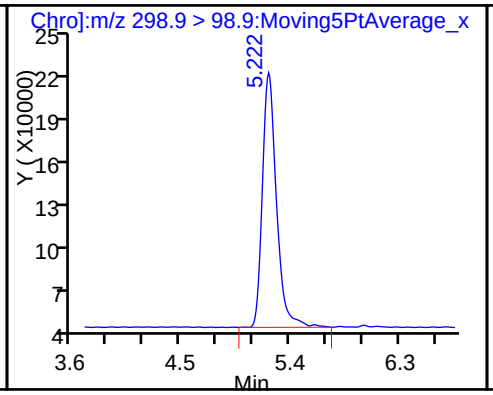
3 Perfluoropentanoic acid



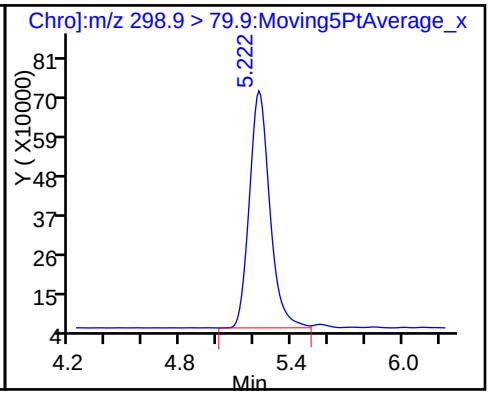
4 Perfluorobutane Sulfonate



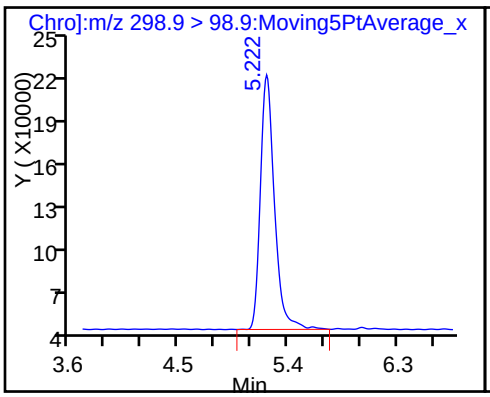
4 Perfluorobutane Sulfonate



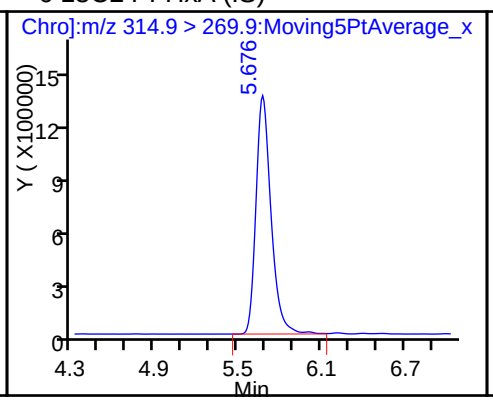
5 Perfluorobutanesulfonic acid



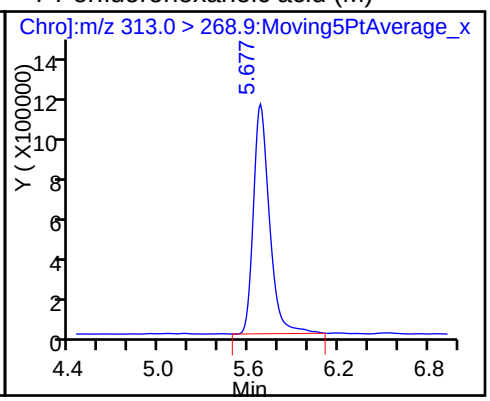
5 Perfluorobutanesulfonic acid



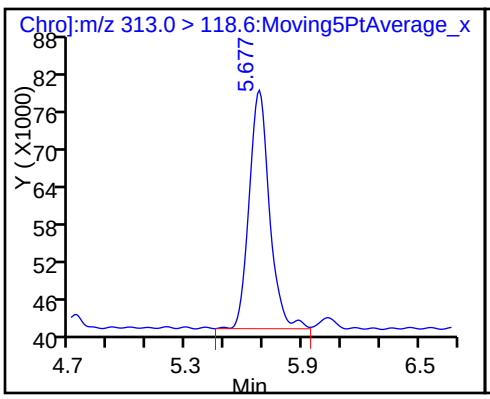
* 6 13C2 PFHxA (IS)



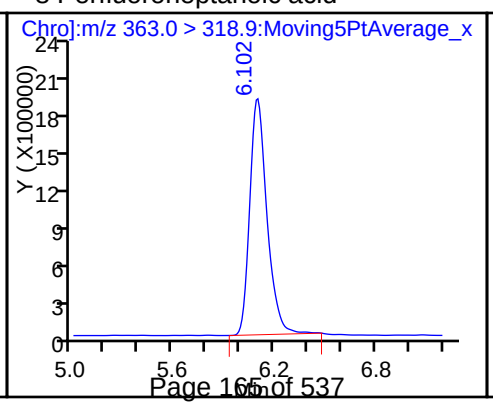
7 Perfluorohexanoic acid (M)



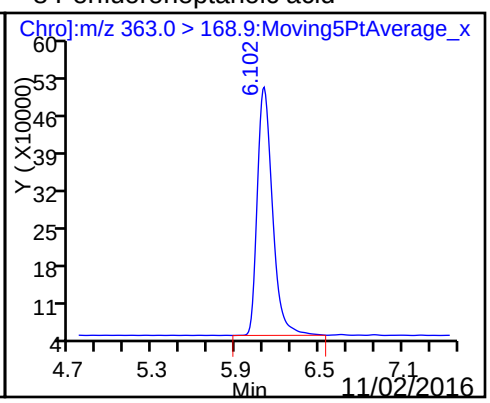
7 Perfluorohexanoic acid



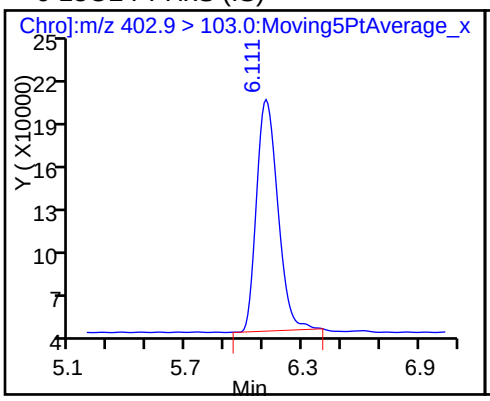
8 Perfluoroheptanoic acid



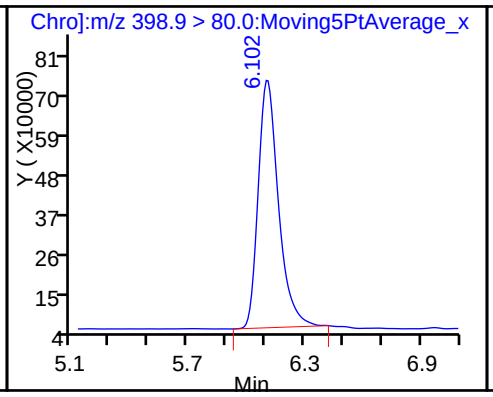
8 Perfluoroheptanoic acid



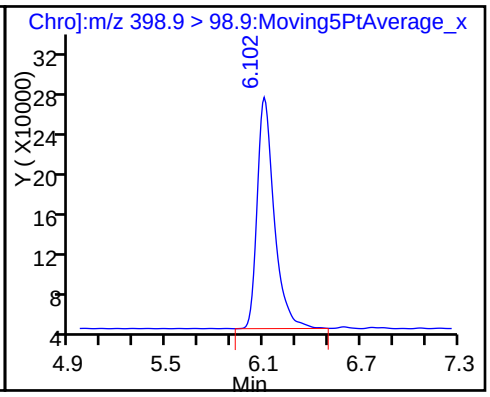
* 9 18O2 PFHxS (IS)



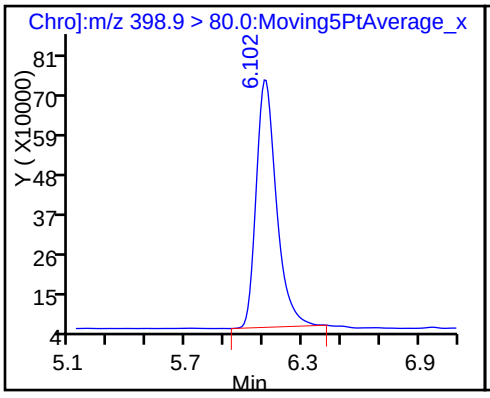
11 Perfluorohexanesulfonic acid



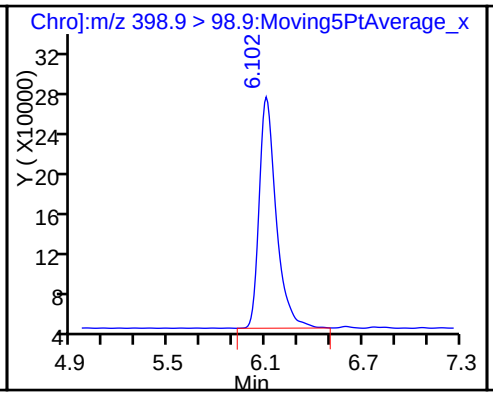
11 Perfluorohexanesulfonic acid



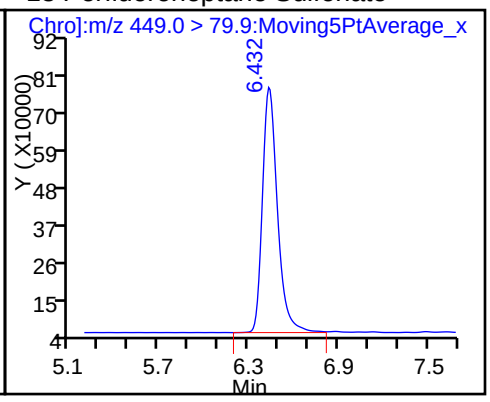
10 Perfluorohexane Sulfonate



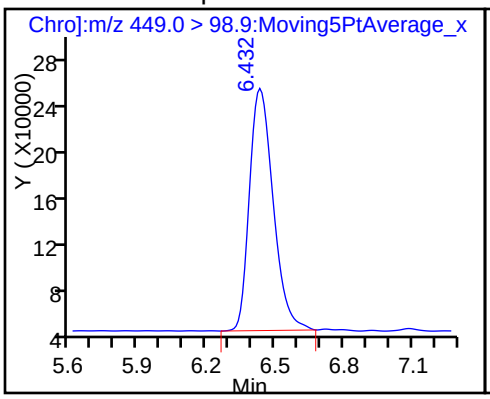
10 Perfluorohexane Sulfonate



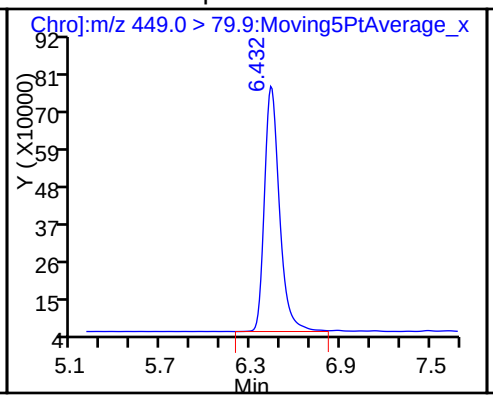
13 Perfluoroheptane Sulfonate



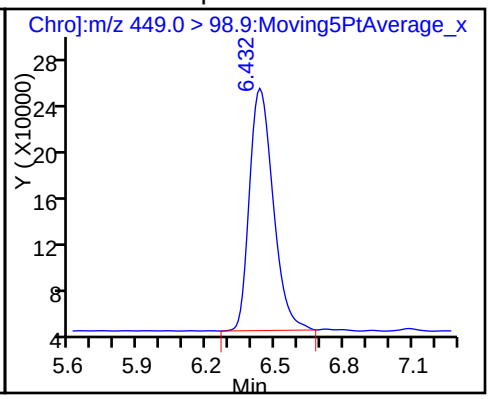
13 Perfluoroheptane Sulfonate



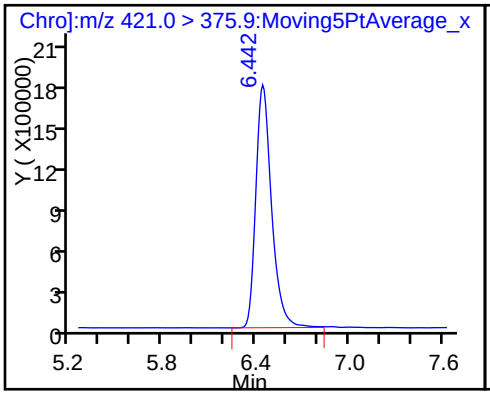
12 Perfluoroheptanesulfonic Acid



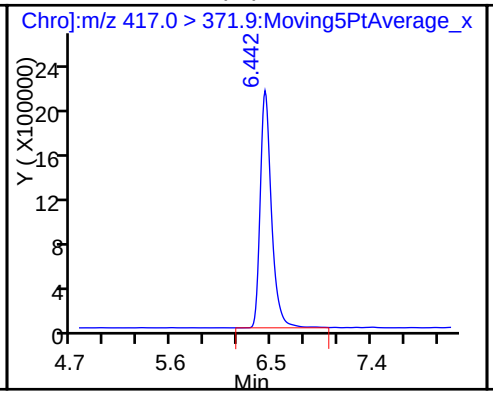
12 Perfluoroheptanesulfonic Acid



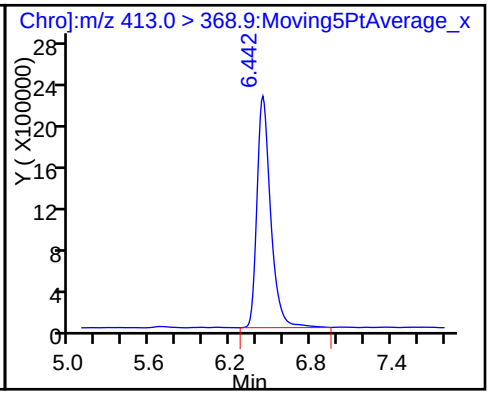
$ 14 13C8 PFOA



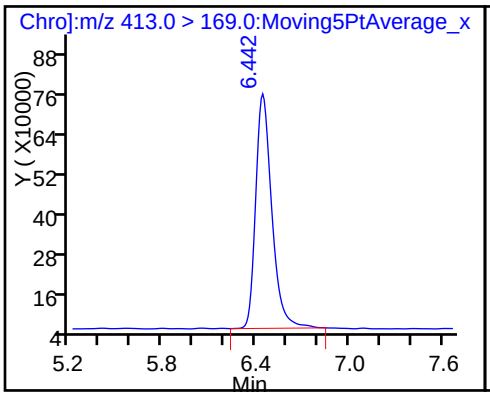
* 15 13C4 PFOA (IS)



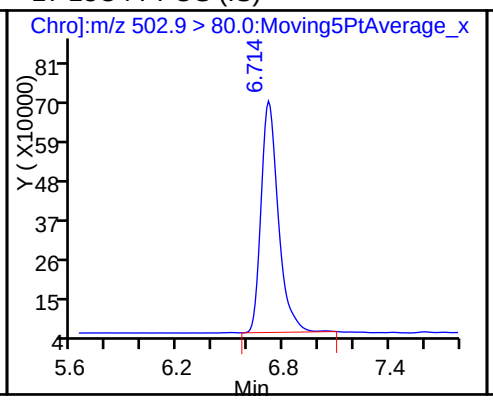
16 Perfluorooctanoic acid



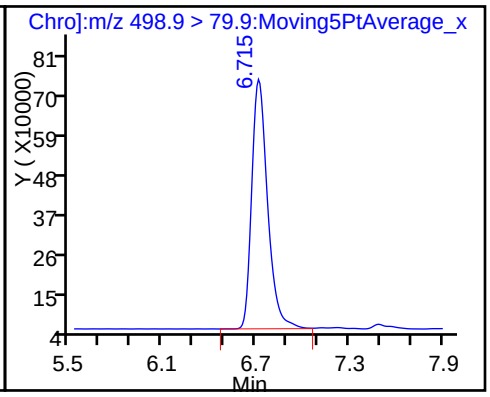
16 Perfluorooctanoic acid



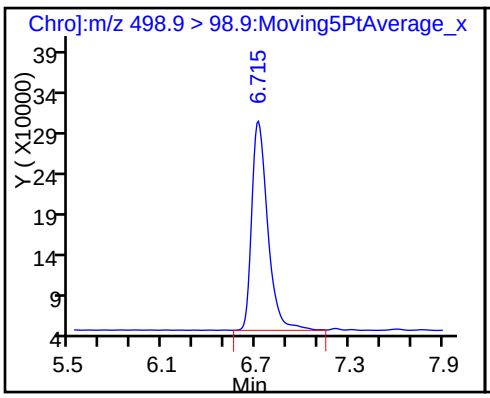
* 17 13C4 PFOS (IS)



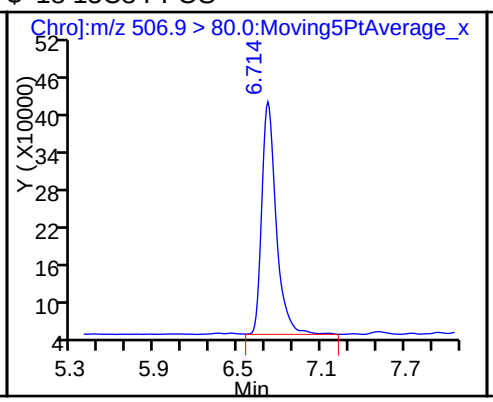
19 Perfluorooctane sulfonic acid



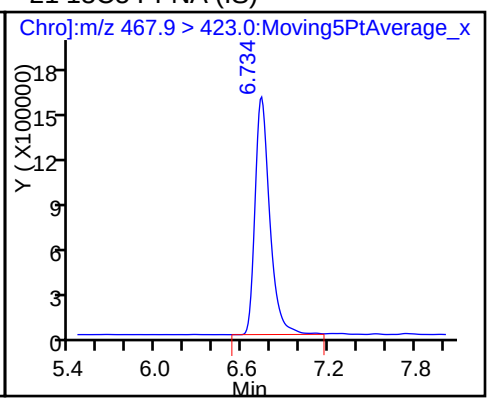
19 Perfluorooctane sulfonic acid



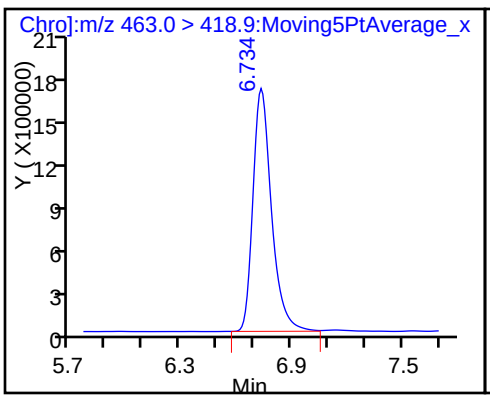
$ 18 13C8 PFOS



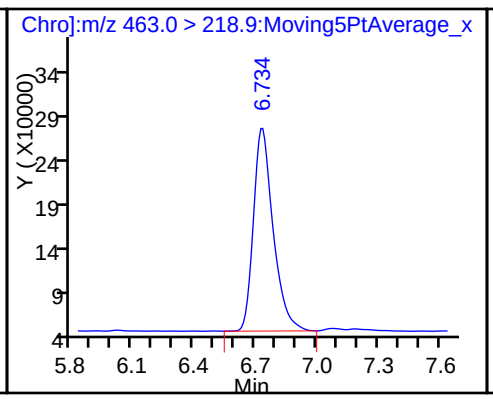
* 21 13C5 PFNA (IS)



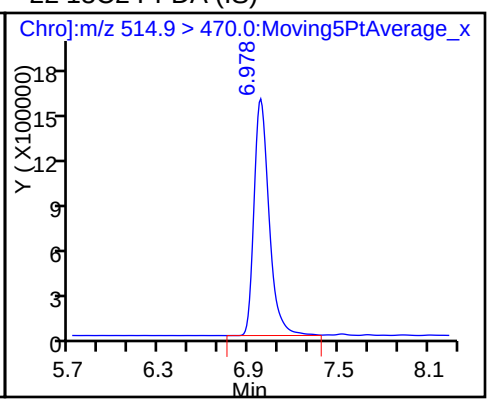
20 Perfluorononanoic acid



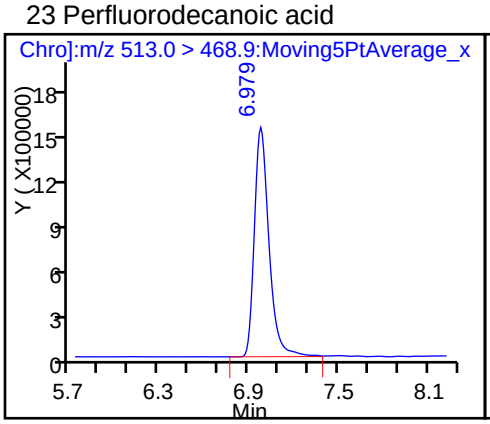
20 Perfluorononanoic acid



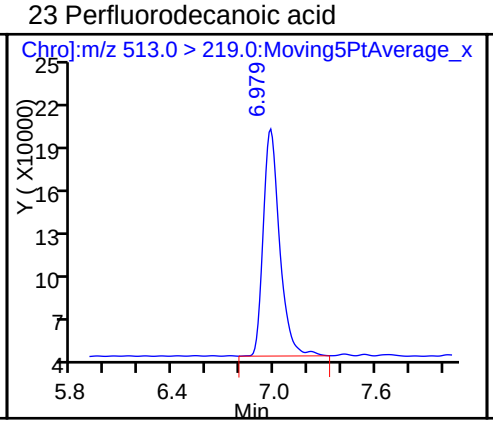
* 22 13C2 PFDA (IS)



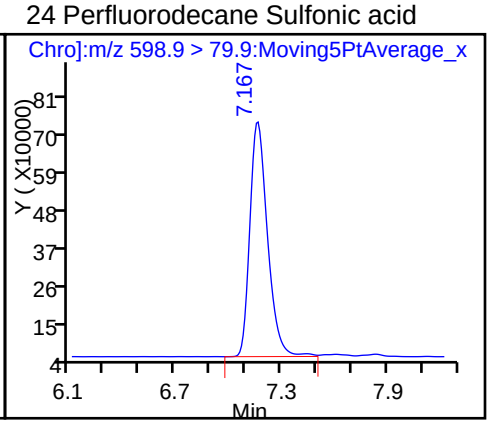
23 Perfluorodecanoic acid



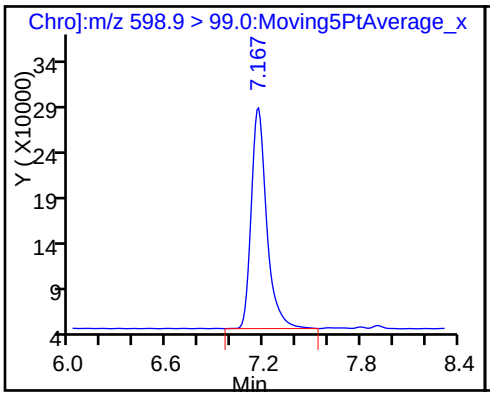
23 Perfluorodecanoic acid



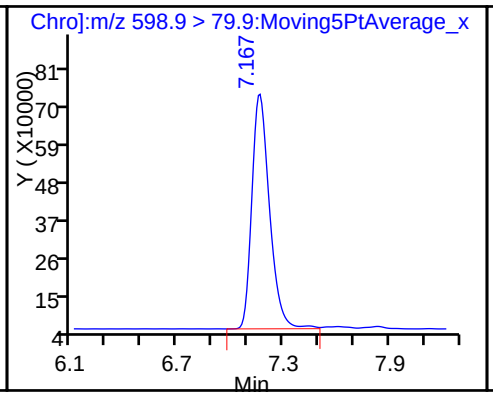
24 Perfluorodecane Sulfonic acid



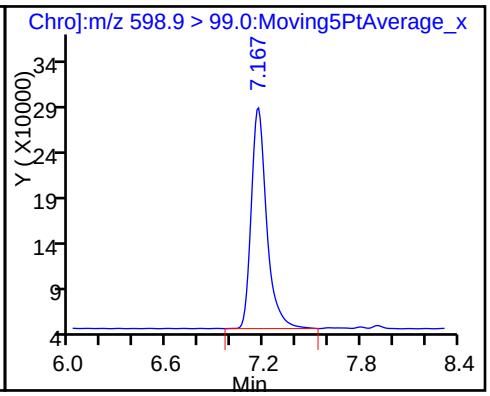
24 Perfluorodecane Sulfonic acid



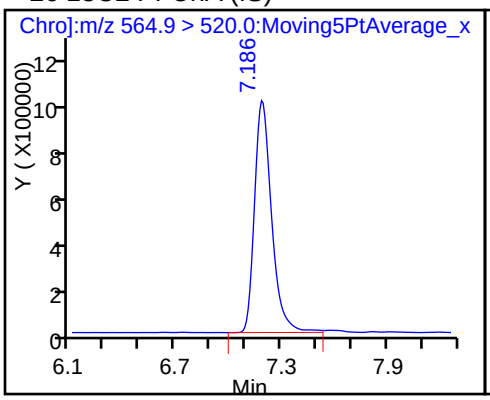
25 Perfluorodecane Sulfonate



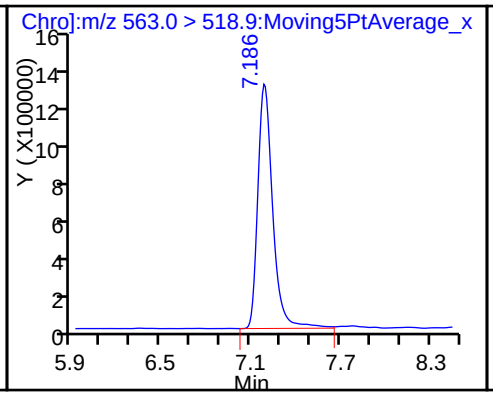
25 Perfluorodecane Sulfonate



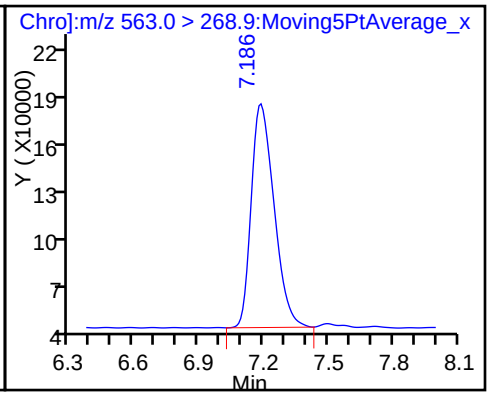
* 26 13C2 PFUnA (IS)



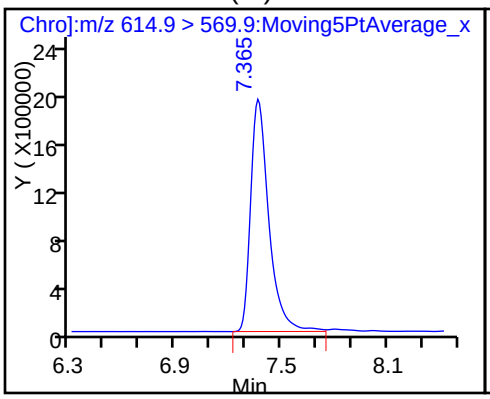
27 Perfluoroundecanoic acid



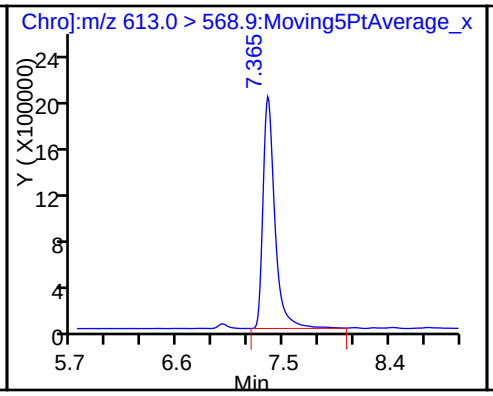
27 Perfluoroundecanoic acid



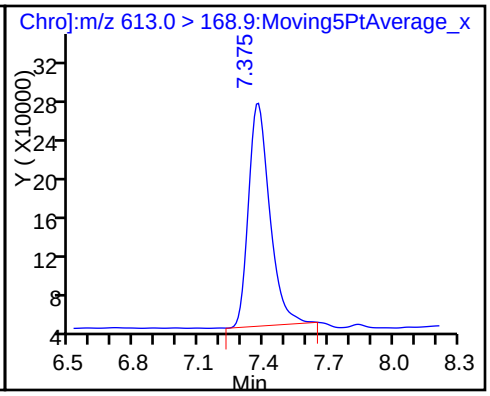
* 28 13C2 PFDoA (IS)



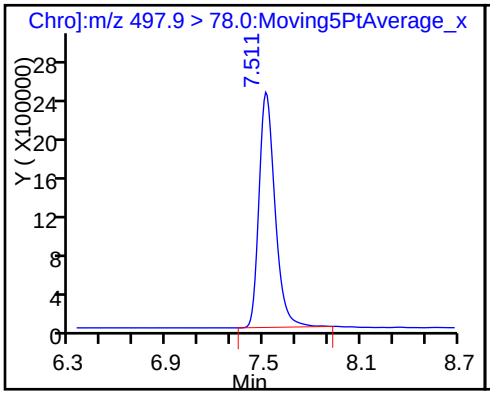
29 Perfluorododecanoic acid



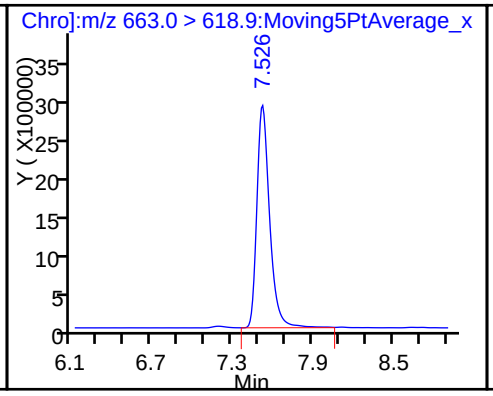
29 Perfluorododecanoic acid



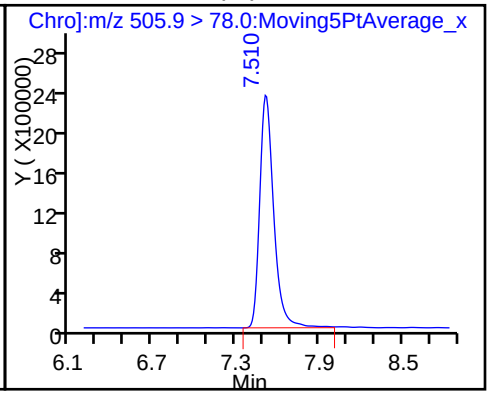
32 Perfluorooctane Sulfonamide



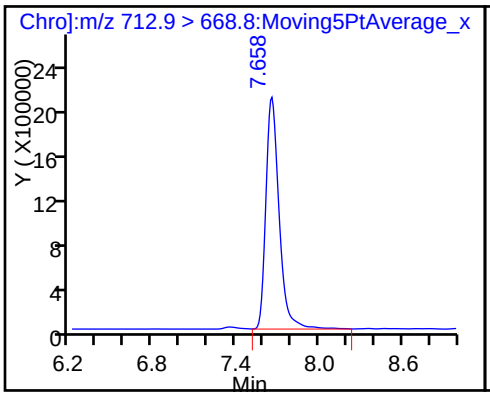
30 Perfluorotridecanoic acid



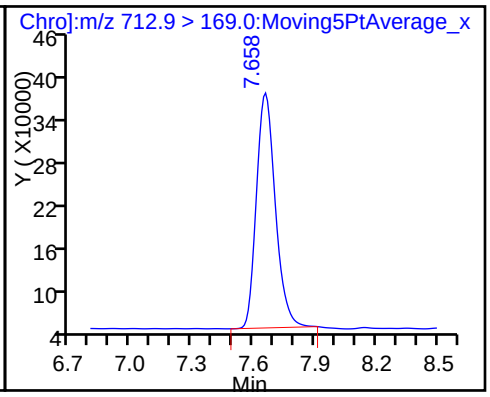
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



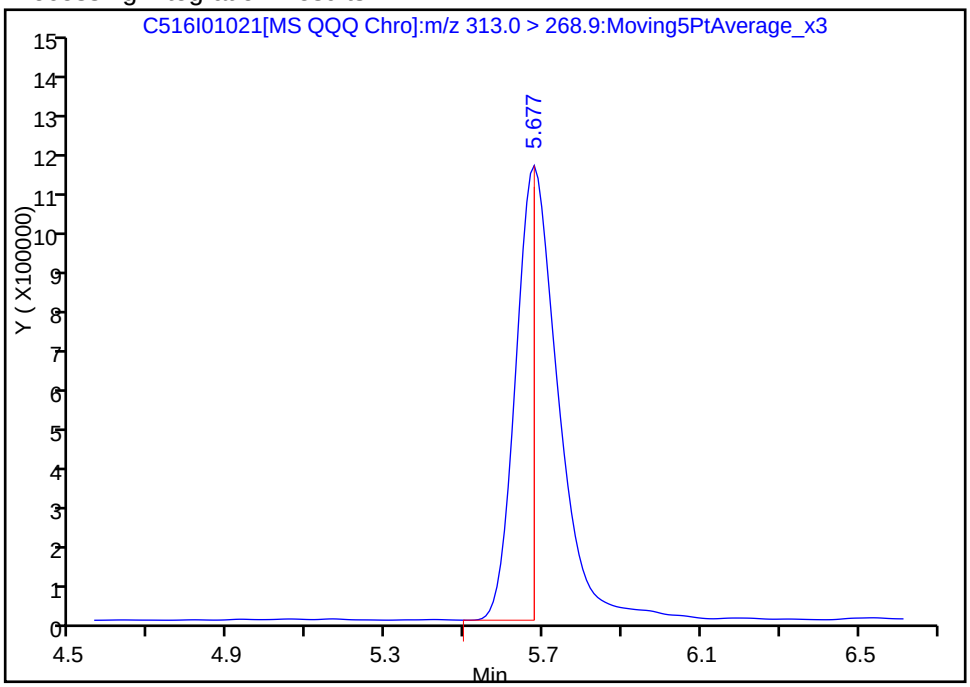
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01021.d
Injection Date: 01-Sep-2016 11:56:50 Instrument ID: LC_LCMS5
Lims ID: STD0100
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

7 Perfluorohexanoic acid, CAS: 307-24-4

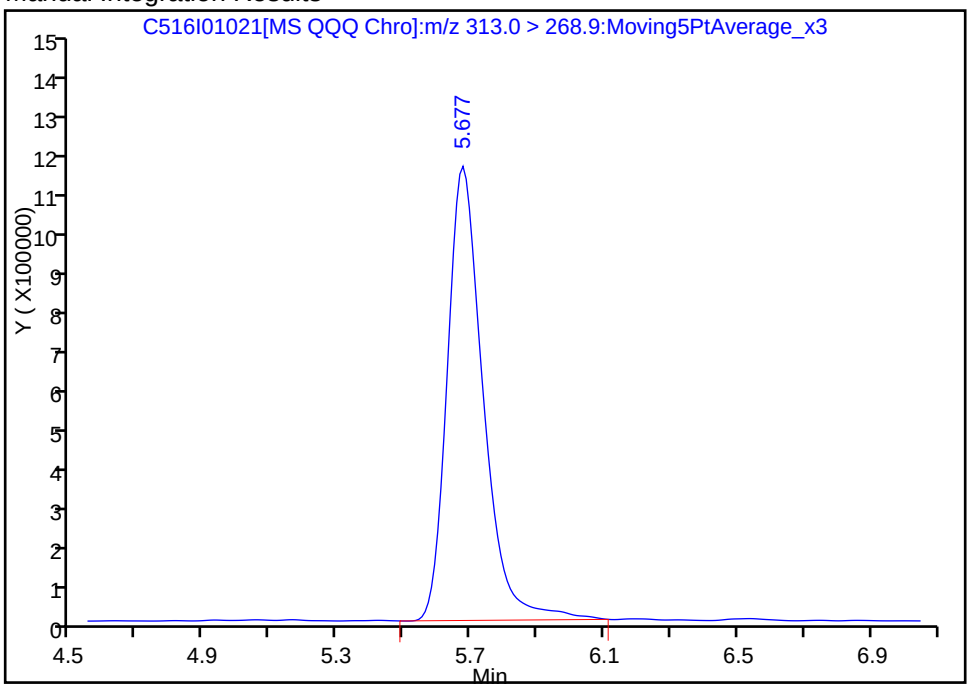
Processing Integration Results

RT: 5.68
Area: 3579763
Amount: 4.263862
Amount Units: ug/L



Manual Integration Results

RT: 5.68
Area: 8402668
Amount: 9.722351
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 10:38:54
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01022.d
Lims ID: STD0200
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 01-Sep-2016 12:09:11 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0200, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:23 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:39:08

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.020	4.058	-0.038		13207503	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.011	4.068	-0.057	0.998	24783380	19.5			
3 Perfluoropentanoic acid									M
263.0 > 218.9	5.100	5.109	-0.009	0.898	20937672	20.6			M
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.232	-0.019	0.852	10278122	17.4			
298.9 > 98.9	5.213	5.232	-0.019	0.852	3155793		3.26(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.232	-0.019	0.852	10278122	17.4			
298.9 > 98.9	5.213	5.232	-0.019	0.852	3155793		3.26(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		9383394	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.686	-0.009	1.000	16800712	20.2			
313.0 > 118.6	5.677	5.686	-0.009	1.000	510891		32.89(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.112	6.102	0.010	0.946	24713014	20.0			
363.0 > 168.9	6.112	6.102	0.010	0.946	6607852		3.74(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.111	0.009		1268798	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	0.998	9727199	18.1			
398.9 > 98.9	6.121	6.111	0.010	1.000	3022528		3.22(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	0.998	9727199	18.1			R
398.9 > 98.9	6.121	6.111	0.010	1.000	3022528		3.22(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.441	0.010	0.958	9639164	19.1			
449.0 > 98.9	6.451	6.441	0.010	0.958	2893152		3.33(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.441	0.010	0.958	9639164	19.1			
449.0 > 98.9	6.451	6.441	0.010	0.958	2893152		3.33(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.442	0.019	1.000	23880169	23.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.442	0.019		14751283	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.442	0.019	1.000	29379405	20.4			
413.0 > 169.0	6.461	6.442	0.019	1.000	9372588		3.13(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.714	0.019		4386622	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.734	6.715	0.019	1.000	9140566	19.5			R
498.9 > 98.9	6.734	6.715	0.019	1.000	3394942		2.69(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.723	0.010	1.000	5225135	19.9			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.734	0.010		11262001	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.734	0.019	1.001	22299666	18.7			
463.0 > 218.9	6.753	6.734	0.019	1.001	3076569		7.25(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	6.978	0.010		10779036	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.988	6.979	0.009	1.000	20217922	19.8			
513.0 > 219.0	6.988	6.979	0.009	1.000	1913924		10.56(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.176	7.167	0.009	1.066	9218011	20.3			
598.9 > 99.0	7.176	7.167	0.009	1.066	2941342		3.13(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.176	7.167	0.009	1.066	9218011	20.3			
598.9 > 99.0	7.176	7.167	0.009	1.066	2941342		3.13(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.205	7.186	0.019		6464767	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.205	7.186	0.019	1.000	16971733	20.3			R
563.0 > 268.9	7.196	7.186	0.010	0.999	1969673		8.62(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.365	0.019		13745058	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.375	7.365	0.010	0.999	26732518	20.0			
613.0 > 168.9	7.375	7.365	0.010	0.999	3230854		8.27(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.511	0.019	1.000	32592976	19.8			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.535	7.516	0.019	1.020	34759616	20.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.519	0.010		15913053	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.668	7.649	0.019	1.038	27275322	20.5			
712.9 > 169.0	7.668	7.649	0.019	1.038	4216761		6.47(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	40.00	Units: uL
PFC-LCS_00084	Amount Added:	40.00	Units: uL

Report Date: 02-Sep-2016 11:52:24 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01022.d

Injection Date: 01-Sep-2016 12:09:11 Instrument ID: LC_LCMS5

Lims ID: STD0200

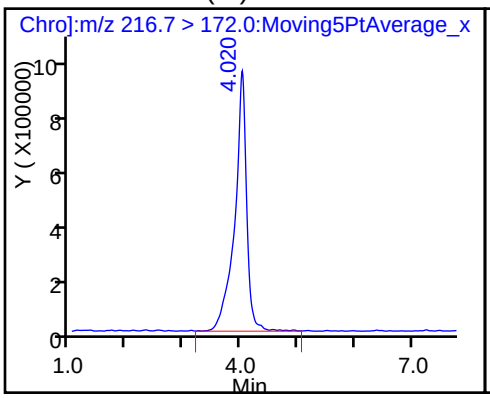
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 9

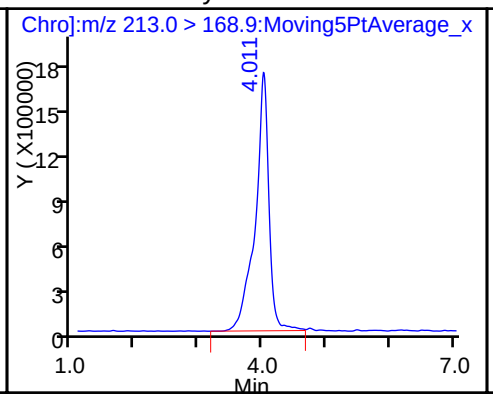
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

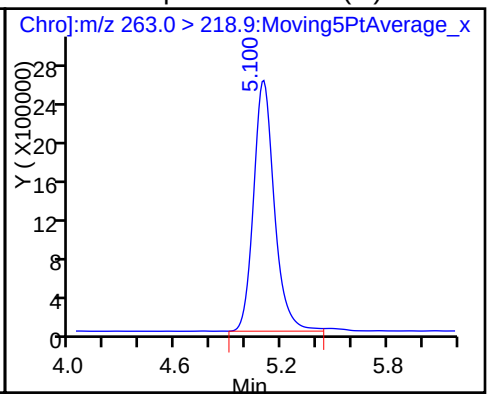
* 1 13C4 PFBA (IS)



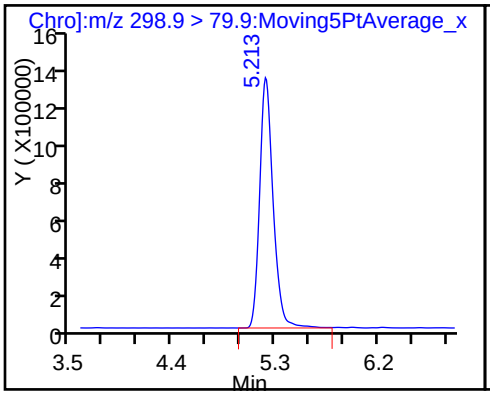
2 Perfluorobutyric acid



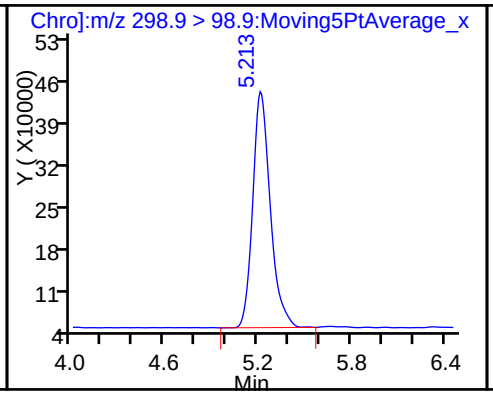
3 Perfluoropentanoic acid (M)



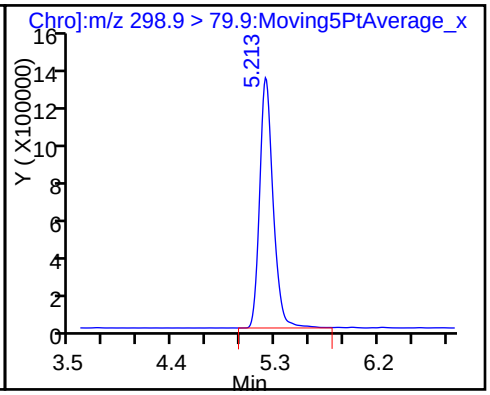
4 Perfluorobutane Sulfonate



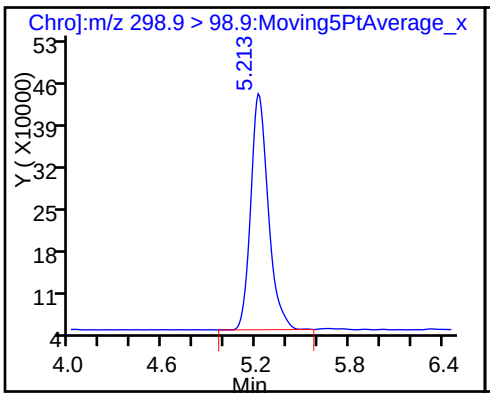
4 Perfluorobutane Sulfonate



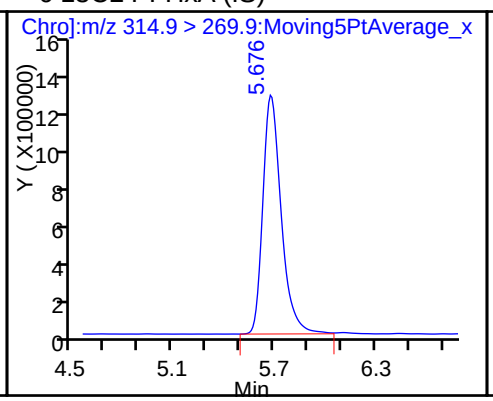
5 Perfluorobutanesulfonic acid



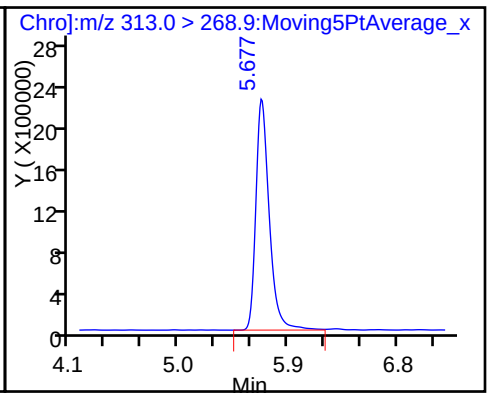
5 Perfluorobutanesulfonic acid



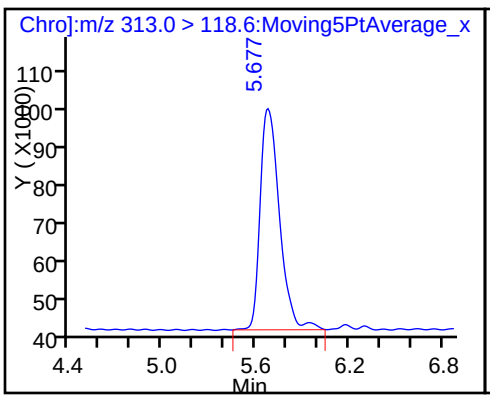
* 6 13C2 PFHxA (IS)



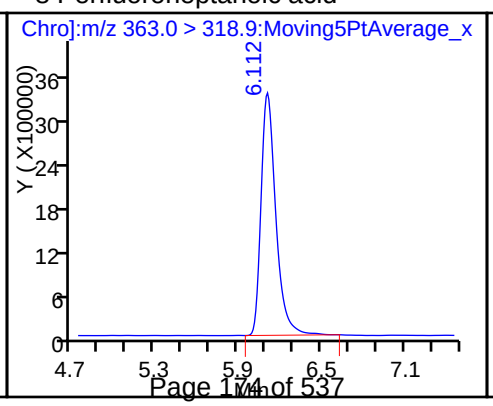
7 Perfluorohexanoic acid



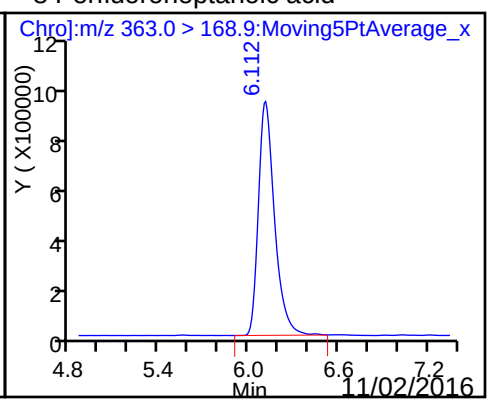
7 Perfluorohexanoic acid



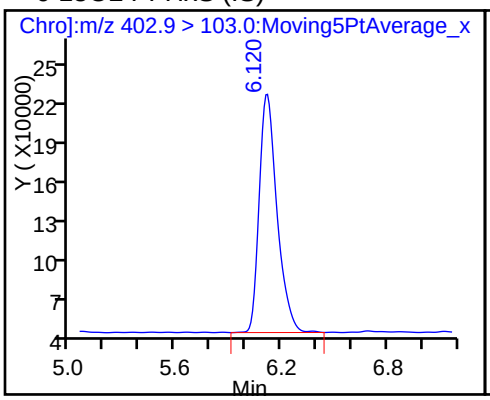
8 Perfluoroheptanoic acid



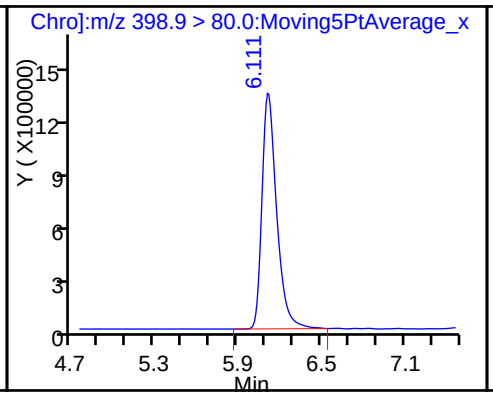
8 Perfluoroheptanoic acid



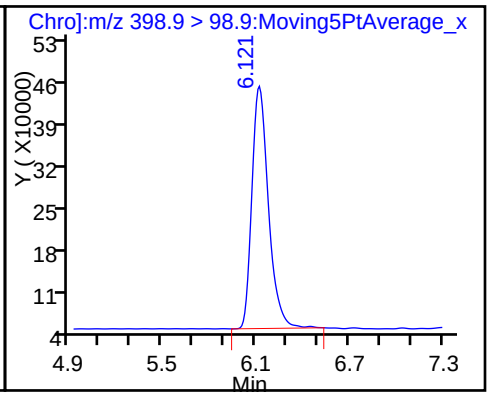
* 9 18O2 PFHxS (IS)



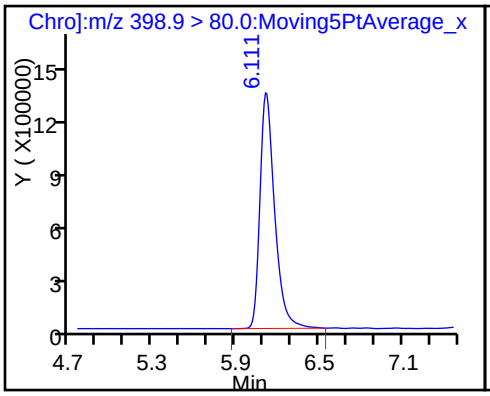
11 Perfluorohexanesulfonic acid



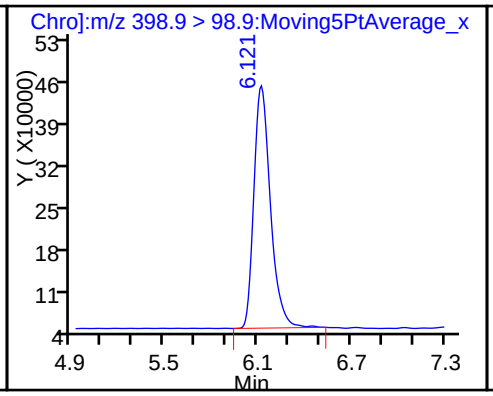
11 Perfluorohexanesulfonic acid



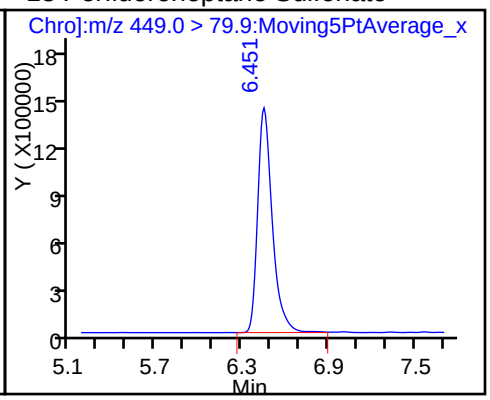
10 Perfluorohexane Sulfonate



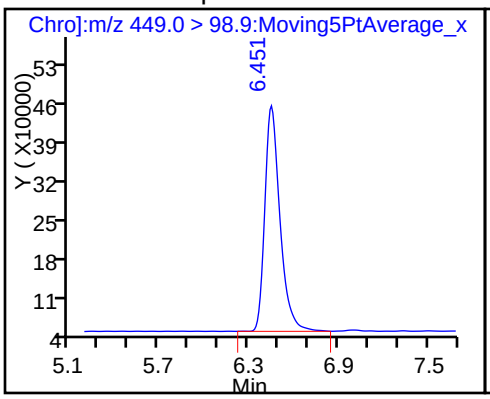
10 Perfluorohexane Sulfonate



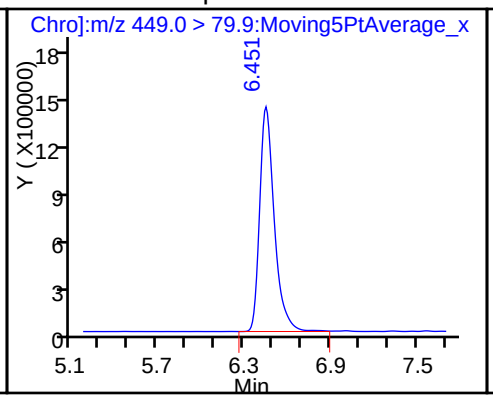
13 Perfluoroheptane Sulfonate



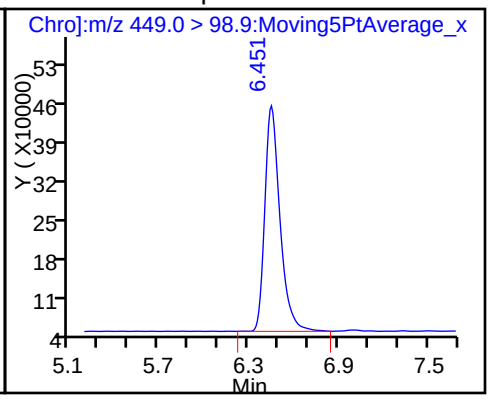
13 Perfluoroheptane Sulfonate



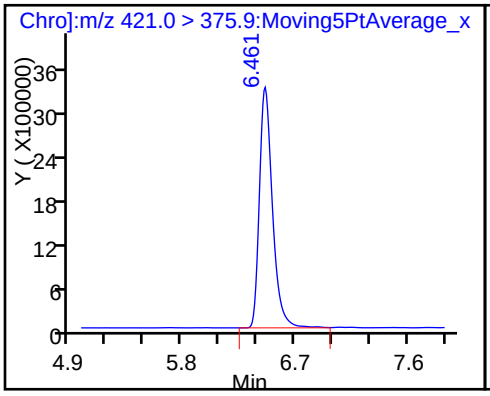
12 Perfluoroheptanesulfonic Acid



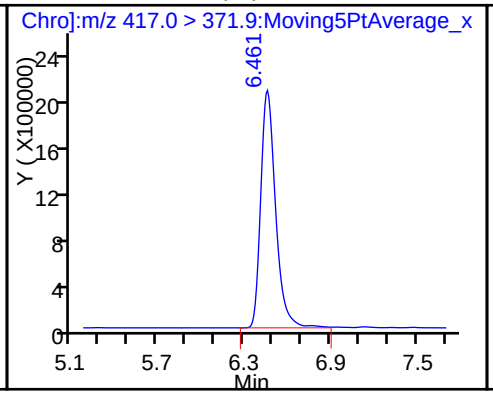
12 Perfluoroheptanesulfonic Acid



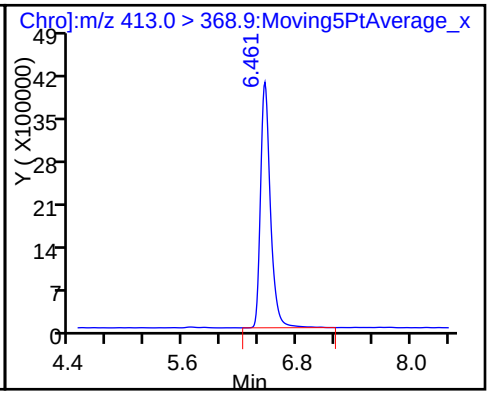
$ 14 13C8 PFOA



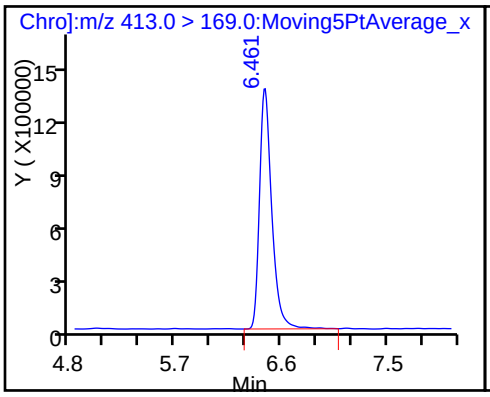
* 15 13C4 PFOA (IS)



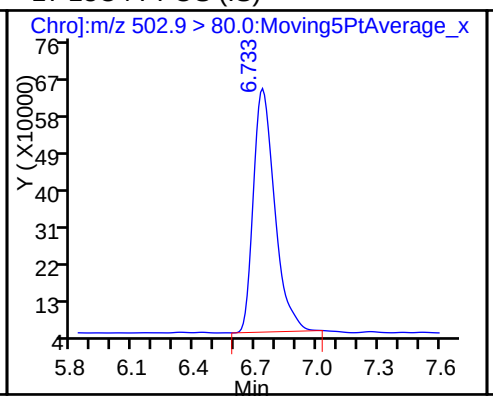
16 Perfluorooctanoic acid



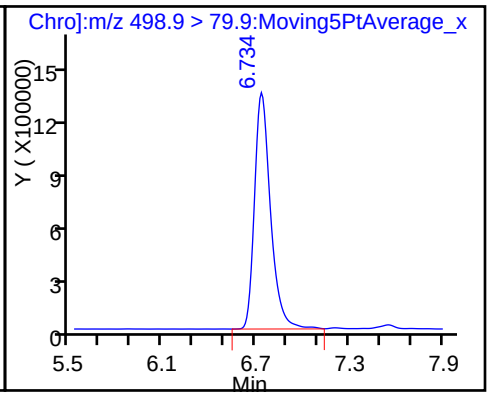
16 Perfluorooctanoic acid



* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid



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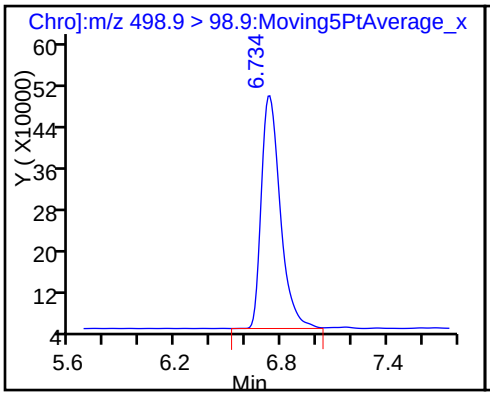
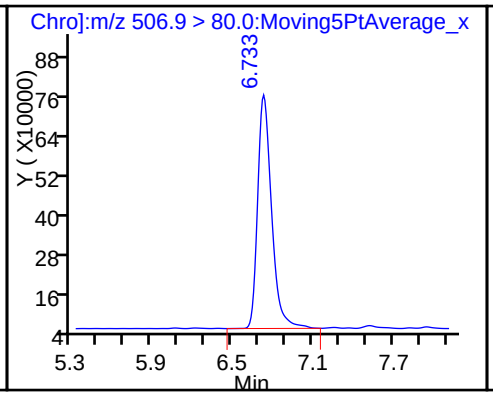
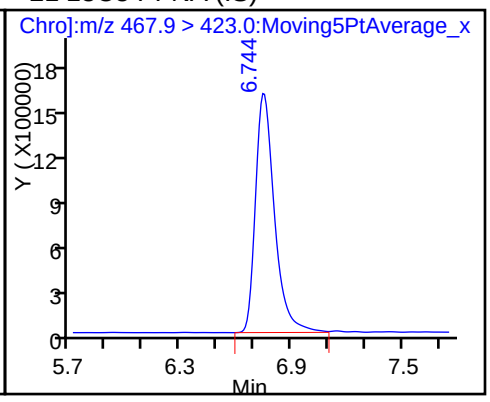


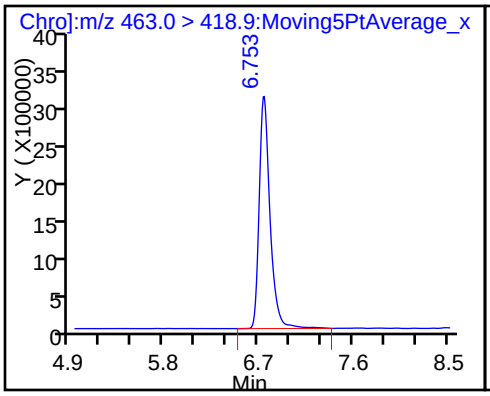
$ 18 13C8 PFOS



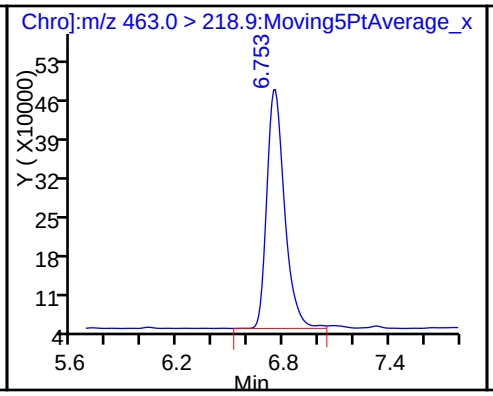
* 21 13C5 PFNA (IS)



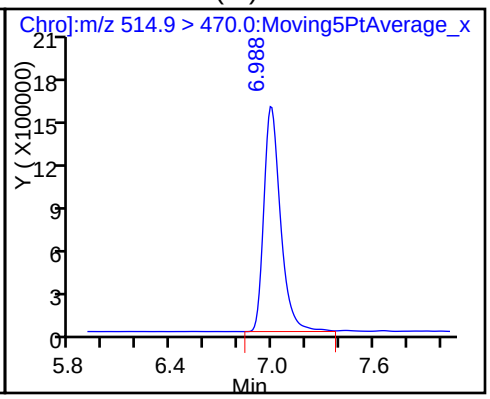
20 Perfluorononanoic acid



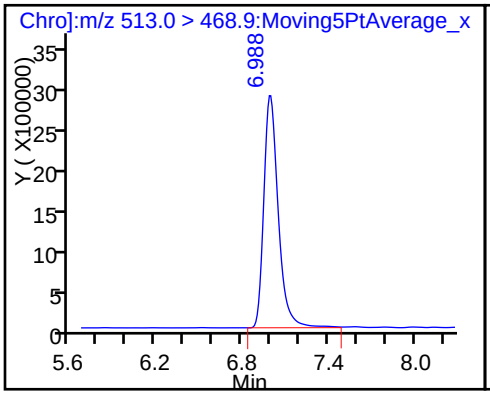
20 Perfluorononanoic acid



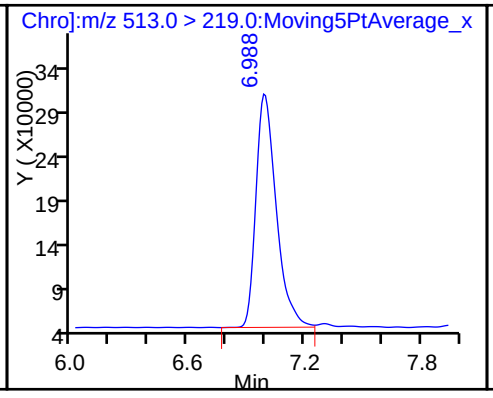
* 22 13C2 PFDA (IS)



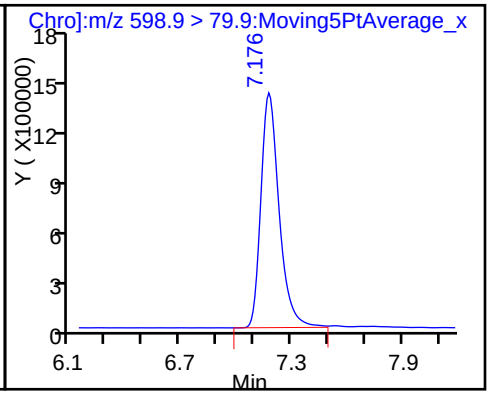
23 Perfluorodecanoic acid



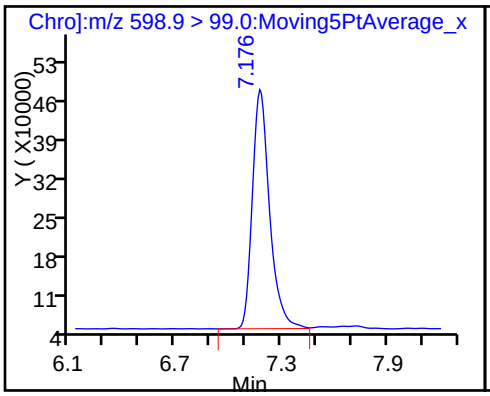
23 Perfluorodecanoic acid



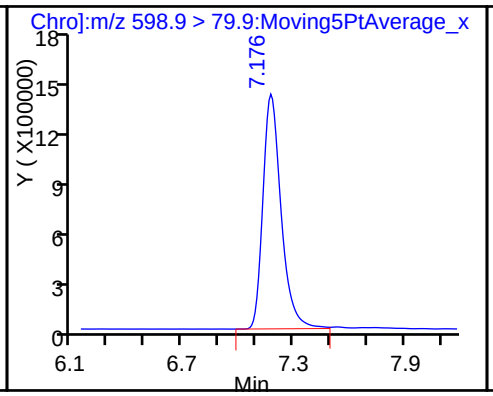
24 Perfluorodecane Sulfonic acid



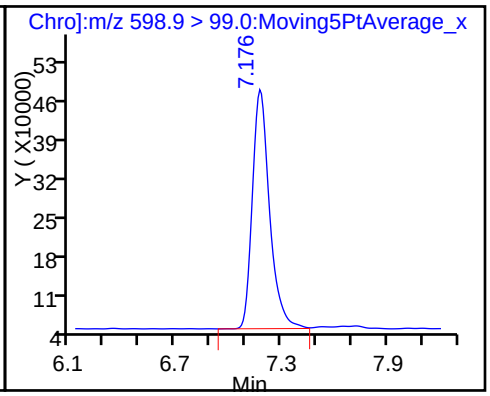
24 Perfluorodecane Sulfonic acid



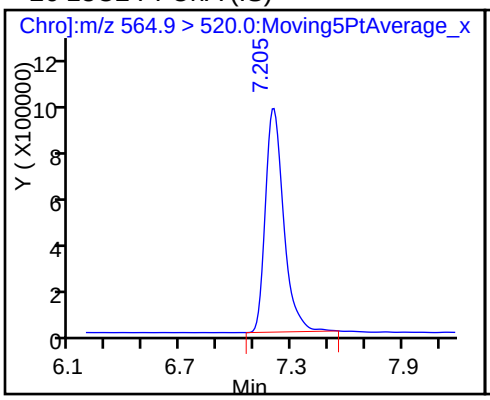
25 Perfluorodecane Sulfonate



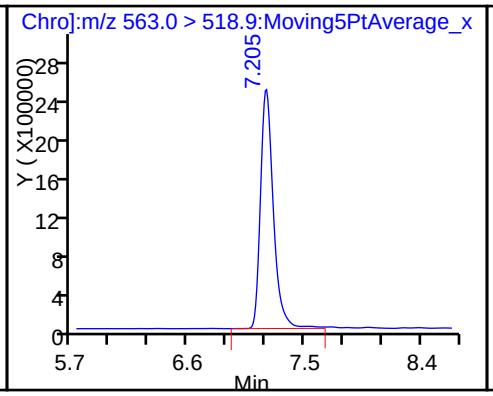
25 Perfluorodecane Sulfonate



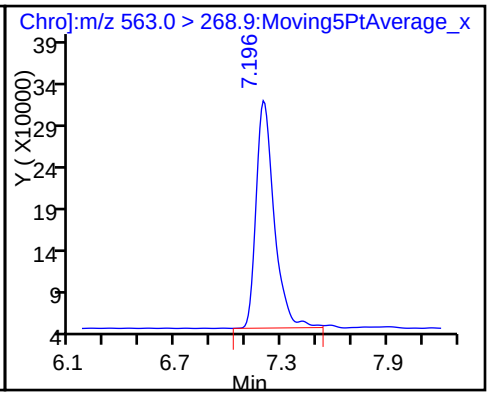
* 26 13C2 PFUnA (IS)



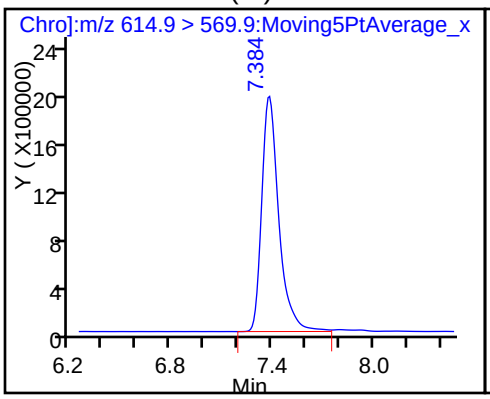
27 Perfluoroundecanoic acid



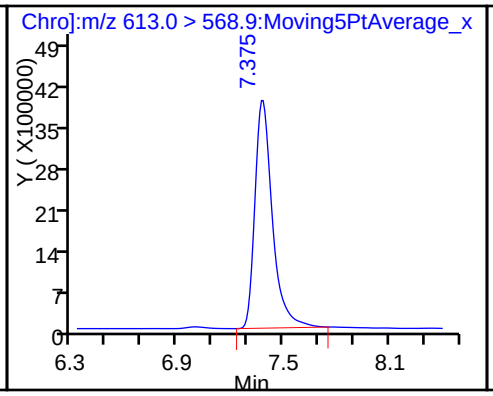
27 Perfluoroundecanoic acid



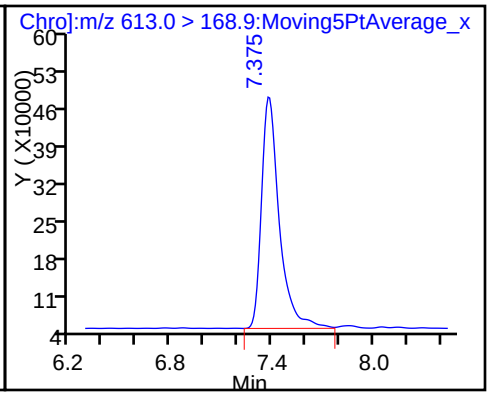
* 28 13C2 PFDoA (IS)



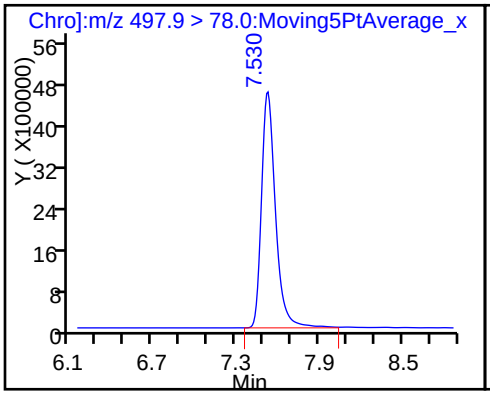
29 Perfluorododecanoic acid



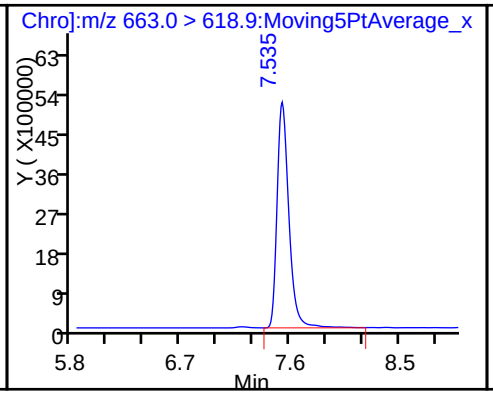
29 Perfluorododecanoic acid



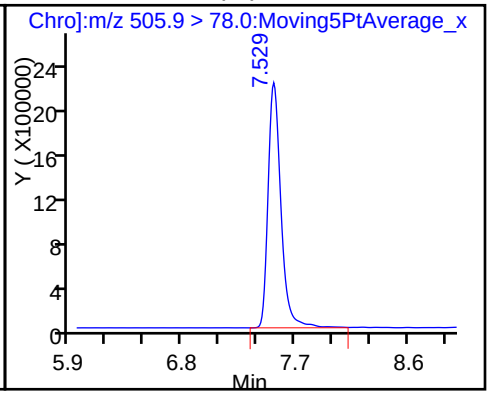
32 Perfluorooctane Sulfonamide



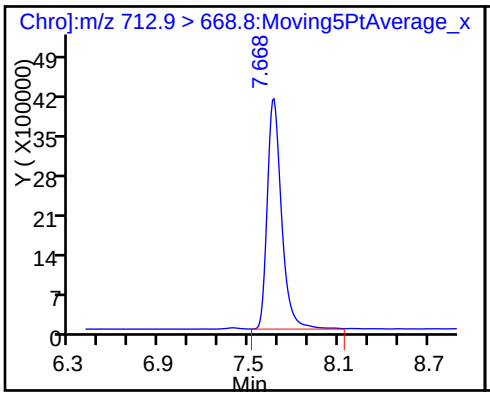
30 Perfluorotridecanoic acid



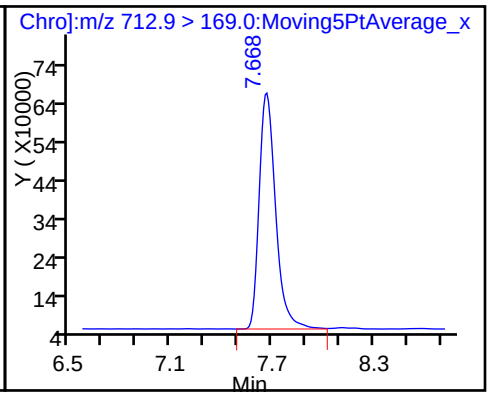
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



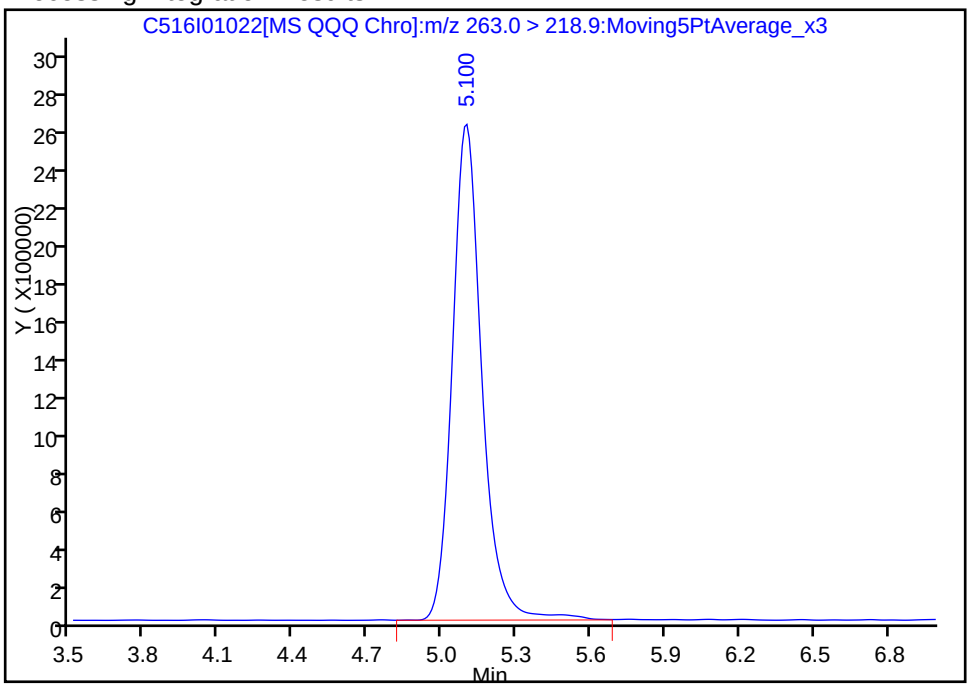
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01022.d
Injection Date: 01-Sep-2016 12:09:11 Instrument ID: LC_LCMS5
Lims ID: STD0200
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

3 Perfluoropentanoic acid, CAS: 2706-90-3

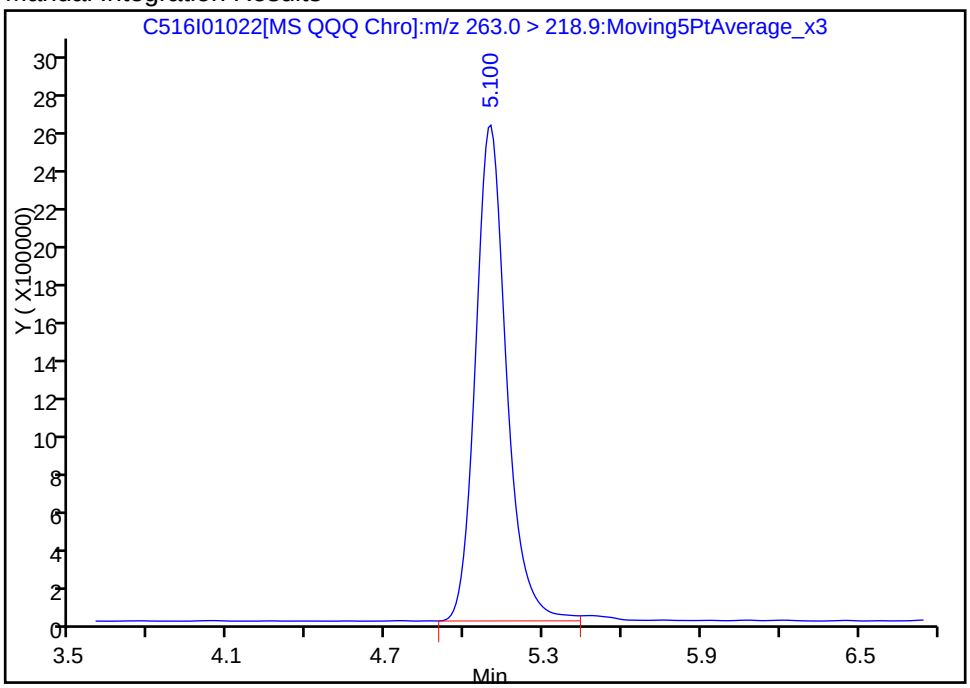
Processing Integration Results

RT: 5.10
Area: 21155887
Amount: 20.731522
Amount Units: ug/L



Manual Integration Results

RT: 5.10
Area: 20937672
Amount: 20.550373
Amount Units: ug/L



Reviewer: meyera, 02-Sep-2016 10:44:46
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01023.d
Lims ID: STD0500
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 01-Sep-2016 12:21:29 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0500, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:27 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:39:21

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.077	4.058	0.019		13061693	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.077	4.068	0.009	1.000	63432662	50.4			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.109	0.0	0.900	52082548	49.7			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.222	5.232	-0.010	0.855	25102967	41.9			R
298.9 > 98.9	5.222	5.232	-0.010	0.855	7266939		3.45(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.222	5.232	-0.010	0.855	25102967	41.9			
298.9 > 98.9	5.222	5.232	-0.010	0.855	7266939		3.45(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.676	0.0		9677513	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.686	-0.009	1.000	41635305	48.6			
313.0 > 118.6	5.677	5.686	-0.009	1.000	1205955		34.52(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.946	59774956	48.3			
363.0 > 168.9	6.102	6.102	0.0	0.946	15399506		3.88(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		1287559	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	1.000	23595828	43.4			
398.9 > 98.9	6.111	6.111	0.0	1.000	7365737		3.20(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	1.000	23595828	43.4			R
398.9 > 98.9	6.111	6.111	0.0	1.000	7365737		3.20(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.441	0.0	0.958	22770367	49.2			
449.0 > 98.9	6.441	6.441	0.0	0.958	6839281		3.33(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.441	0.0	0.958	22770367	49.2			
449.0 > 98.9	6.441	6.441	0.0	0.958	6839281		3.33(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.451	6.442	0.009	1.000	53941464	54.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.442	0.009		14754835	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.452	6.442	0.010	1.000	71067411	49.5			
413.0 > 169.0	6.452	6.442	0.010	1.000	22371997		3.18(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.714	0.010		4017926	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.724	6.715	0.009	1.000	21274119	49.4			R
498.9 > 98.9	6.724	6.715	0.009	1.000	7752497		2.74(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.723	0.0	1.000	11353754	47.4			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.734	0.0		10024325	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.734	0.010	1.001	53901822	50.8			
463.0 > 218.9	6.734	6.734	0.0	1.000	7628835		7.07(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	6.978	0.010		10564872	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.988	6.979	0.009	1.000	48609515	48.6			R
513.0 > 219.0	6.988	6.979	0.009	1.000	4721010		10.30(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.167	0.0	1.066	21459219	51.7			
598.9 > 99.0	7.176	7.167	0.009	1.067	7053706		3.04(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.167	7.167	0.0	1.066	21459219	51.7			
598.9 > 99.0	7.176	7.167	0.009	1.067	7053706		3.04(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.196	7.186	0.010		6290944	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.196	7.186	0.010	1.000	40165888	49.5			R
563.0 > 268.9	7.196	7.186	0.010	1.000	5328877		7.54(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.375	7.365	0.010		13606837	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.375	7.365	0.010	1.000	65559095	49.6			
613.0 > 168.9	7.375	7.365	0.010	1.000	8084293		8.11(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.511	0.009	1.000	77190935	49.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.535	7.516	0.019	1.022	86143679	50.2			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.519	0.0		15269215	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.668	7.649	0.019	1.040	67093348	50.9			
712.9 > 169.0	7.668	7.649	0.019	1.040	10458171		6.42(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC-LCS_00084	Amount Added: 100.00	Units: uL
PFC_Surr_00023	Amount Added: 100.00	Units: uL

Report Date: 02-Sep-2016 11:52:27 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01023.d

Injection Date: 01-Sep-2016 12:21:29 Instrument ID: LC_LCMS5

Lims ID: STD0500

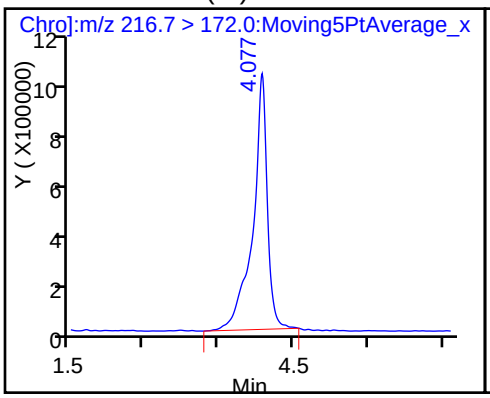
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 10

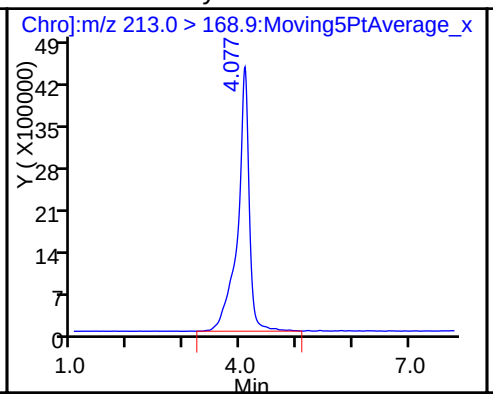
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

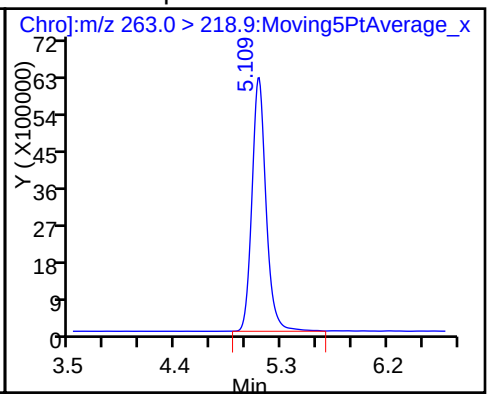
* 1 13C4 PFBA (IS)



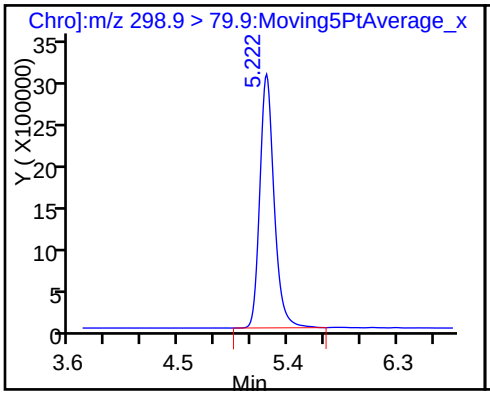
2 Perfluorobutyric acid



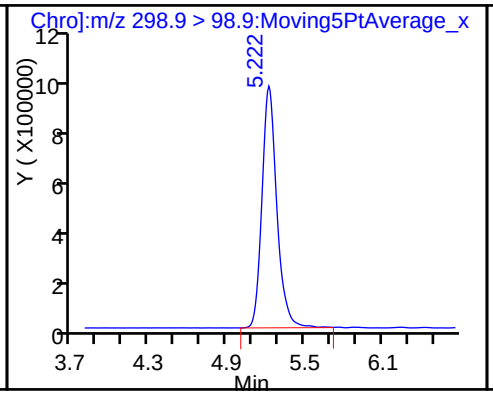
3 Perfluoropentanoic acid



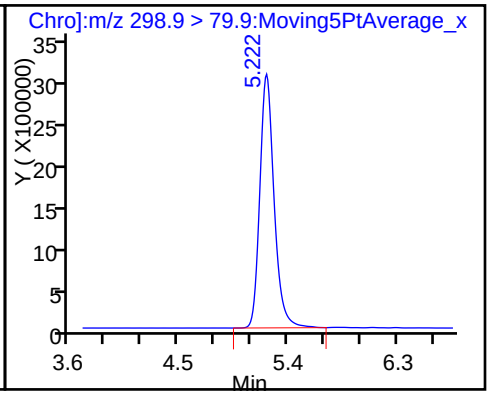
4 Perfluorobutane Sulfonate



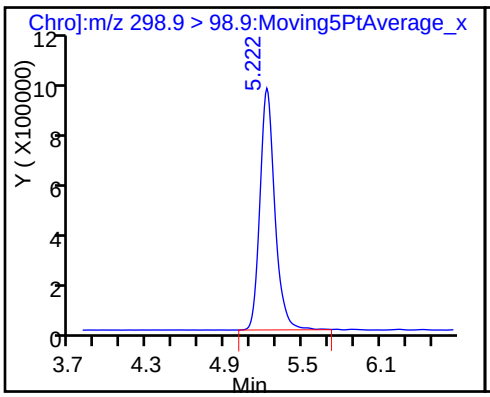
4 Perfluorobutane Sulfonate



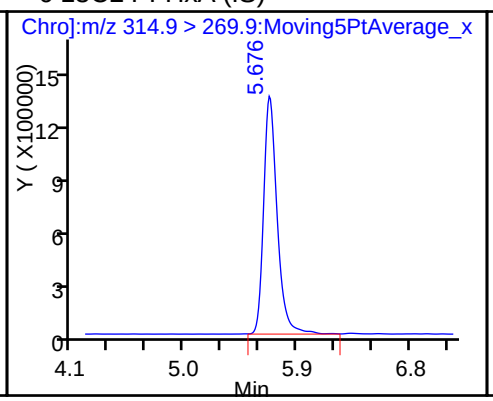
5 Perfluorobutanesulfonic acid



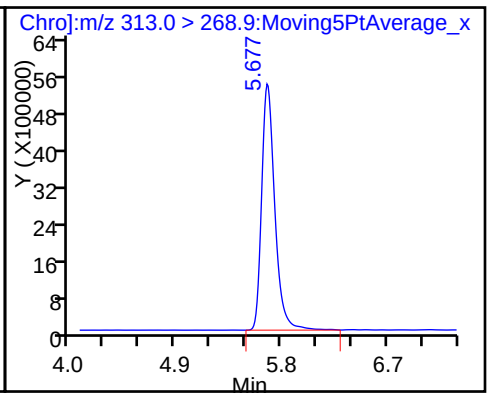
5 Perfluorobutanesulfonic acid



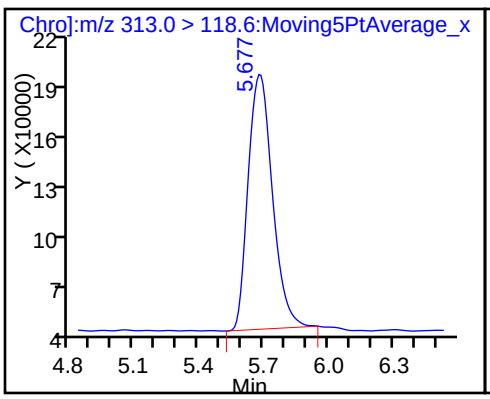
* 6 13C2 PFHxA (IS)



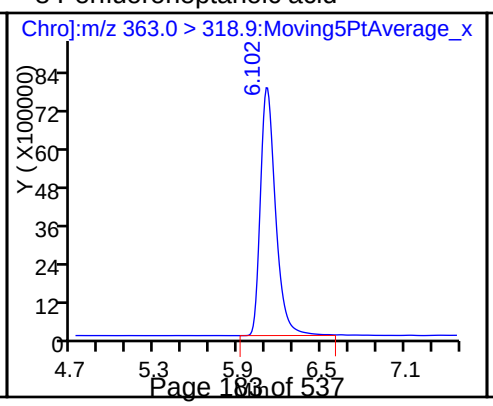
7 Perfluorohexanoic acid



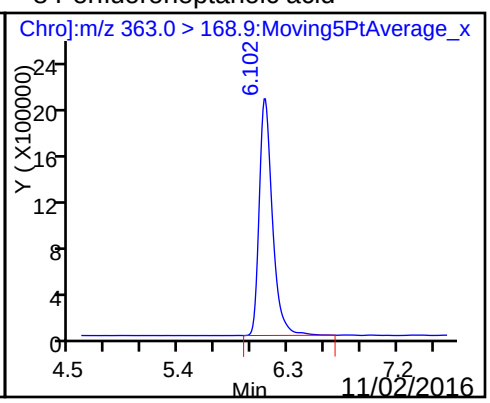
7 Perfluorohexanoic acid



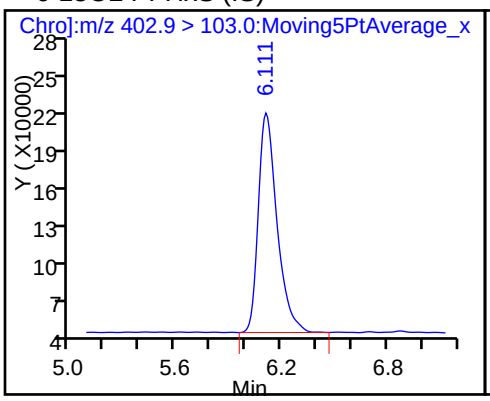
8 Perfluoroheptanoic acid



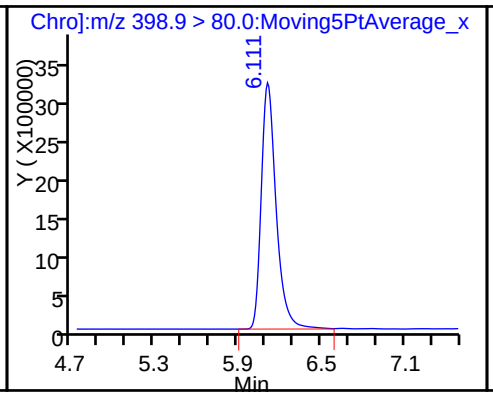
8 Perfluoroheptanoic acid



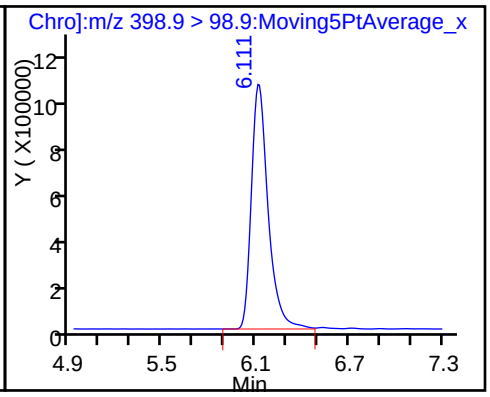
* 9 18O2 PFHxS (IS)



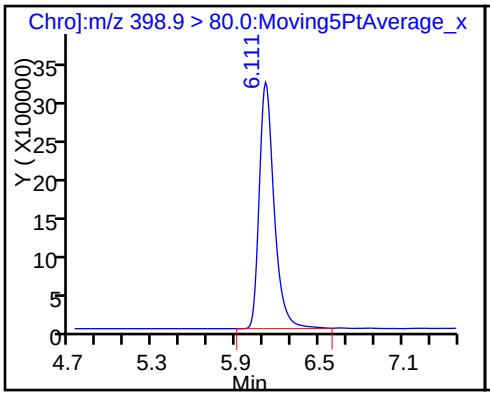
11 Perfluorohexanesulfonic acid



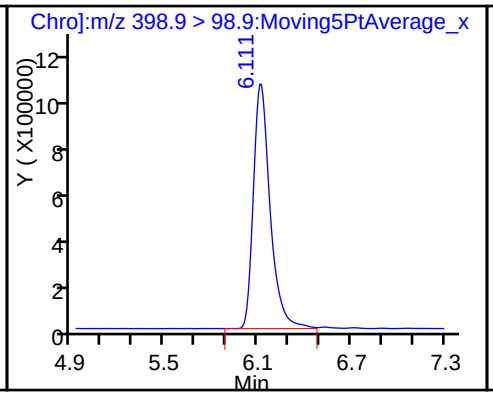
11 Perfluorohexanesulfonic acid



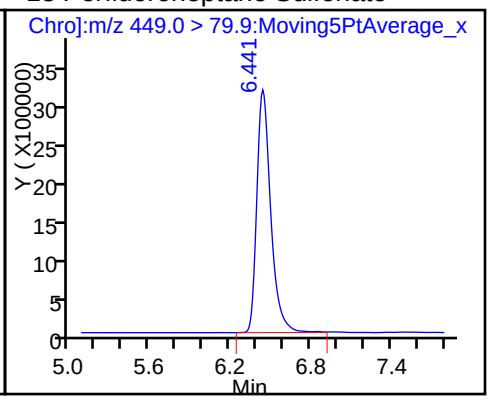
10 Perfluorohexane Sulfonate



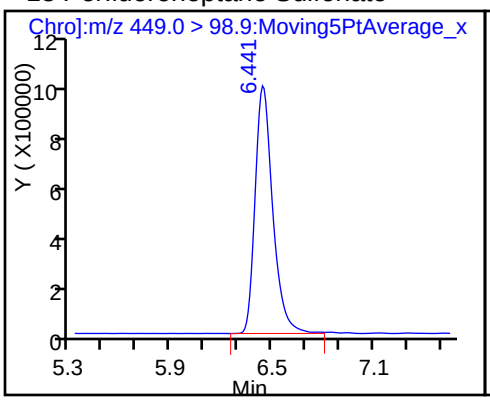
10 Perfluorohexane Sulfonate



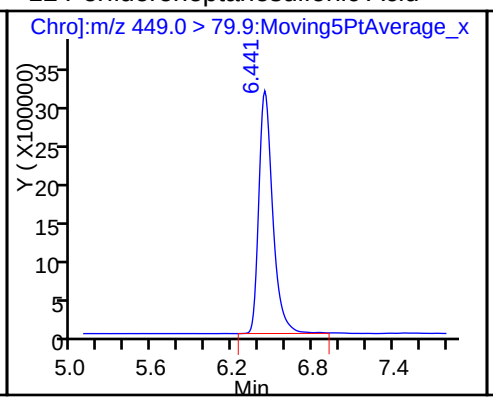
13 Perfluoroheptane Sulfonate



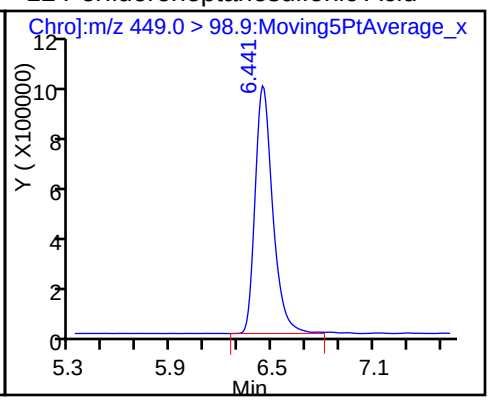
13 Perfluoroheptane Sulfonate



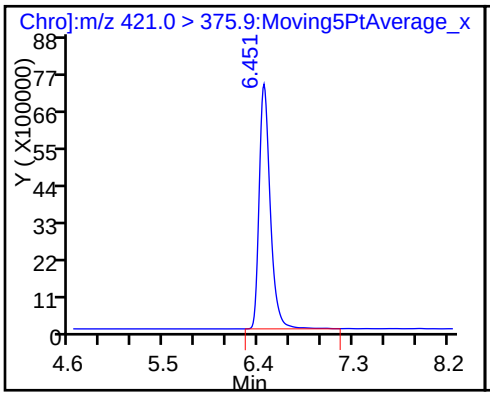
12 Perfluoroheptanesulfonic Acid



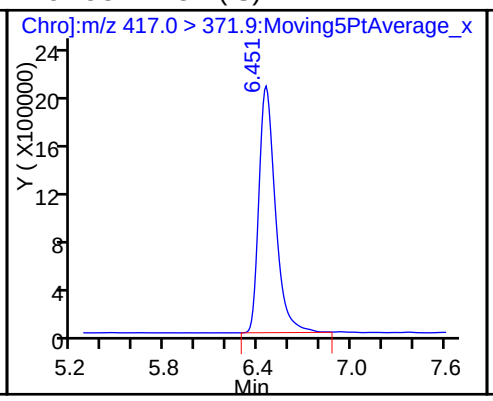
12 Perfluoroheptanesulfonic Acid



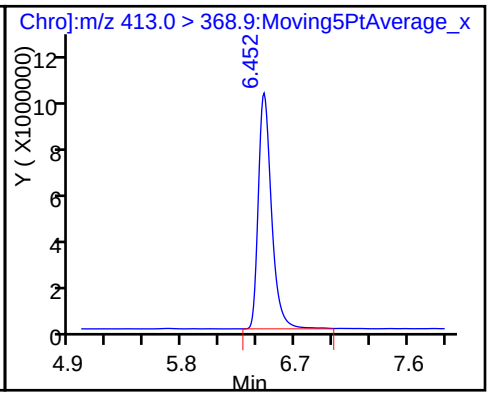
$ 14 13C8 PFOA



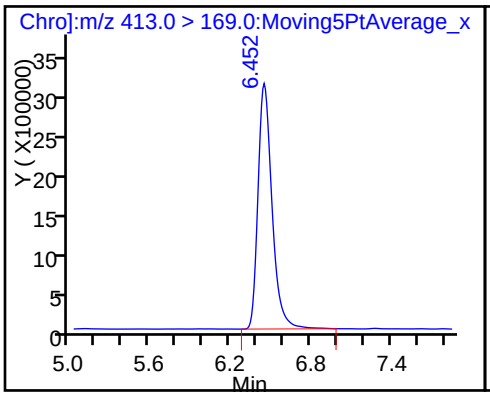
* 15 13C4 PFOA (IS)



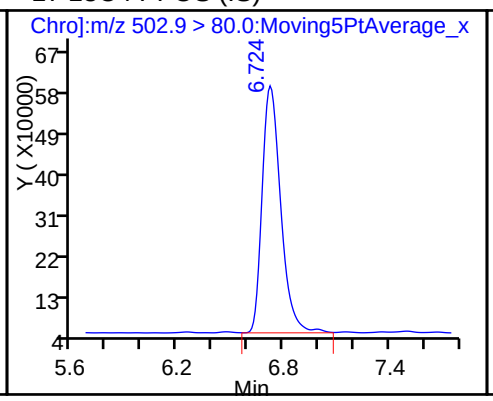
16 Perfluorooctanoic acid



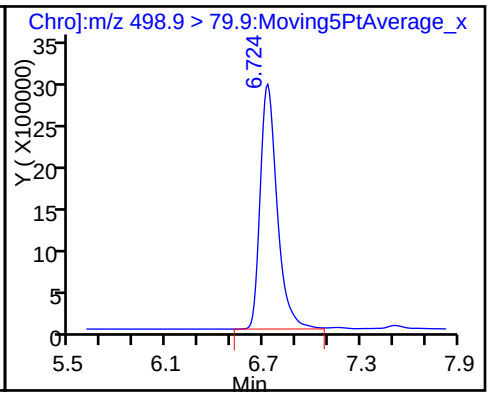
16 Perfluorooctanoic acid



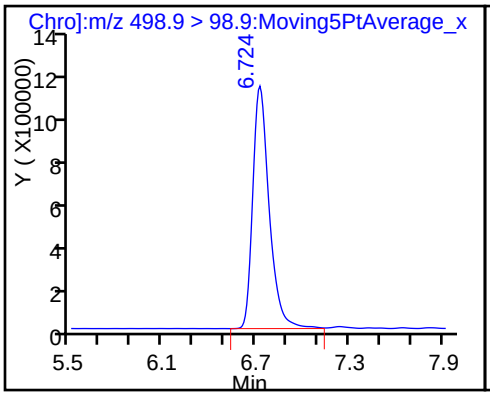
* 17 13C4 PFOS (IS)



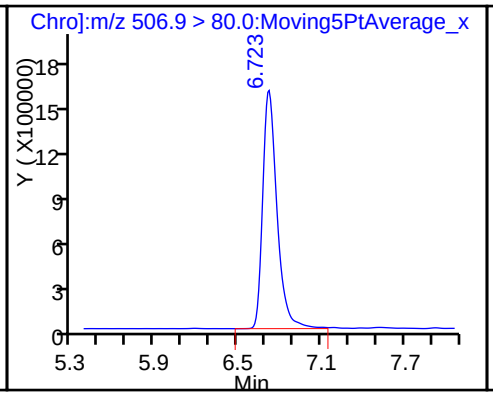
19 Perfluorooctane sulfonic acid



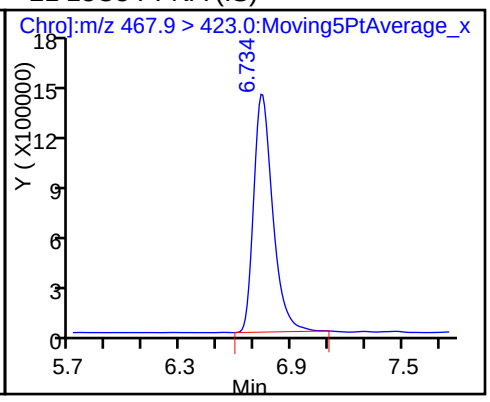
19 Perfluorooctane sulfonic acid



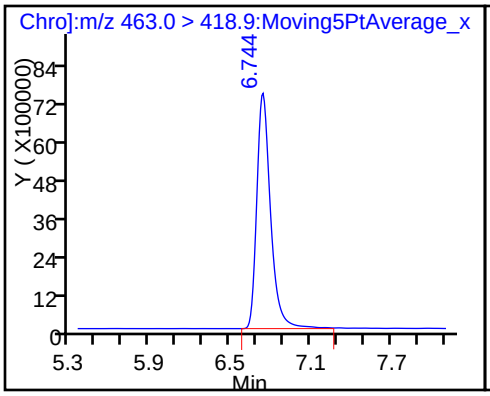
$ 18 13C8 PFOS



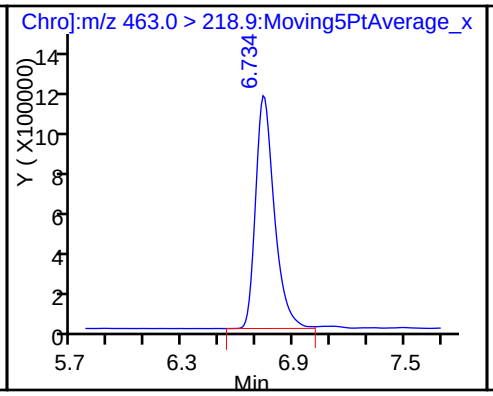
* 21 13C5 PFNA (IS)



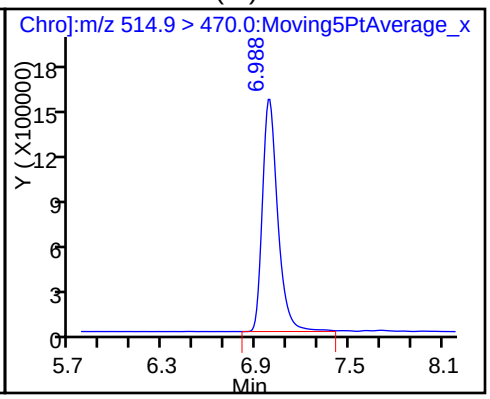
20 Perfluorononanoic acid



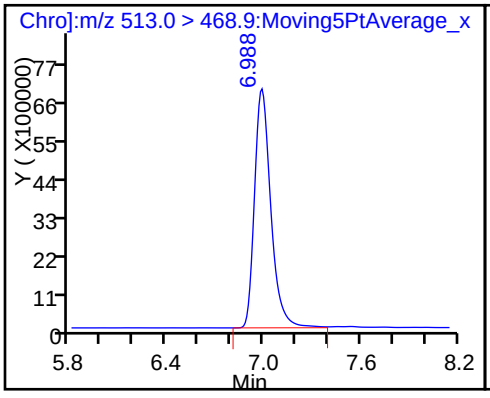
20 Perfluorononanoic acid



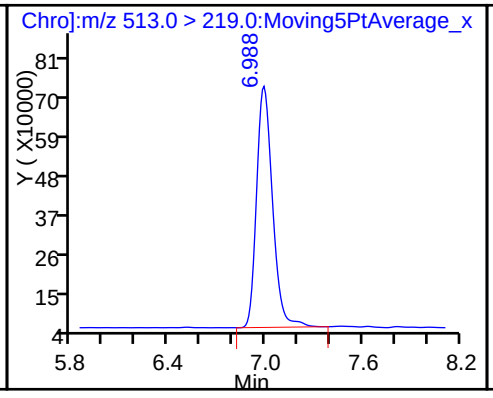
* 22 13C2 PFDA (IS)



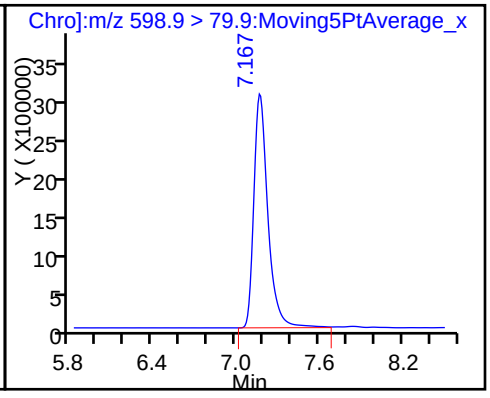
23 Perfluorodecanoic acid



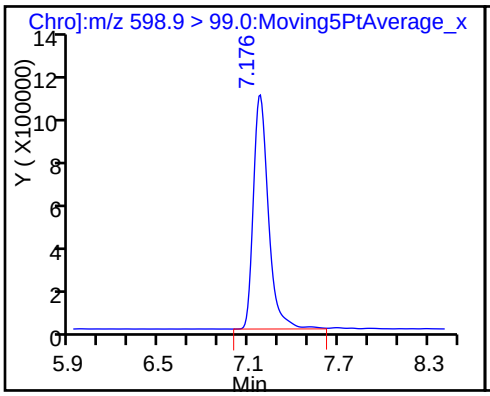
23 Perfluorodecanoic acid



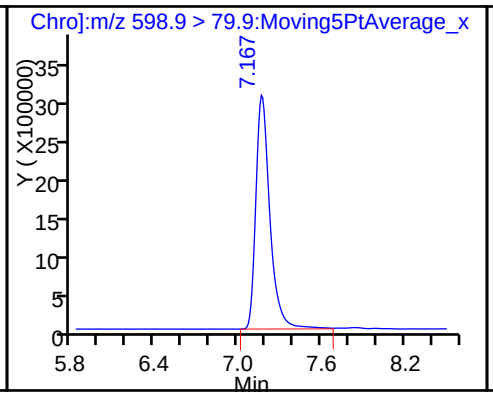
24 Perfluorodecane Sulfonic acid



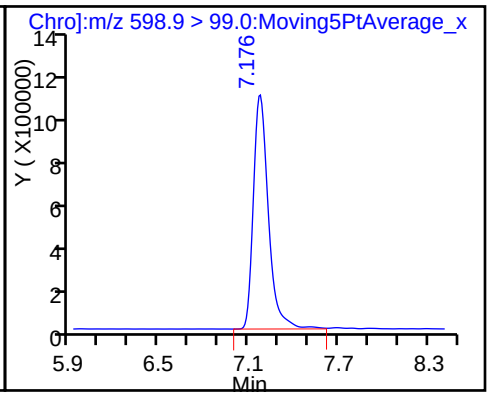
24 Perfluorodecane Sulfonic acid



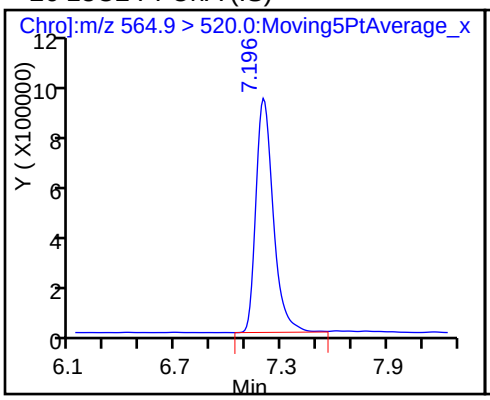
25 Perfluorodecane Sulfonate



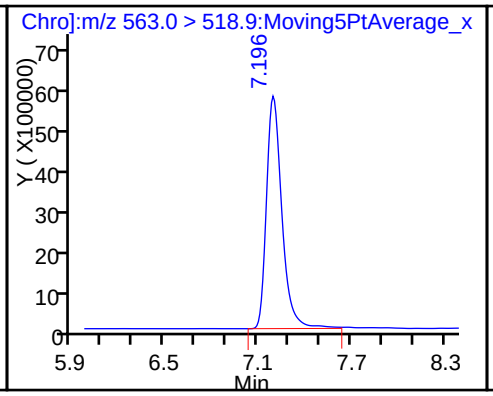
25 Perfluorodecane Sulfonate



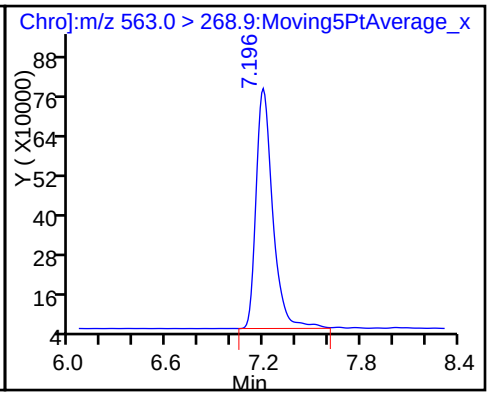
* 26 13C2 PFUnA (IS)



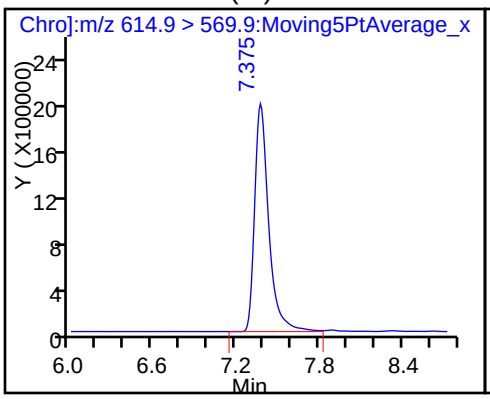
27 Perfluoroundecanoic acid



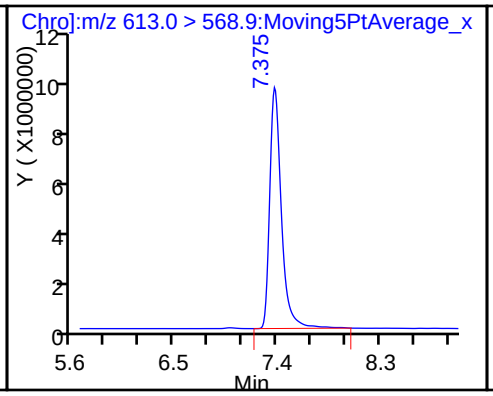
27 Perfluoroundecanoic acid



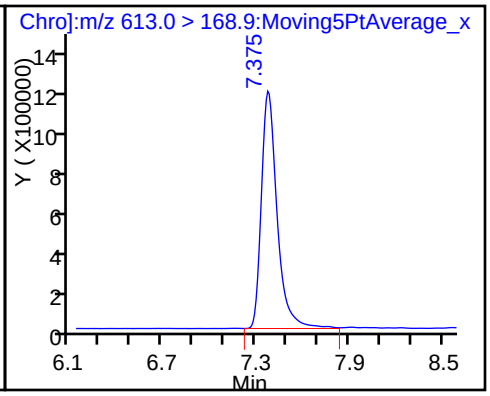
* 28 13C2 PFDoA (IS)



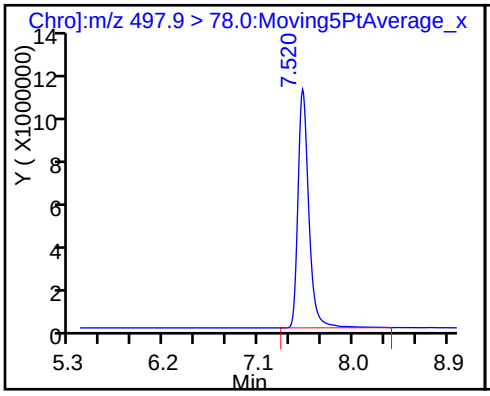
29 Perfluorododecanoic acid



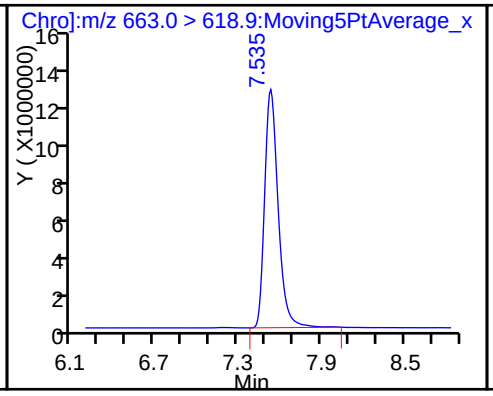
29 Perfluorododecanoic acid



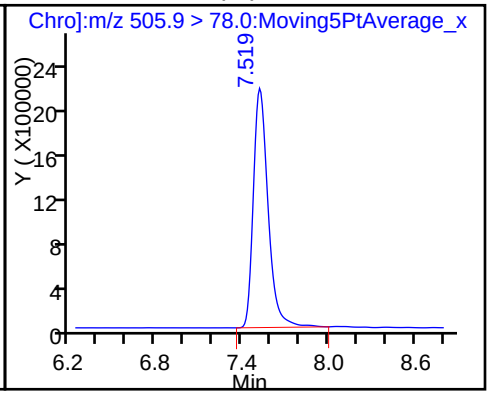
32 Perfluorooctane Sulfonamide



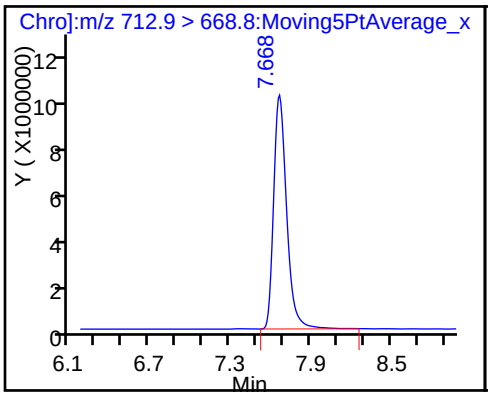
30 Perfluorotridecanoic acid



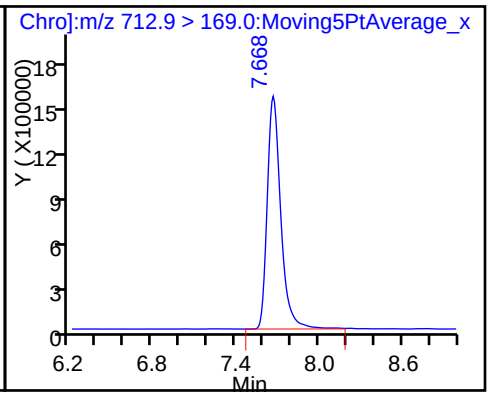
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d
Lims ID: STD1250
Client ID:
Sample Type: IC Calib Level: 9
Inject. Date: 01-Sep-2016 12:33:48 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 1250, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:30 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:39:41

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.048	4.058	-0.010		12979355	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.049	4.068	-0.019	1.000	154342797	123.3			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.109	0.0	0.899	123787287	128.8			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.232	5.232	0.0	0.853	58702268	115.0			R
298.9 > 98.9	5.232	5.232	0.0	0.853	17160978		3.42(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.232	5.232	0.0	0.853	58702268	115.0			
298.9 > 98.9	5.232	5.232	0.0	0.853	17160978		3.42(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.686	5.676	0.010		8877447	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.696	5.686	0.010	1.002	98976344	126.1			
313.0 > 118.6	5.696	5.686	0.010	1.002	2858167		34.63(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.121	6.102	0.019	0.946	142918889	107.9			
363.0 > 168.9	6.121	6.102	0.019	0.946	35735132		4.00(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.130	6.111	0.019		1096601	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.130	6.111	0.019	1.000	52301837	112.9			
398.9 > 98.9	6.130	6.111	0.019	1.000	16319604		3.20(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.130	6.111	0.019	1.000	52301837	112.9			R
398.9 > 98.9	6.130	6.111	0.019	1.000	16319604		3.20(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.460	6.441	0.019	0.958	50154548	100.5			
449.0 > 98.9	6.460	6.441	0.019	0.958	15111418		3.32(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.460	6.441	0.019	0.958	50154548	100.5			
449.0 > 98.9	6.460	6.441	0.019	0.958	15111418		3.32(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.470	6.442	0.028	1.000	121199928	113.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.470	6.442	0.028		15798255	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.471	6.442	0.029	1.000	157527806	102.6			
413.0 > 169.0	6.471	6.442	0.029	1.000	49102187		3.21(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.743	6.714	0.029		4333658	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.743	6.715	0.028	1.000	46396532	99.8			R
498.9 > 98.9	6.743	6.715	0.028	1.000	17042019		2.72(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.742	6.723	0.019	1.000	25454631	98.6			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.763	6.734	0.029		9337331	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.763	6.734	0.029	1.000	122511662	123.9			
463.0 > 218.9	6.763	6.734	0.029	1.000	17157905		7.14(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	6.978	0.029		10327363	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.007	6.979	0.028	1.000	118049050	120.7			R
513.0 > 219.0	7.007	6.979	0.028	1.000	11326037		10.42(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.167	0.019	1.066	48688260	108.7			
598.9 > 99.0	7.186	7.167	0.019	1.066	15478896		3.15(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.167	0.019	1.066	48688260	108.7			
598.9 > 99.0	7.186	7.167	0.019	1.066	15478896		3.15(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.186	0.029		6136283	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.186	0.029	1.000	91112669	115.1			R
563.0 > 268.9	7.215	7.186	0.029	1.000	11474520		7.94(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.365	0.028		13658879	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.365	0.029	1.000	160800256	121.1			
613.0 > 168.9	7.394	7.365	0.029	1.000	20627346		7.80(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.511	0.028	1.000	173475638	128.7			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.554	7.516	0.038	1.022	195237711	113.5			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.519	0.019		13061105	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.686	7.649	0.037	1.040	156178707	118.2			
712.9 > 169.0	7.686	7.649	0.037	1.040	24843825		6.29(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 250.00	Units: uL
PFC-LCS_00084	Amount Added: 250.00	Units: uL

Report Date: 02-Sep-2016 11:52:31 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Injection Date: 01-Sep-2016 12:33:48 Instrument ID: LC_LCMS5

Lims ID: STD1250

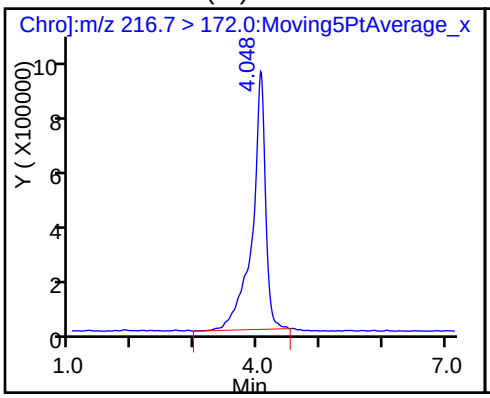
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 11

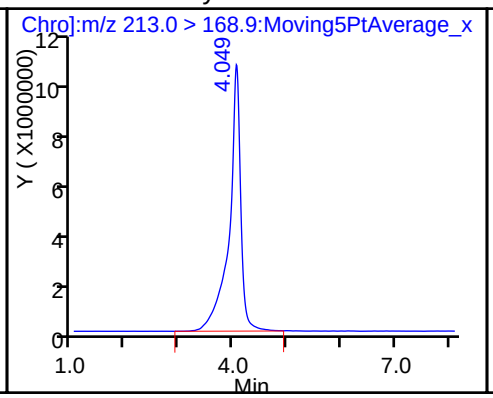
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

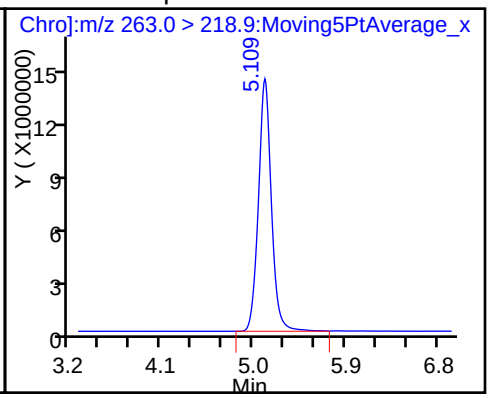
* 1 13C4 PFBA (IS)



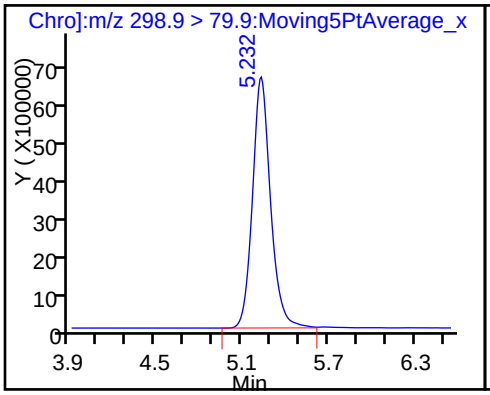
2 Perfluorobutyric acid



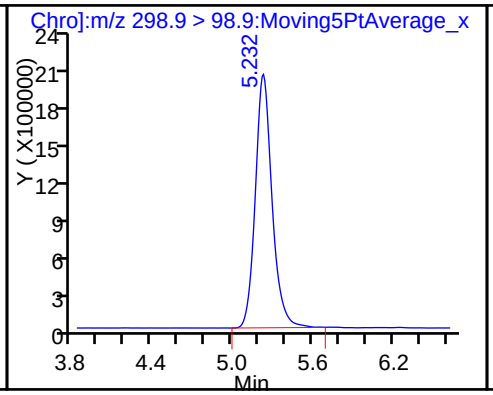
3 Perfluoropentanoic acid



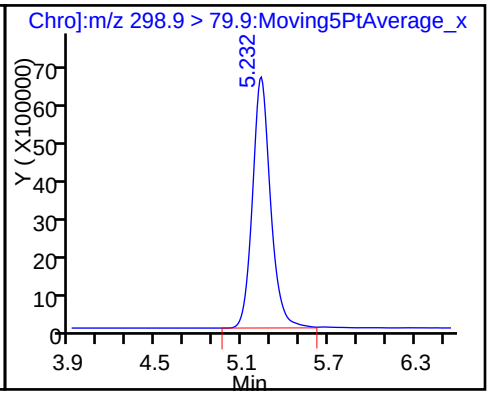
4 Perfluorobutane Sulfonate



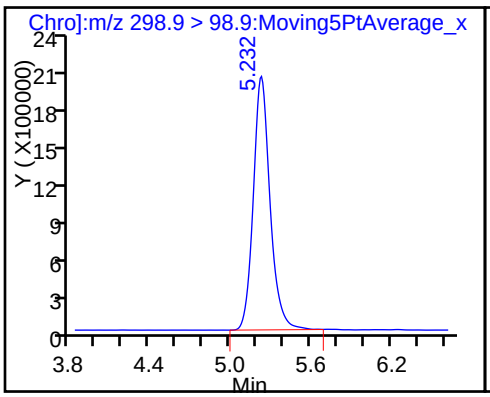
4 Perfluorobutane Sulfonate



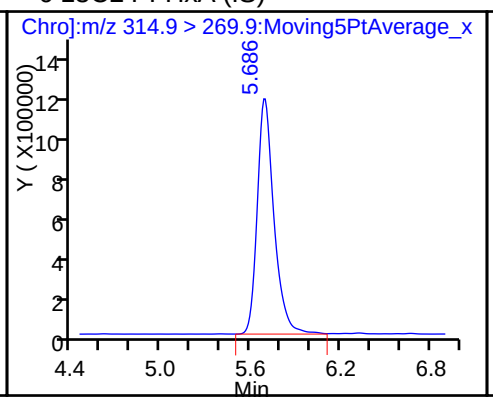
5 Perfluorobutanesulfonic acid



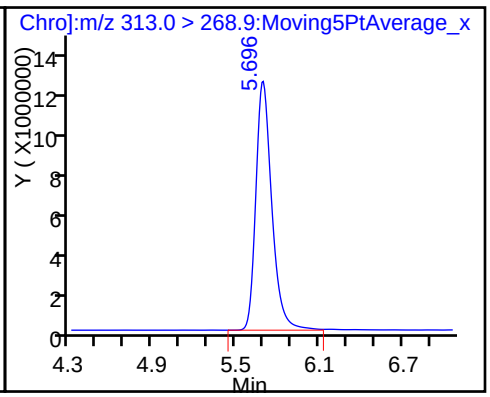
5 Perfluorobutanesulfonic acid



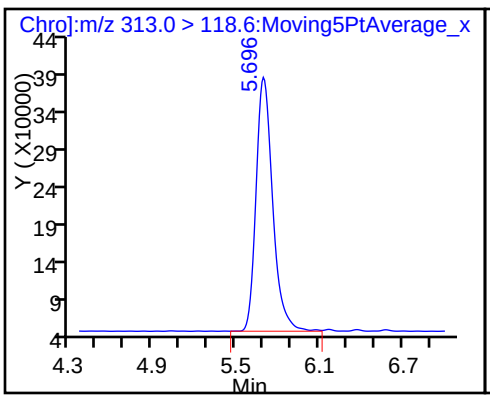
* 6 13C2 PFHxA (IS)



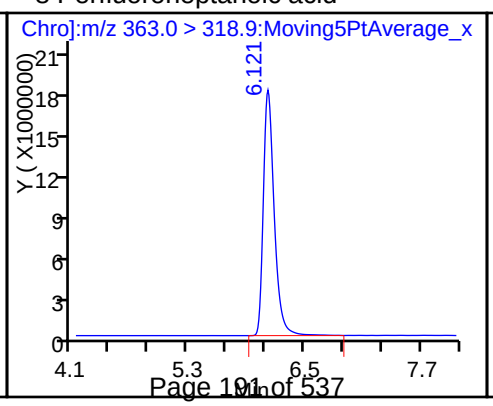
7 Perfluorohexanoic acid



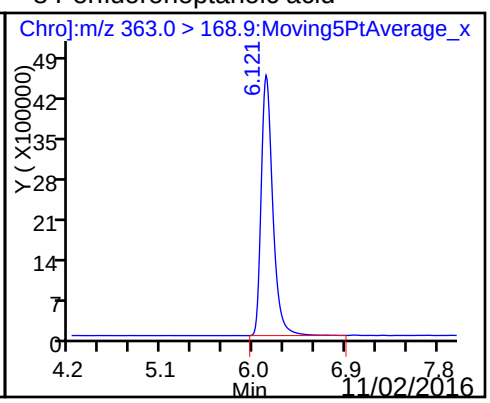
7 Perfluorohexanoic acid



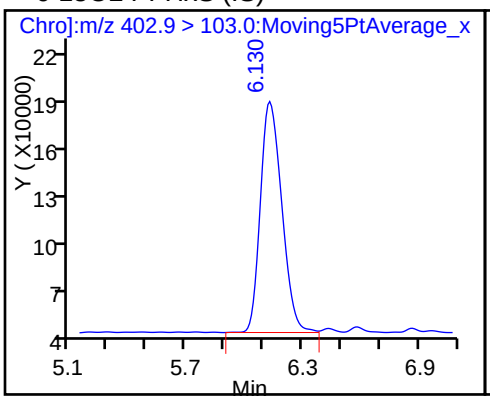
8 Perfluoroheptanoic acid



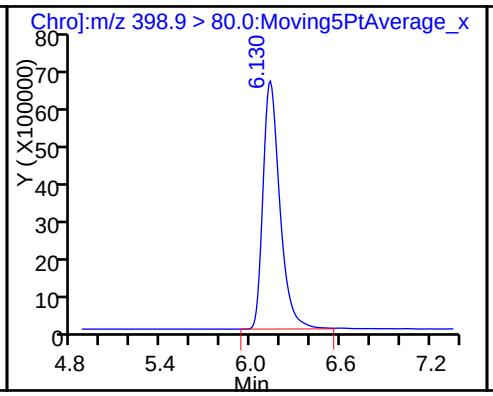
8 Perfluoroheptanoic acid



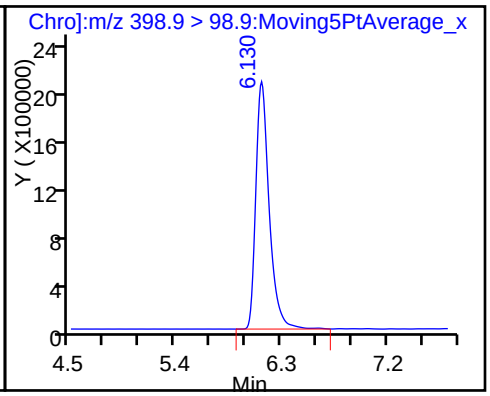
* 9 18O2 PFHxS (IS)



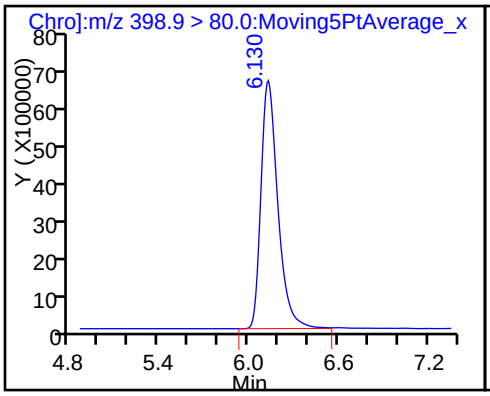
11 Perfluorohexanesulfonic acid



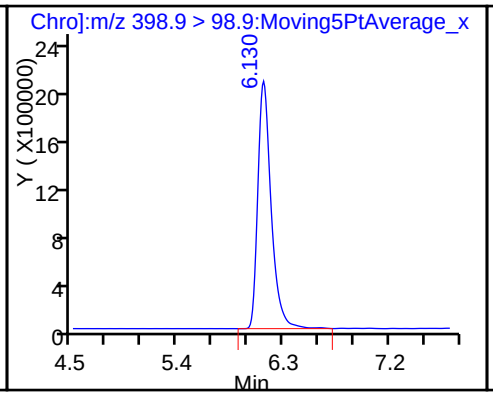
11 Perfluorohexanesulfonic acid



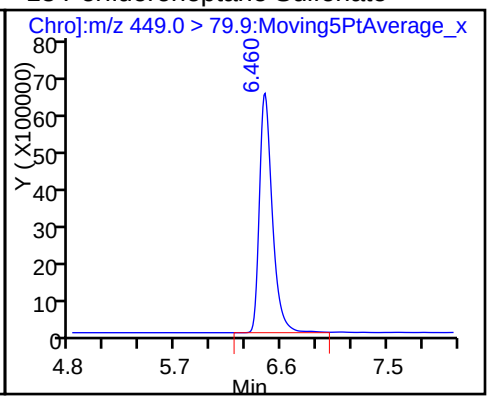
10 Perfluorohexane Sulfonate



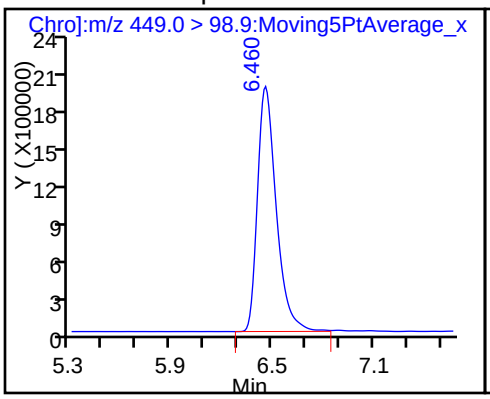
10 Perfluorohexane Sulfonate



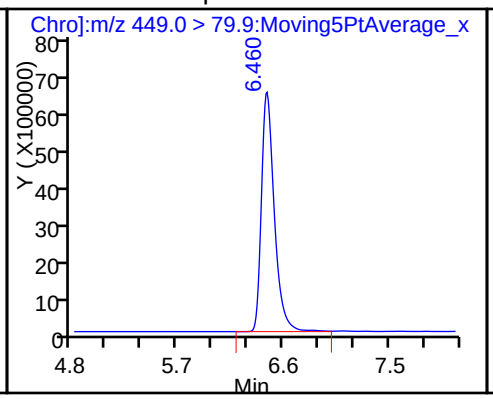
13 Perfluoroheptane Sulfonate



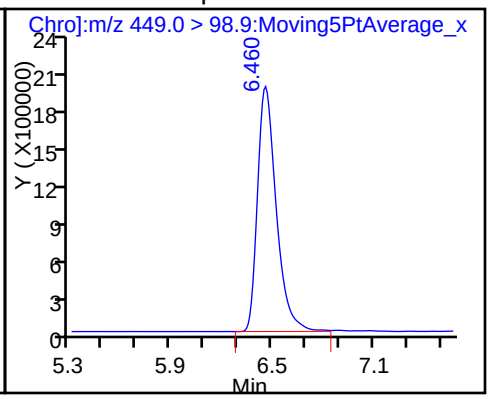
13 Perfluoroheptane Sulfonate



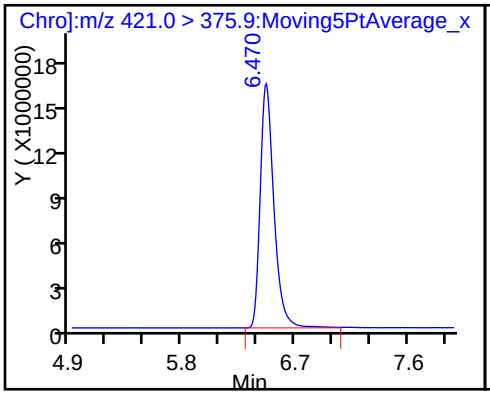
12 Perfluoroheptanesulfonic Acid



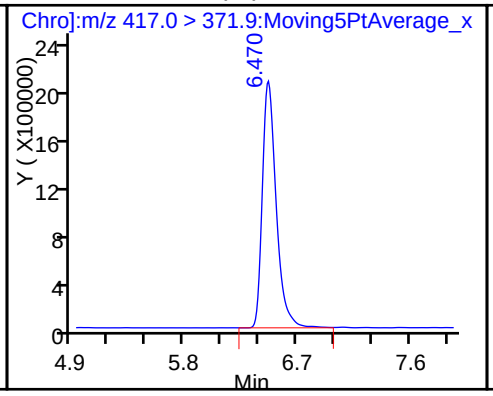
12 Perfluoroheptanesulfonic Acid



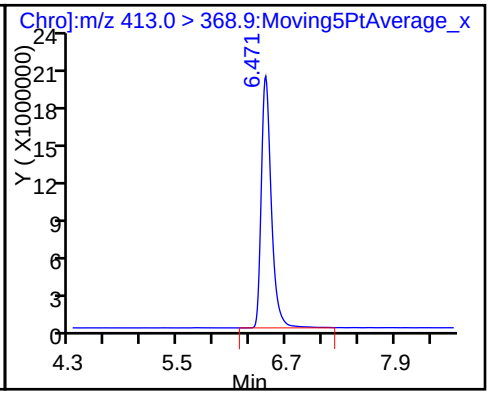
$ 14 13C8 PFOA



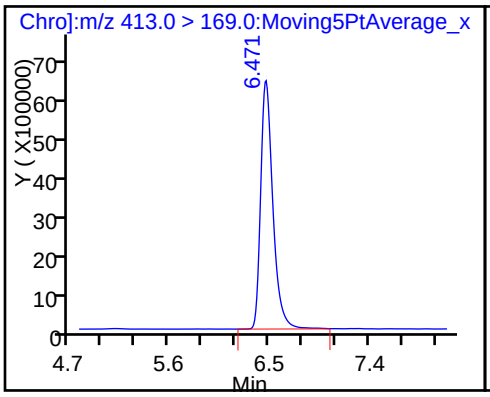
* 15 13C4 PFOA (IS)



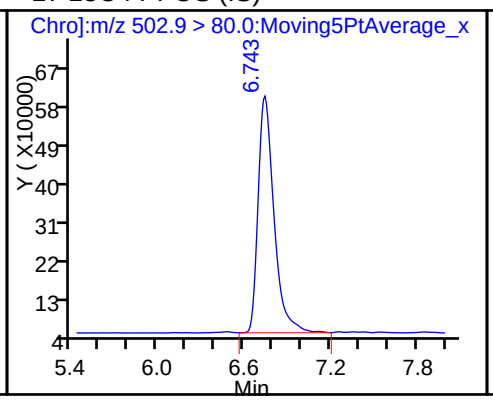
16 Perfluorooctanoic acid



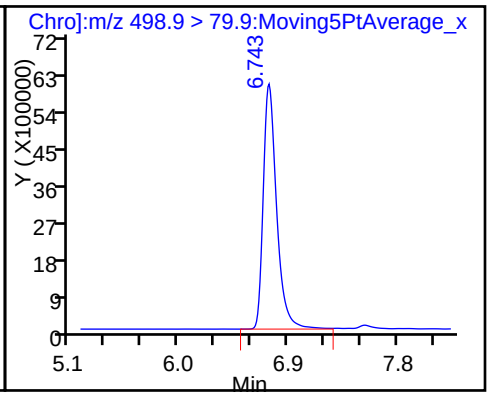
16 Perfluorooctanoic acid



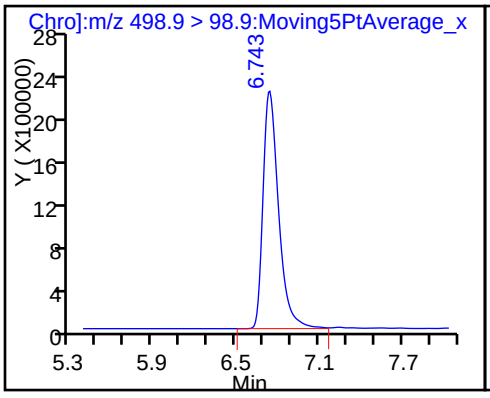
* 17 13C4 PFOS (IS)



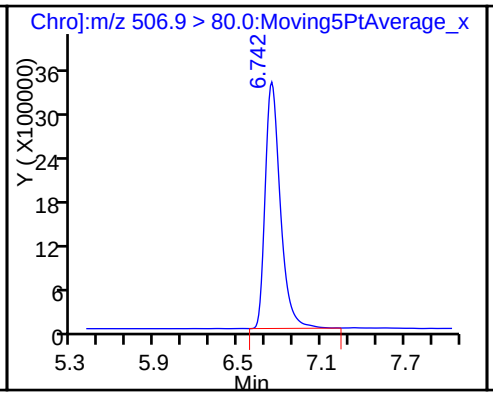
19 Perfluorooctane sulfonic acid



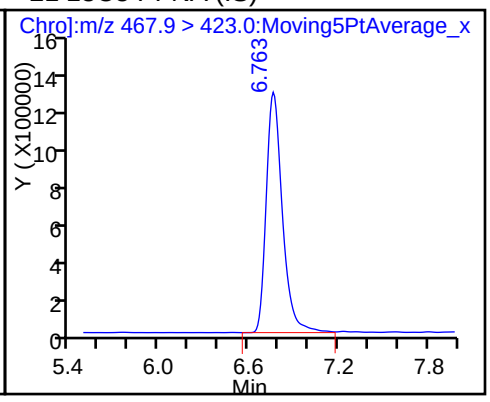
19 Perfluorooctane sulfonic acid



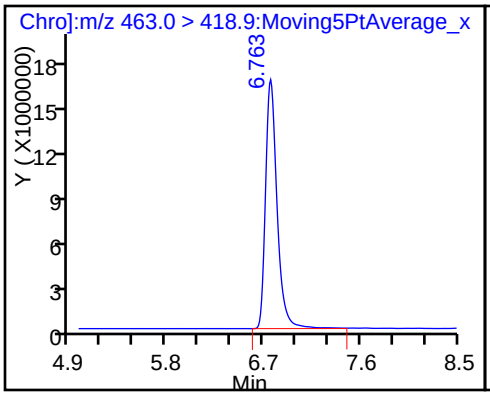
$ 18 13C8 PFOS



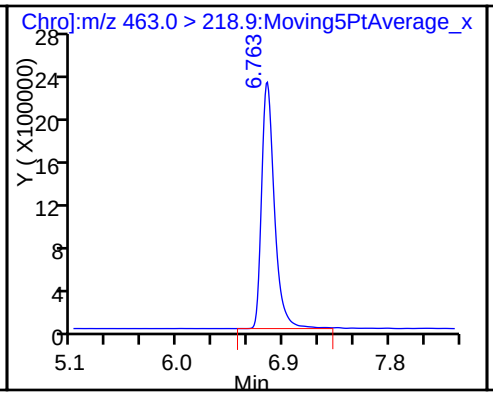
* 21 13C5 PFNA (IS)



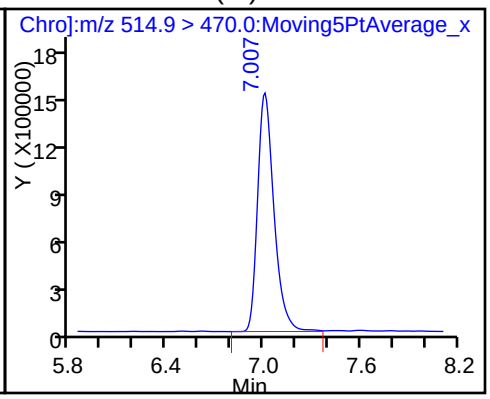
20 Perfluorononanoic acid



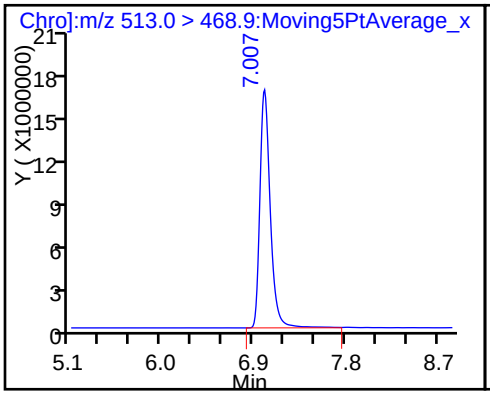
20 Perfluorononanoic acid



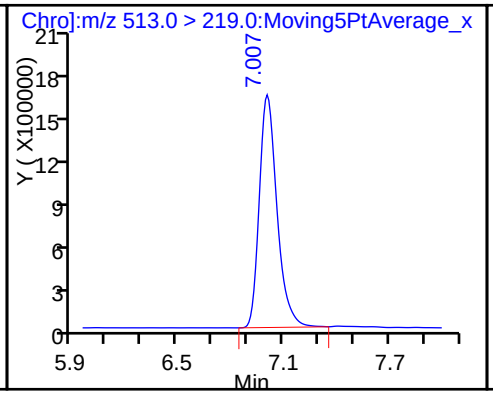
* 22 13C2 PFDA (IS)



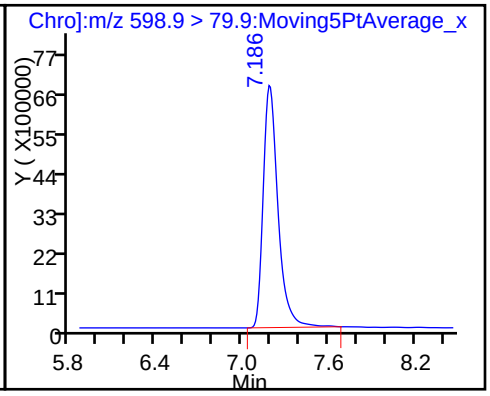
23 Perfluorodecanoic acid



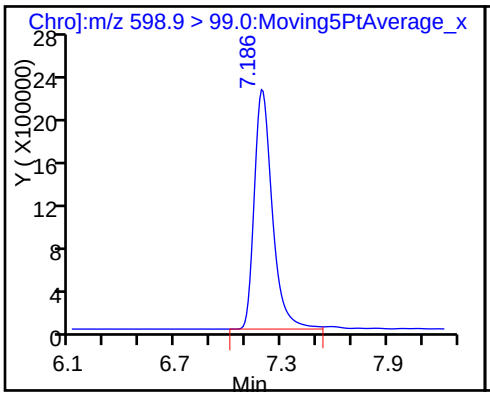
23 Perfluorodecanoic acid



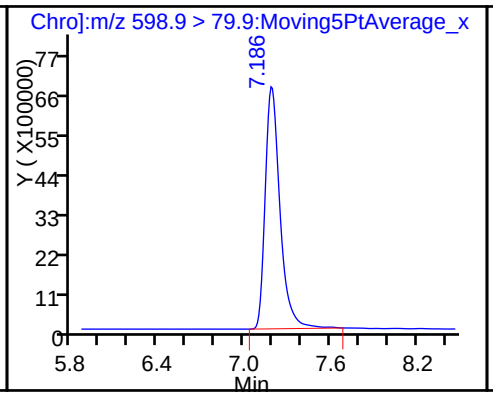
24 Perfluorodecane Sulfonic acid



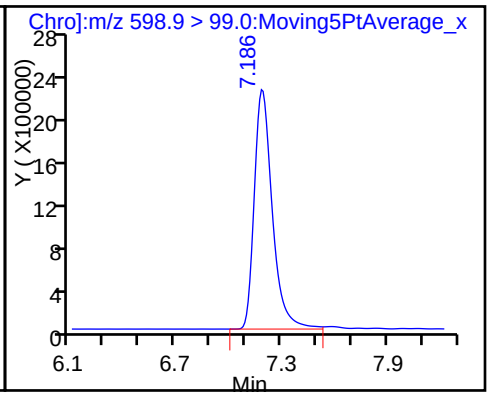
24 Perfluorodecane Sulfonic acid



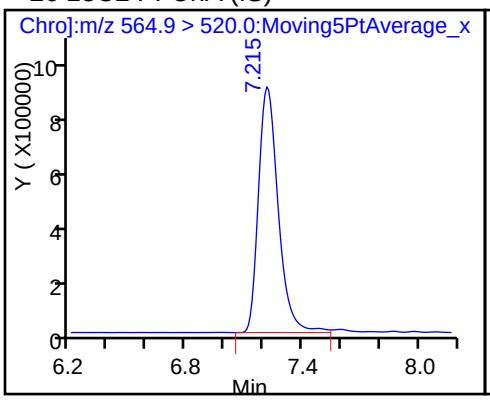
25 Perfluorodecane Sulfonate



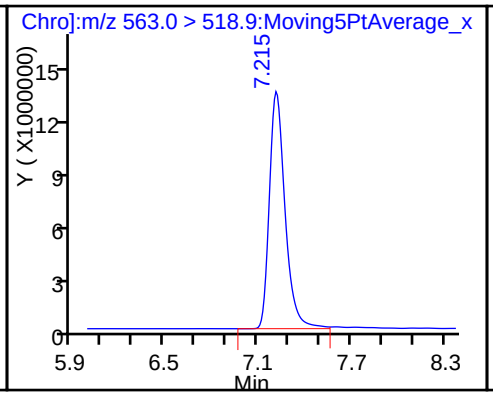
25 Perfluorodecane Sulfonate



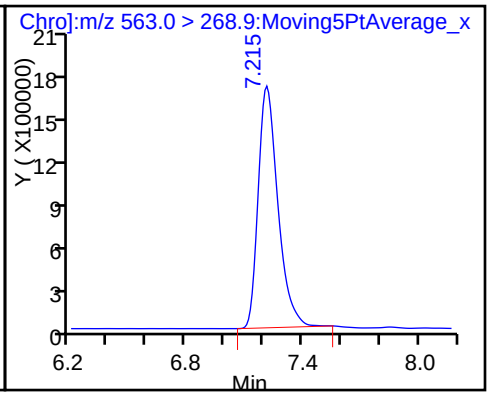
* 26 13C2 PFUnA (IS)



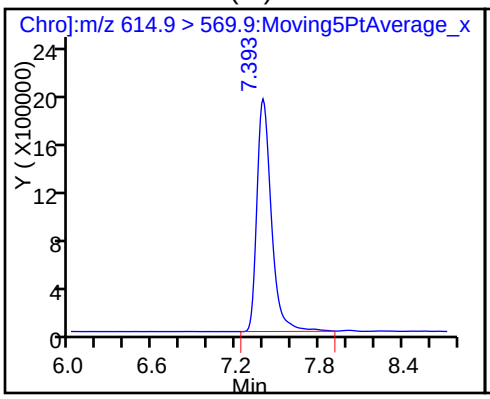
27 Perfluoroundecanoic acid



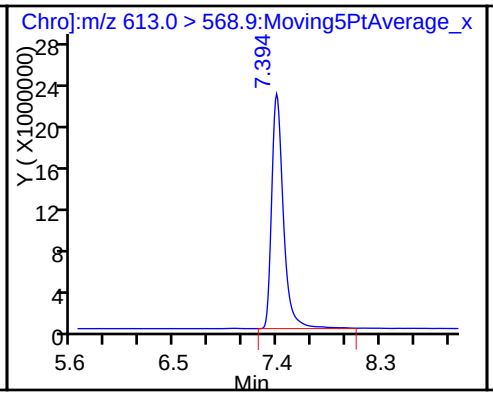
27 Perfluoroundecanoic acid



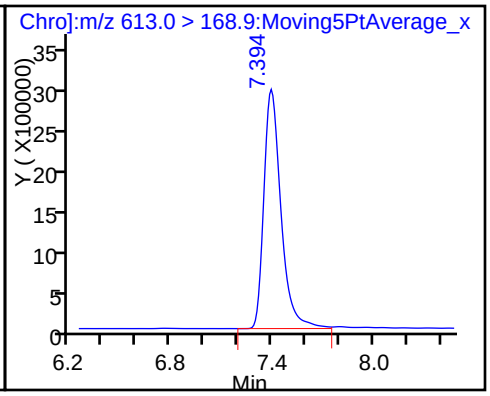
* 28 13C2 PFDoA (IS)



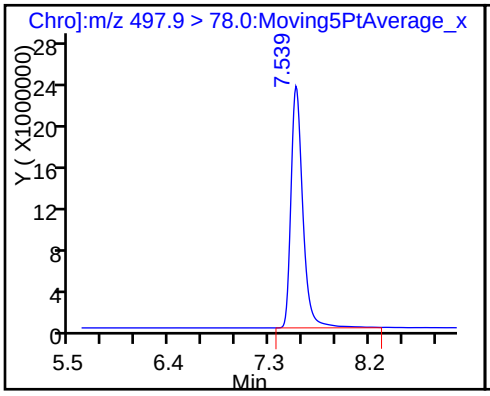
29 Perfluorododecanoic acid



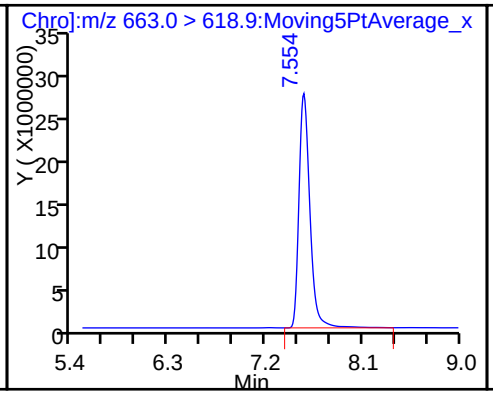
29 Perfluorododecanoic acid



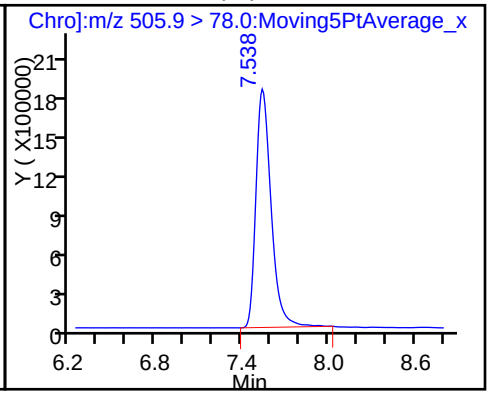
32 Perfluorooctane Sulfonamide



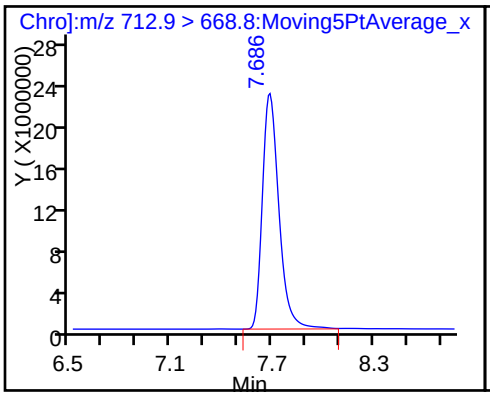
30 Perfluorotridecanoic acid



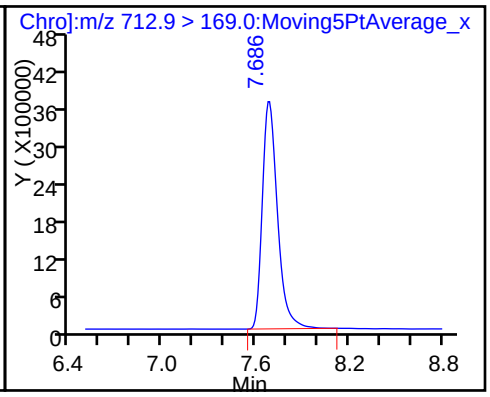
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-87416-1 Analy Batch No.: 341287

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/07/2016 13:06 Calibration End Date: 09/07/2016 14:44 Calibration ID: 26932

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-341287/3	PC516I07006.d
Level 2	STD0005 280-341287/4	PC516I07007.d
Level 3	STD0010 280-341287/5	PC516I07008.d
Level 4	STD0020 280-341287/6	PC516I07009.d
Level 5	STD0050 280-341287/7	PC516I07010.d
Level 6	STD0100 280-341287/8	PC516I07011.d
Level 7	STD0200 280-341287/9	PC516I07012.d
Level 8	STD0500 280-341287/10	PC516I07013.d
Level 9	STD1250 280-341287/11	PC516I07014.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.8461 1.0161	1.0561 0.9838	1.7102 0.9664	1.0643 0.9579	0.9778	Lin1	0.0997	0.9660							0.9970		0.9800
Perfluoropentanoic acid (PFPA)	1.4728 1.2088	1.2068 1.0963	1.1972 1.1414	1.1266 1.1516	1.1368	Lin2	0.0641	1.1299							0.9990		0.9800
Perfluorobutane Sulfonate (PFBS)	4.1798 4.0569	4.5382 3.9465	3.9112 4.2232	4.2334 4.2198	3.6546	Lin2	0.0408	4.0616							0.9960		0.9800
Perfluorobutanesulfonic acid (PFBS)	4.1798 4.0569	4.5382 3.9465	3.9112 4.2232	4.2334 4.2198	3.6546	Lin2	0.0408	4.0616							0.9960		0.9800
Perfluorohexanoic acid (PFHxA)	1.3138 0.9140	1.0739 0.8398	1.0081 0.8748	0.9214 0.8857	0.9050	Lin2	0.0885	0.8834							0.9990		0.9800
Perfluoroheptanoic acid (PFHpA)	1.0290 0.8675	0.8964 0.8329	0.8765 0.7865	0.8535 0.7400	0.7420	Lin2	0.0473	0.8005							0.9960		0.9800
Perfluorohexane Sulfonate (PFHxS)	5.4358 3.8230	4.1148 3.5819	4.0203 3.7905	4.2372 3.6070	3.3783	Lin2	0.3241	3.6605							0.9950		0.9800
Perfluorohexanesulfonic acid	5.4358 3.8230	4.1148 3.5819	4.0203 3.7905	4.2372 3.6070	3.3783	Lin2	0.3241	3.6605							0.9950		0.9800
Perfluoroheptane Sulfonate	1.1320 1.0486	1.0370 1.0344	1.0184 1.0407	1.1862 0.9481	0.9725	Lin2	0.0192	1.0266							0.9950		0.9800
Perfluoroheptanesulfonic Acid (PFHpS)	1.1320 1.0486	1.0370 1.0344	1.0184 1.0407	1.1862 0.9481	0.9725	Lin2	0.0192	1.0266							0.9950		0.9800
Perfluorooctanoic acid (PFOA)	1.3324 1.0529	1.0996 1.0000	1.1171 0.9231	1.1102 0.8338	1.0048	Lin2	0.0728	0.9808							0.9930		0.9800
Perfluorooctanesulfonic acid (PFOS)	1.1832 1.1095	1.1132 1.0481	1.0172 0.9933	1.1398 0.8832	1.0713	Lin2	0.0312	1.0298							0.9940		0.9800
Perfluorononanoic acid (PFNA)	1.2832 1.0464	0.9456 1.0232	1.1691 1.0397	1.1687 1.0173	1.0123	Lin2	0.0406	1.0384							0.9920		0.9800

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-87416-1 Analy Batch No.: 341287

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/07/2016 13:06 Calibration End Date: 09/07/2016 14:44 Calibration ID: 26932

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	1.0271 0.9837	1.1160 0.9240	0.9897 0.9514	1.0054 0.9478	0.9206	Lin2	0.0218	0.9636							0.9970		0.9800
Perfluorodecane sulfonate (PFDS)	1.0679 1.0672	1.2914 1.0881	0.9659 1.1426	1.1025 1.0616	1.0420	Lin2	0.0065	1.0855							0.9920		0.9800
Perfluorodecane Sulfonic acid	1.0679 1.0672	1.2914 1.0881	0.9659 1.1426	1.1025 1.0616	1.0420	Lin2	0.0065	1.0855							0.9920		0.9800
Perfluoroundecanoic acid (PFUnA)	2.2283 1.3910	1.5469 1.3640	1.4221 1.3640	1.4245 1.3672	1.2014	Lin2	0.1730	1.3082							0.9950		0.9800
Perfluorododecanoic acid (PFDoA)	1.2214 1.0183	1.1051 0.9588	1.0250 1.0185	0.9878 1.0166	0.9443	Lin2	0.0480	0.9855							0.9990		0.9800
Perfluorooctane Sulfonamide (FOSA)	1.0661 0.9523	1.0950 1.0076	1.1398 1.0108	0.9979 1.0118	1.0028	Lin2	0.0174	1.0144							0.9970		0.9800
Perfluorotridecanoic Acid (PFTriA)	1.0665 1.0077	1.1870 1.0052	1.0154 1.0170	1.0919 0.9977	1.0331	Lin2	0.0167	1.0304							0.9970		0.9800
Perfluorotetradecanoic acid (PFTeA)	0.8270 0.8151	0.8098 0.7907	0.8873 0.7904	0.7909 0.7459	0.7818	Lin2	0.0091	0.7954							0.9970		0.9800
13C8 PFOA	0.9243 0.8376	0.9288 0.8176	0.9006 0.7067	0.9306 0.6281	0.8470	Lin2	0.0343	0.8019							0.9850		0.9800
13C8 PFOS	0.4730 0.5810	0.3569 0.5831	0.6464 0.5307	0.6749 0.4573	0.6221	Lin1	0.0493	0.4964							0.9880		0.9800

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-87416-1 Analy Batch No.: 341287

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/07/2016 13:06 Calibration End Date: 09/07/2016 14:44 Calibration ID: 26932

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-341287/3	PC516I07006.d
Level 2	STD0005 280-341287/4	PC516I07007.d
Level 3	STD0010 280-341287/5	PC516I07008.d
Level 4	STD0020 280-341287/6	PC516I07009.d
Level 5	STD0050 280-341287/7	PC516I07010.d
Level 6	STD0100 280-341287/8	PC516I07011.d
Level 7	STD0200 280-341287/9	PC516I07012.d
Level 8	STD0500 280-341287/10	PC516I07013.d
Level 9	STD1250 280-341287/11	PC516I07014.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorobutanoic acid (PFBA)	BA	Lin1	304371 15704439	893664 32331849	1737929 78774097	3578176 190870861	8413081	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoropentanoic acid (PFPA)	HXA	Lin2	341081 12276275	676048 25531864	1342235 59608278	2517033 142787415	6442983	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorobutane Sulfonate (PFBS)	HXS	Lin2	129440 5937014	348522 12391653	610357 28732880	1296922 66668224	3295719	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorobutanesulfonic acid (PFBS)	HXS	Lin2	129440 5937014	348522 12391653	610357 28732880	1296922 66668224	3295719	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorohexanoic acid (PFHxA)	HXA	Lin2	304254 9282197	601595 19559068	1130265 45687001	2058442 109820330	5129038	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoroheptanoic acid (PFHpA)	OA	Lin2	376158 14157185	803066 28639644	1560380 65153721	3155486 146384241	7481391	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorohexane Sulfonate (PFHxS)	HXS	Lin2	179749 5974112	337426 12009436	669924 27537109	1386079 60850526	3253049	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluorohexanesulfonic acid	HXS	Lin2	179749 5974112	337426 12009436	669924 27537109	1386079 60850526	3253049	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluoroheptane Sulfonate	PFOS	Lin2	147794 5971797	323395 12363031	643613 28895107	1451982 62734208	3048256	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluoroheptanesulfonic Acid (PFHpS)	PFOS	Lin2	147794 5971797	323395 12363031	643613 28895107	1451982 62734208	3048256	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluorooctanoic acid (PFOA)	OA	Lin2	487059 17183901	985102 34385834	1988649 76465851	4104854 164933072	10130189	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctanesulfonic acid (PFOS)	PFOS	Lin2	154960 6338189	348239 12566481	644873 27664994	1399481 58624534	3368736	0.191 9.55	0.478 19.1	0.955 47.8	1.91 119	4.78
Perfluorononanoic acid (PFNA)	NA	Lin2	371584 12980652	661216 26623499	1638516 57697637	3273833 122529912	6871618	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorodecanoic acid (PFDA)	DA	Lin2	296072 12328985	767561 25163537	1367978 59167220	2767550 137325415	6546413	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-87416-1 Analy Batch No.: 341287

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/07/2016 13:06 Calibration End Date: 09/07/2016 14:44 Calibration ID: 26932

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorodecane sulfonate (PFDS)	PFOS	Lin2	141324 6160461	408226 13182012	618725 32156584	1367917 71199503	3310649	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluorodecane Sulfonic acid	PFOS	Lin2	141324 6160461	408226 13182012	618725 32156584	1367917 71199503	3310649	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluoroundecanoic acid (PFUnA)	UNA	Lin2	369288 10133146	616518 20121450	1098311 45626135	2270492 99650722	4916834	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorododecanoic acid (PFDoA)	DOA	Lin2	454339 16534345	984048 33167835	1824629 80865486	3566747 183917657	8277966	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctane Sulfonamide (FOSA)	FOSA	Lin2	423389 16521491	1033730 36847342	2153920 86707198	3805671 191982435	9270254	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotridecanoic Acid (PFTriA)	DOA	Lin2	396743 16361498	1057049 34774479	1807576 80752372	3942584 180508840	9056472	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotetradecanoic acid (PFTeA)	DOA	Lin2	307623 13234167	721158 27352037	1579506 62758763	2855857 134948944	6853416	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOA	OA	Lin2	337884 13669467	832102 28112642	1603293 58538791	3440830 124257098	8539760	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOS	PFOS	Lin1	62016 3322860	111772 6998158	410185 14796480	829518 30381289	1958056	0.191 9.56	0.478 19.1	0.956 47.8	1.91 120	4.78

Curve Type Legend:
Lin1 = Linear 1/conc ISTD
Lin2 = Linear 1/conc^2 ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07006.d
Lims ID: STD0002
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 07-Sep-2016 13:06:20 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0002, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:14 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:10:18

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	4.067	-0.075		17986590	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.011	4.068	-0.057	1.005	304371	0.0720			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.081	5.138	-0.057	0.897	341081	0.2040			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.184	5.260	-0.076	0.848	129440	0.1721			R
298.9 > 98.9	5.213	5.260	-0.047	0.853	16008		8.09(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.184	5.260	-0.076	0.848	129440	0.1721			
298.9 > 98.9	5.213	5.260	-0.047	0.853	16008		8.09(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.667	5.743	-0.076		11579120	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.658	5.743	-0.085	0.998	304254	0.1973			
313.0 > 118.6	5.648	5.743	-0.095	0.997	3130		97.21(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.178	-0.076	0.946	376158	0.1980			
363.0 > 168.9	6.131	6.178	-0.047	0.950	99138		3.79(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.177	-0.066		1655117	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.102	6.187	-0.085	0.998	179749	0.1921			R
398.9 > 98.9	6.121	6.187	-0.066	1.002	24515		7.33(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.102	6.187	-0.085	0.998	179749	0.1921			
398.9 > 98.9	6.121	6.187	-0.066	1.002	24515		7.33(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.460	6.526	-0.066	0.959	147794	0.1913			
449.0 > 98.9	6.422	6.526	-0.104	0.954	20937		7.06(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.460	6.526	-0.066	0.959	147794	0.1913			
449.0 > 98.9	6.422	6.526	-0.104	0.954	20937		7.06(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.527	-0.066	1.001	337884	0.1878			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.527	-0.076		18278095	10.0			
16 Perfluorooctanoic acid									R
413.0 > 368.9	6.461	6.527	-0.066	1.002	487059	0.1974			R
413.0 > 169.0	6.442	6.527	-0.085	0.999	179294		2.72(2.86-5.31)		
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.734	6.809	-0.075	1.000	154960	0.1891			R
498.9 > 98.9	6.715	6.809	-0.094	0.997	45378		3.41(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.809	-0.076	1.000	62016	0.0829			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.809	-0.076		6555177	9.56			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.829	-0.085		14479210	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.820	-0.076	1.000	371584	0.2081			
463.0 > 218.9	6.772	6.820	-0.048	1.004	48871		7.60(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	7.073	-0.085		14413581	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.007	7.073	-0.066	1.003	296072	0.1906			R
513.0 > 219.0	7.026	7.073	-0.047	1.005	36371		8.14(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.195	7.262	-0.067	1.069	141324	0.1839			
598.9 > 99.0	7.167	7.262	-0.095	1.064	40295		3.51(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.195	7.262	-0.067	1.069	141324	0.1839			
598.9 > 99.0	7.167	7.262	-0.095	1.064	40295		3.51(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.205	7.290	-0.085		8286418	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.205	7.291	-0.086	1.000	369288	0.2084			R
563.0 > 268.9	7.186	7.291	-0.105	0.997	26599		13.88(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.469	-0.085		18599468	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.375	7.479	-0.104	0.999	454339	0.1992			
613.0 > 168.9	7.403	7.479	-0.076	1.003	57325		7.93(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.520	0.0	1.001	423389	0.1930			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.519	-0.009		19857363	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.535	7.630	-0.095	1.020	396743	0.1908			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.668	7.762	-0.094	1.038	307623	0.1965			
712.9 > 169.0	7.734	7.762	-0.028	1.047	26450		11.63(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	10.00	Units: uL

Report Date: 08-Sep-2016 09:39:14 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07006.d

Injection Date: 07-Sep-2016 13:06:20 Instrument ID: LC_LCMS5

Lims ID: STD0002

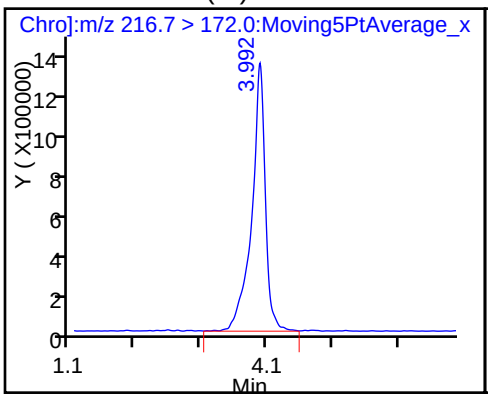
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

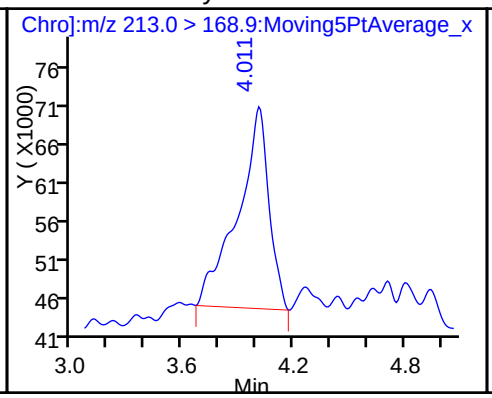
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

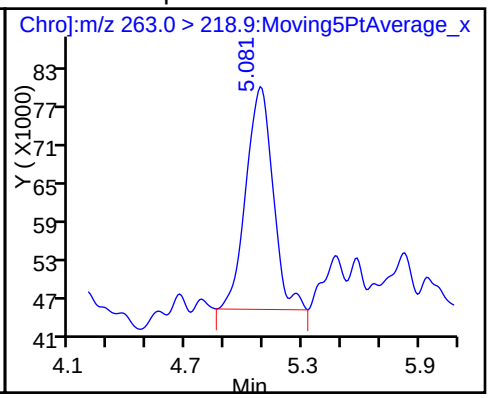
* 1 13C4 PFBA (IS)



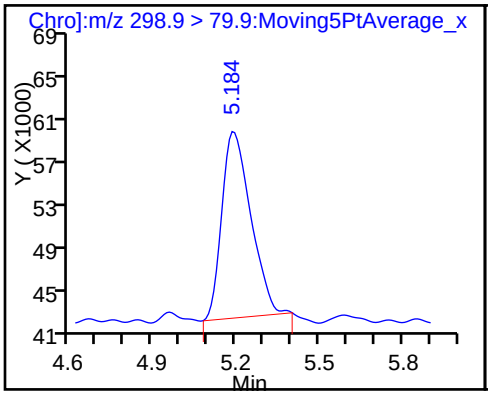
2 Perfluorobutyric acid



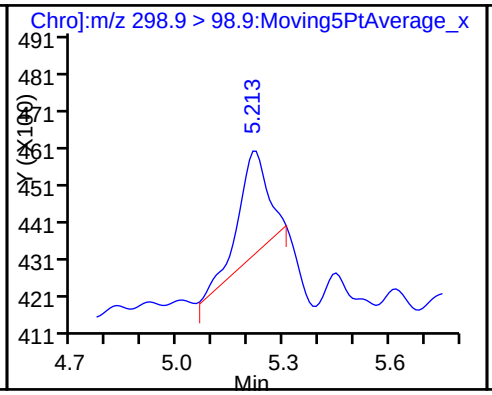
3 Perfluoropentanoic acid



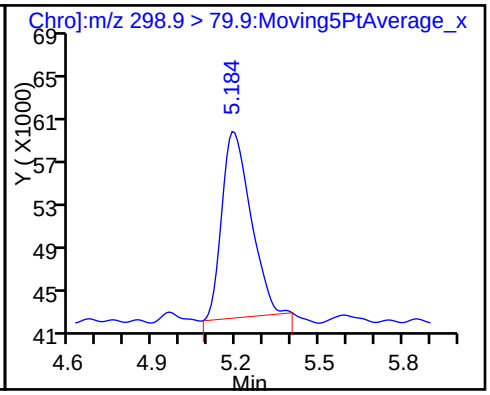
4 Perfluorobutane Sulfonate



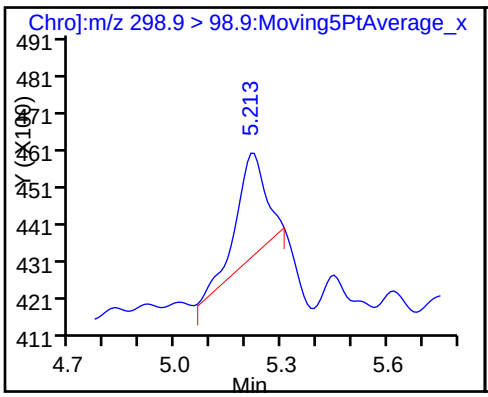
4 Perfluorobutane Sulfonate



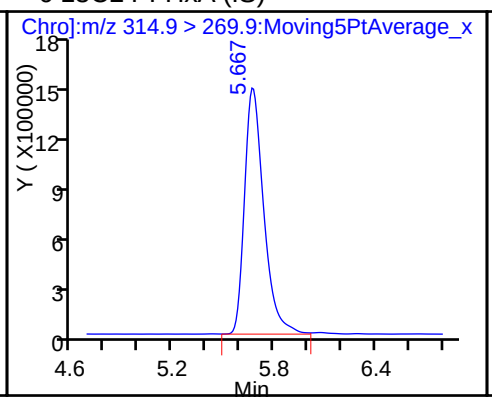
5 Perfluorobutanesulfonic acid



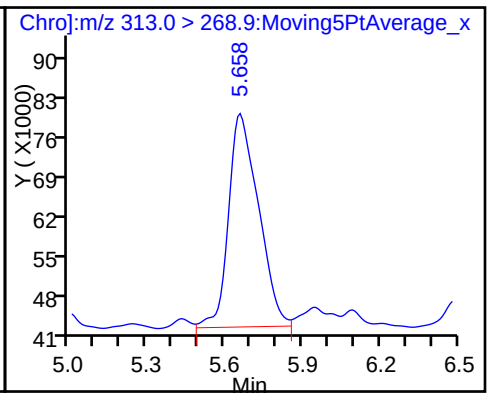
5 Perfluorobutanesulfonic acid



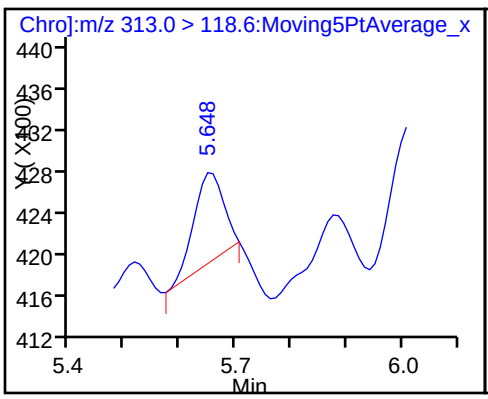
* 6 13C2 PFHxA (IS)



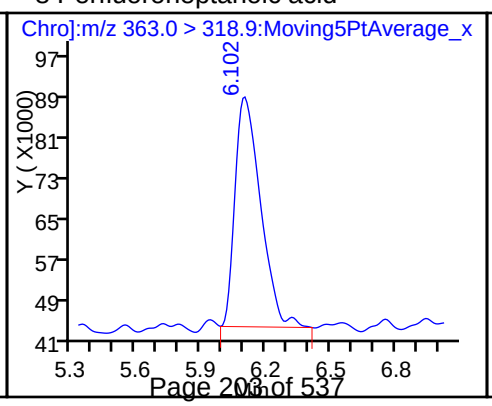
7 Perfluorohexanoic acid



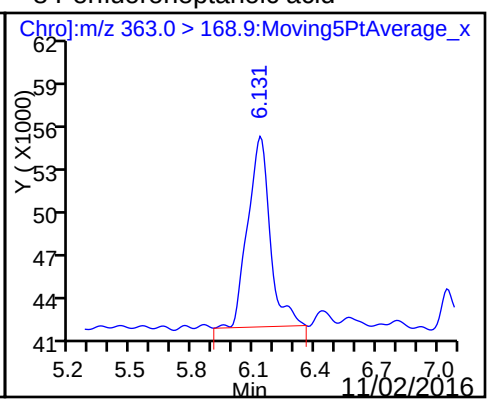
7 Perfluorohexanoic acid



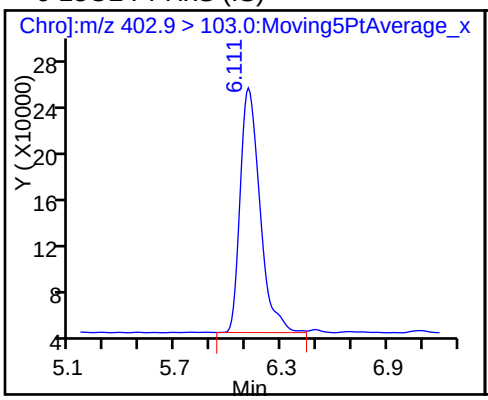
8 Perfluoroheptanoic acid



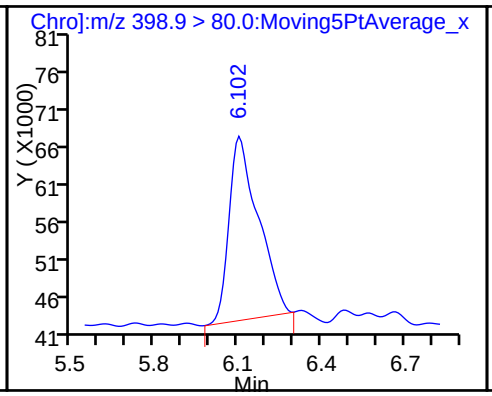
8 Perfluoroheptanoic acid



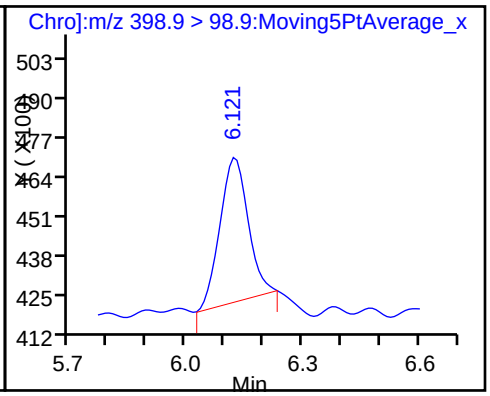
* 9 18O2 PFHxS (IS)



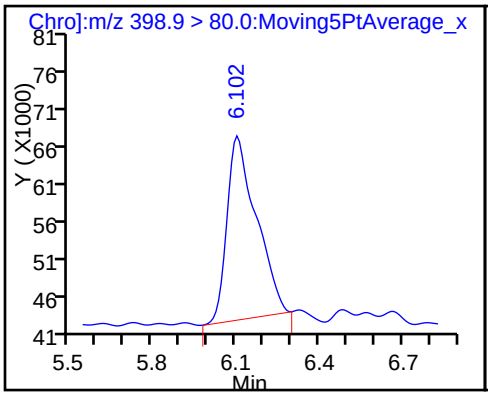
10 Perfluorohexane Sulfonate



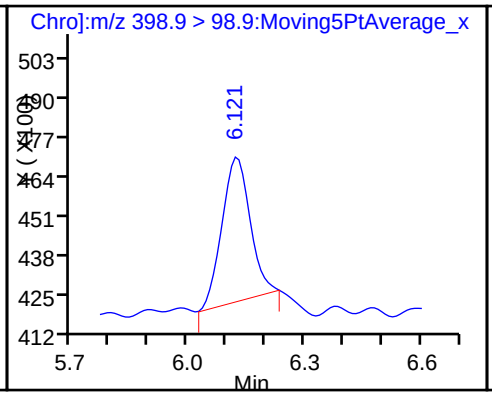
10 Perfluorohexane Sulfonate



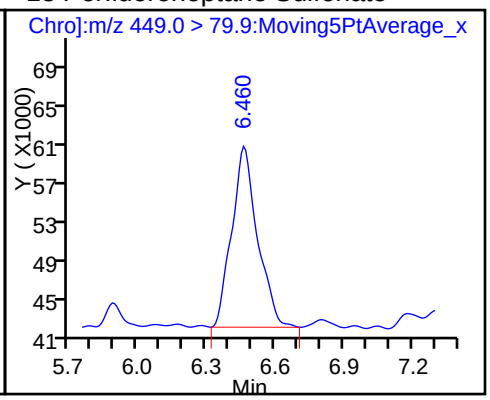
11 Perfluorohexanesulfonic acid



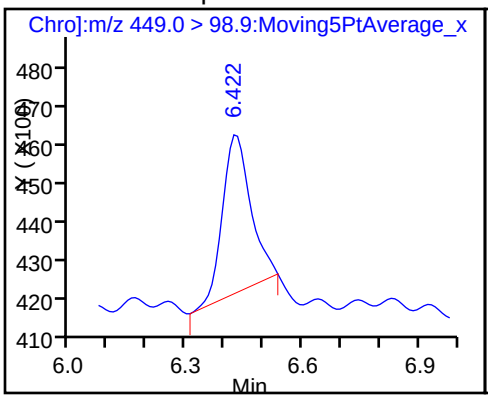
11 Perfluorohexanesulfonic acid



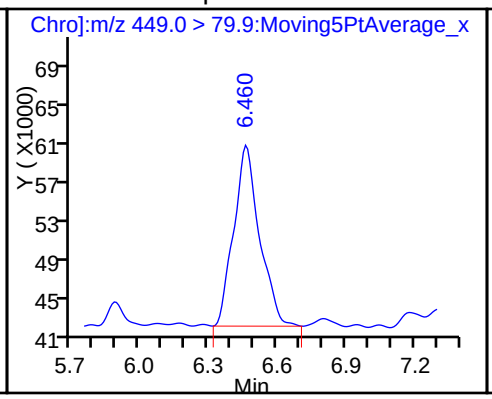
13 Perfluoroheptane Sulfonate



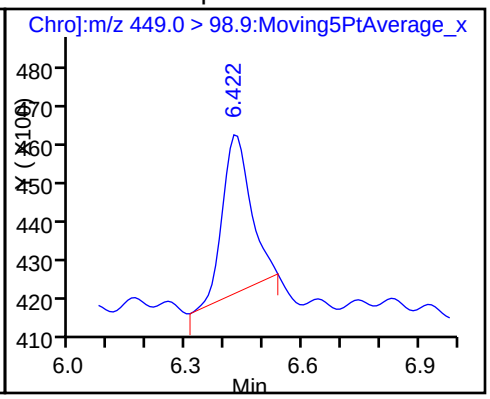
13 Perfluoroheptane Sulfonate



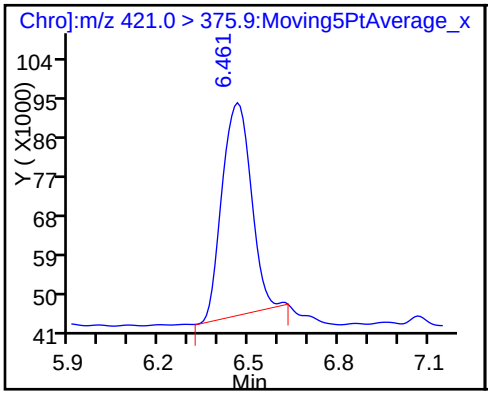
12 Perfluoroheptanesulfonic Acid



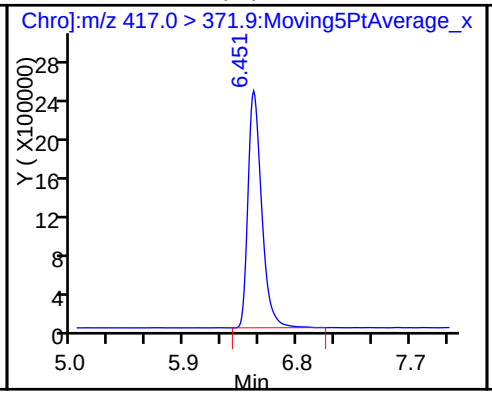
12 Perfluoroheptanesulfonic Acid



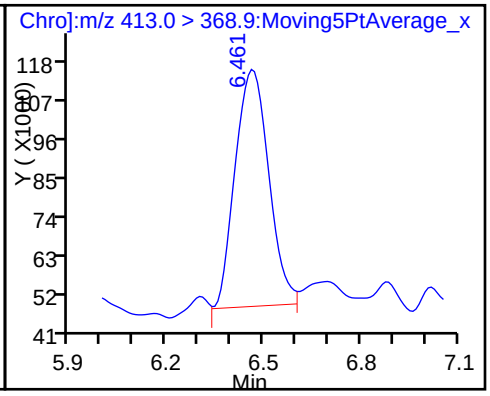
$ 14 13C8 PFOA



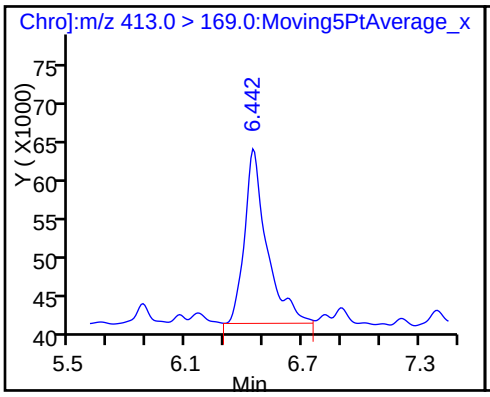
* 15 13C4 PFOA (IS)



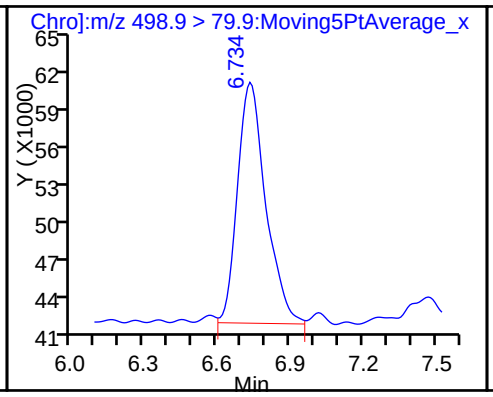
16 Perfluorooctanoic acid



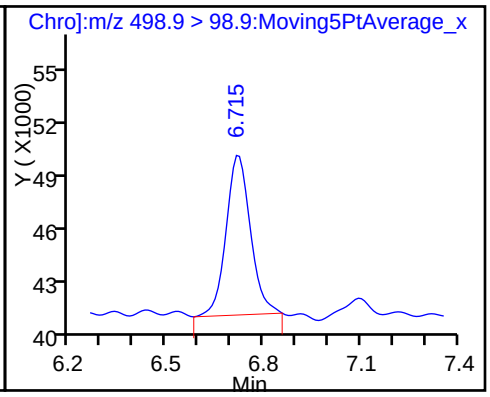
16 Perfluorooctanoic acid



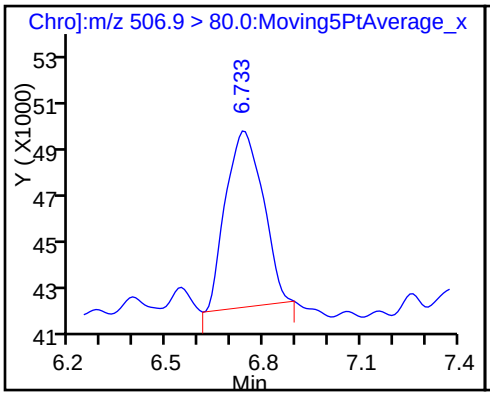
19 Perfluorooctane sulfonic acid



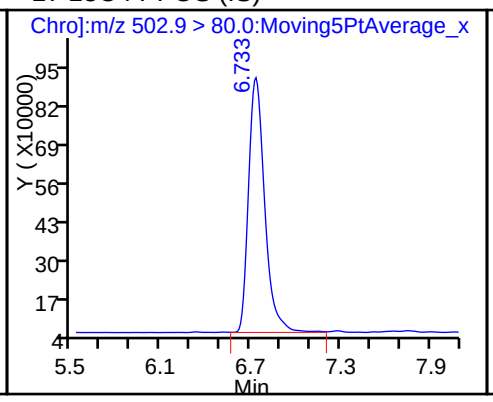
19 Perfluorooctane sulfonic acid



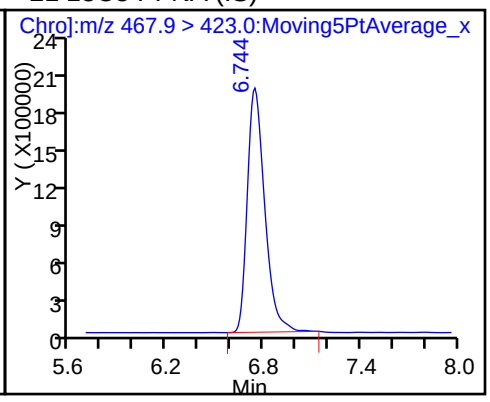
$ 18 13C8 PFOS



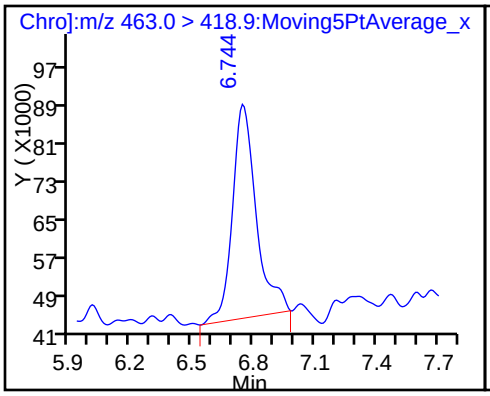
* 17 13C4 PFOS (IS)



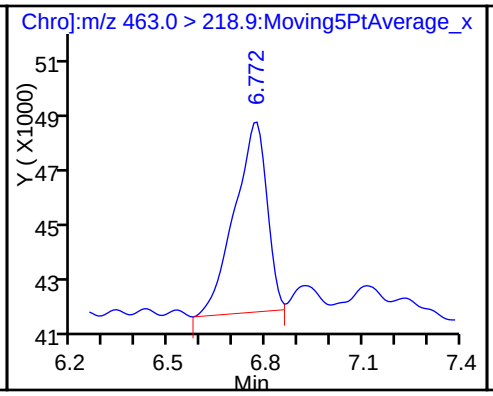
* 21 13C5 PFNA (IS)



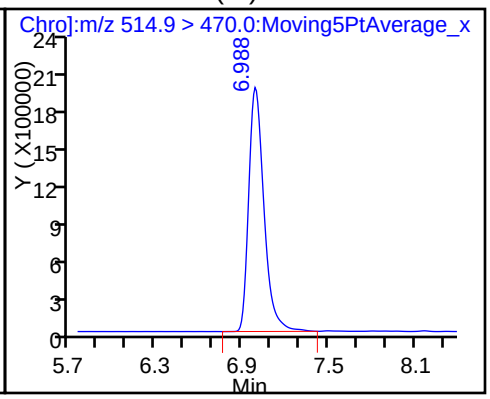
20 Perfluorononanoic acid



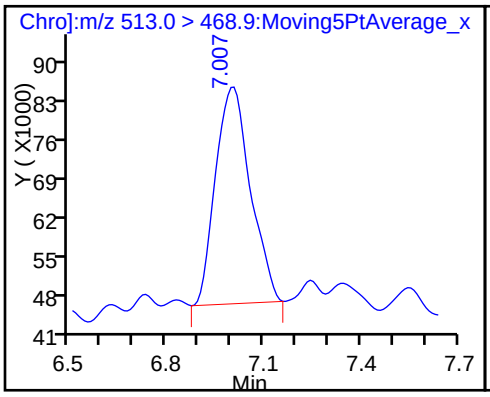
20 Perfluorononanoic acid



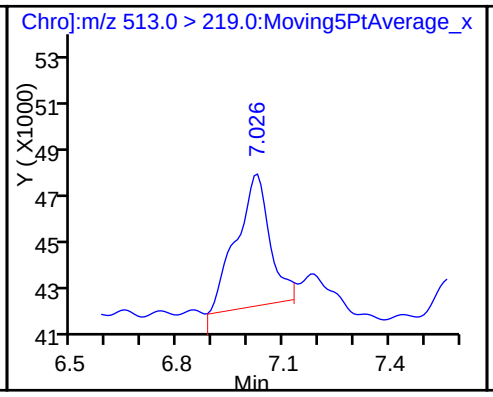
* 22 13C2 PFDA (IS)



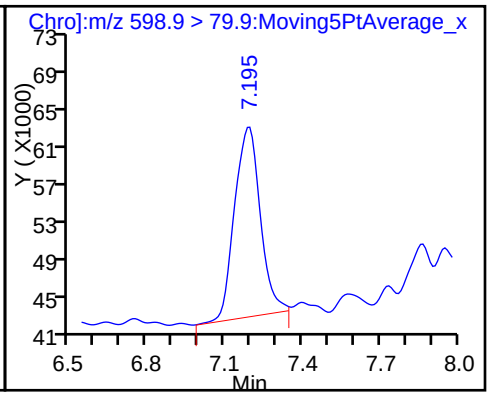
23 Perfluorodecanoic acid



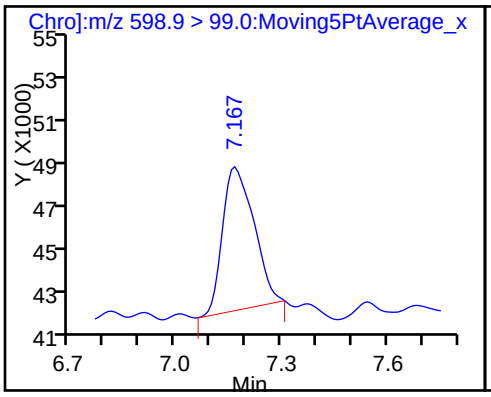
23 Perfluorodecanoic acid



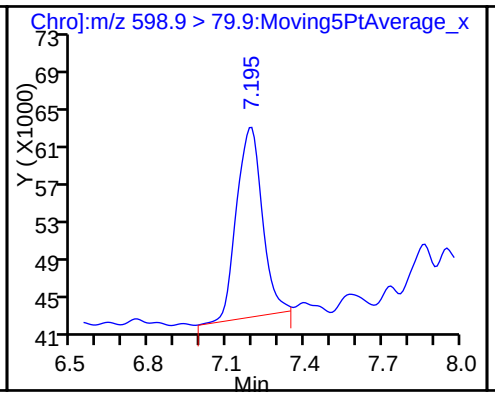
24 Perfluorodecane Sulfonic acid



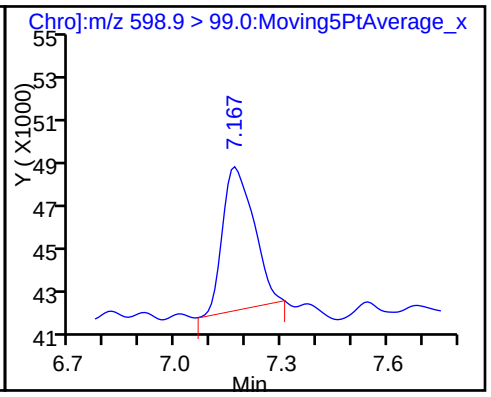
24 Perfluorodecane Sulfonic acid



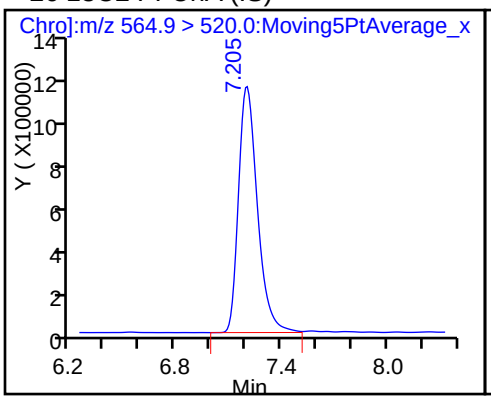
25 Perfluorodecane Sulfonate



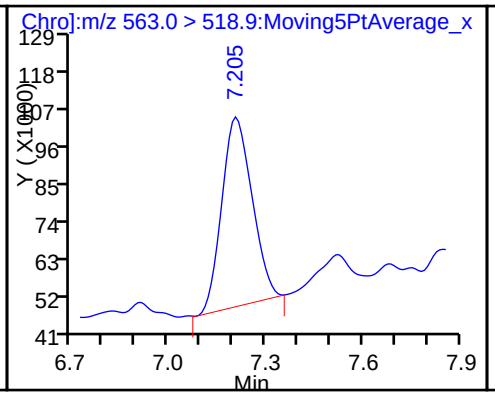
25 Perfluorodecane Sulfonate



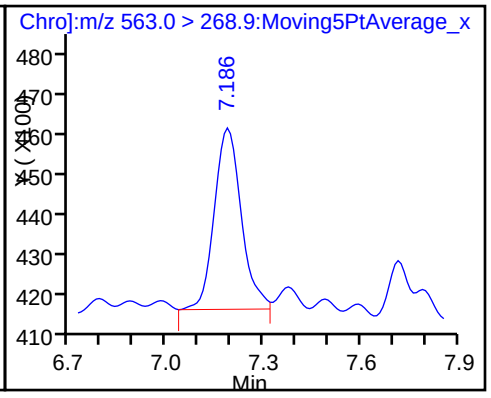
* 26 13C2 PFUnA (IS)



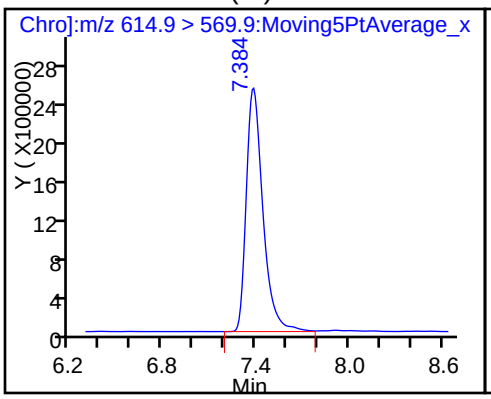
27 Perfluoroundecanoic acid



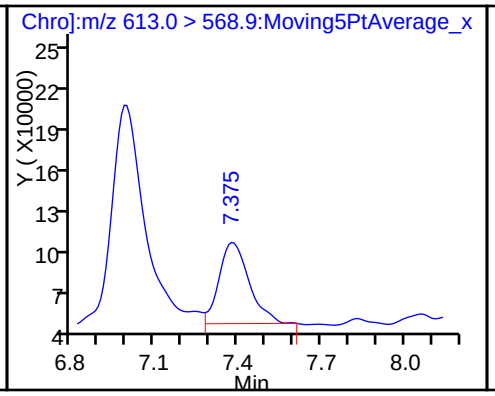
27 Perfluoroundecanoic acid



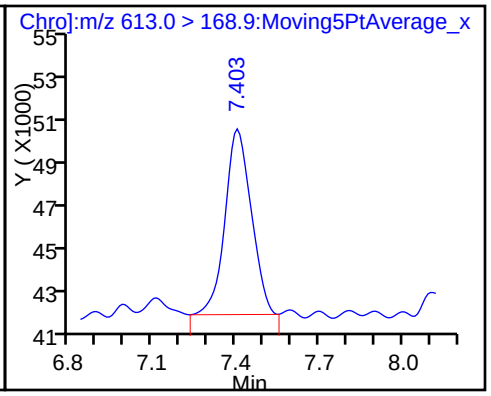
* 28 13C2 PFDoA (IS)



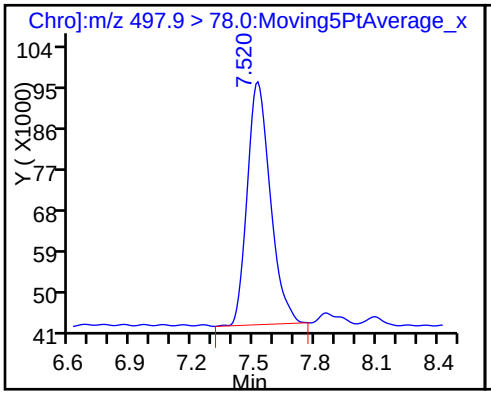
29 Perfluorododecanoic acid



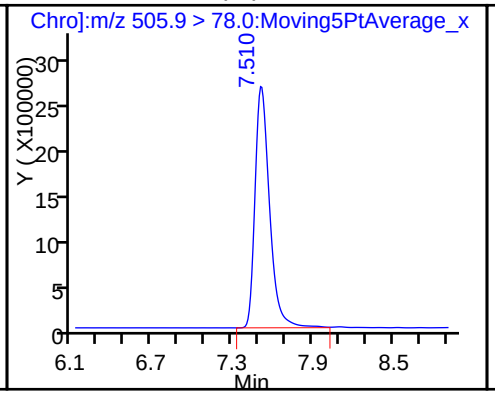
29 Perfluorododecanoic acid



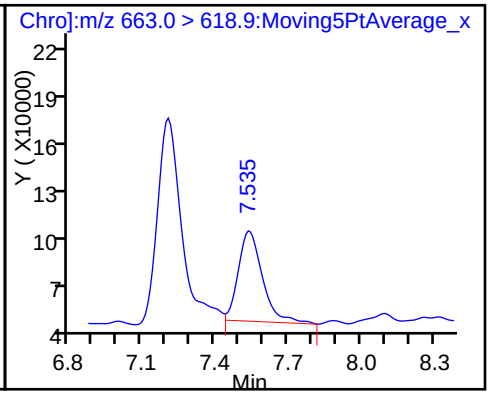
32 Perfluorooctane Sulfonamide



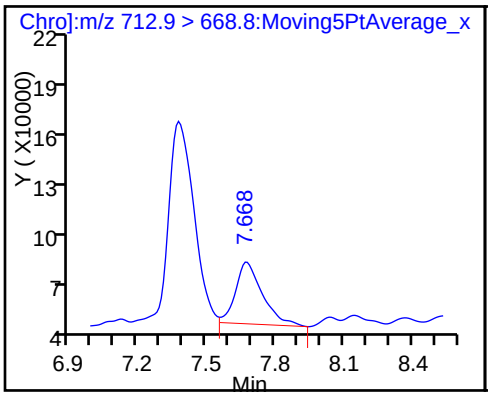
* 31 13C8 FOSA (IS)



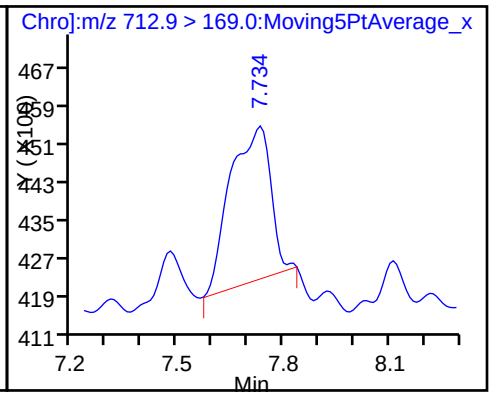
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

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Lims ID: STD0005
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 07-Sep-2016 13:18:40 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0005, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:17 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:10:35

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.982	4.067	-0.085		16923481	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.973	4.068	-0.095	0.998	893664	0.4435			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.071	5.138	-0.067	0.895	676048	0.4773			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.184	5.260	-0.076	0.847	348522	0.4844			
298.9 > 98.9	5.194	5.260	-0.066	0.849	106646		3.27(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.184	5.260	-0.076	0.847	348522	0.4844			
298.9 > 98.9	5.194	5.260	-0.066	0.849	106646		3.27(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.667	5.743	-0.076		11203618	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.743	-0.066	1.002	601595	0.5076			
313.0 > 118.6	5.648	5.743	-0.095	0.997	7618		78.97(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.177	-0.057		1641806	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.093	6.178	-0.085	0.946	803066	0.5008			
363.0 > 168.9	6.102	6.178	-0.076	0.947	168801		4.76(3.35-6.23)		
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.130	6.187	-0.057	1.002	337426	0.4426			
398.9 > 98.9	6.092	6.187	-0.095	0.995	169870		1.99(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.130	6.187	-0.057	1.002	337426	0.4426			
398.9 > 98.9	6.092	6.187	-0.095	0.995	169870		1.99(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.526	-0.085	0.958	323395	0.4621			
449.0 > 98.9	6.441	6.526	-0.085	0.958	91280		3.54(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.526	-0.085	0.958	323395	0.4621			
449.0 > 98.9	6.441	6.526	-0.085	0.958	91280		3.54(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.451	6.527	-0.076	1.001	832102	0.5364			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.527	-0.085		17917678	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.452	6.527	-0.075	1.002	985102	0.4863			
413.0 > 169.0	6.452	6.527	-0.075	1.002	290903		3.39(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.809	-0.076	1.001	111772	0.2444			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.809	-0.085		6263255	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.705	6.809	-0.104	0.997	348239	0.4858			R
498.9 > 98.9	6.724	6.809	-0.085	1.000	111800		3.11(1.31-2.43)		
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.820	-0.076	1.001	661216	0.4163			
463.0 > 218.9	6.715	6.820	-0.105	0.997	64365		10.27(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.829	-0.095		13985008	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	7.073	-0.085		13755433	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.998	7.073	-0.075	1.001	767561	0.5565			
513.0 > 219.0	6.988	7.073	-0.085	1.000	46987		16.34(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.167	7.262	-0.095	1.066	408226	0.5681			
598.9 > 99.0	7.176	7.262	-0.086	1.067	108918		3.75(2.84-2.84)		
25 Perfluorodecane Sulfonate									R
598.9 > 79.9	7.167	7.262	-0.095	1.066	408226	0.5681			R
598.9 > 99.0	7.176	7.262	-0.086	1.067	108918		3.75(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.196	7.290	-0.094		7970840	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.196	7.291	-0.095	1.000	616518	0.4590			R
563.0 > 268.9	7.196	7.291	-0.095	1.000	39810		15.49(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.375	7.469	-0.094		17809934	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.384	7.479	-0.095	1.001	984048	0.5120			
613.0 > 168.9	7.375	7.479	-0.104	1.000	106825		9.21(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.519	-0.009		18880381	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.520	-0.009	1.000	1033730	0.5226			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.535	7.630	-0.095	1.022	1057049	0.5598			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.668	7.762	-0.094	1.040	721158	0.4977			
712.9 > 169.0	7.668	7.762	-0.094	1.040	129829		5.55(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	25.00	Units: uL

Report Date: 08-Sep-2016 09:39:18 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07007.d

Injection Date: 07-Sep-2016 13:18:40 Instrument ID: LC_LCMS5

Lims ID: STD0005

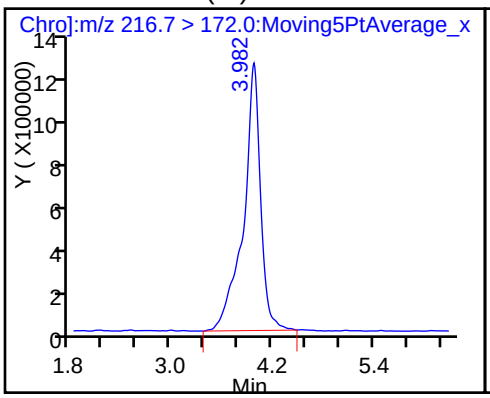
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4

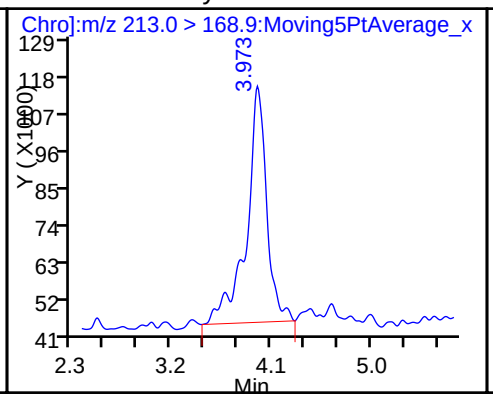
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

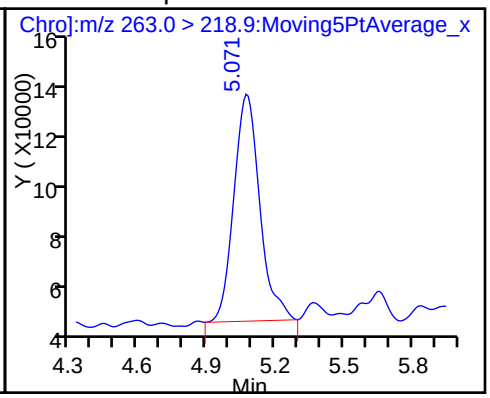
* 1 13C4 PFBA (IS)



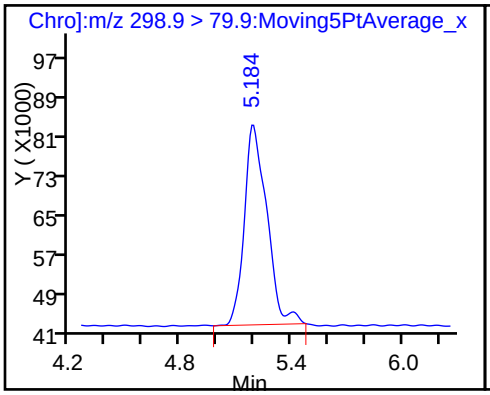
2 Perfluorobutyric acid



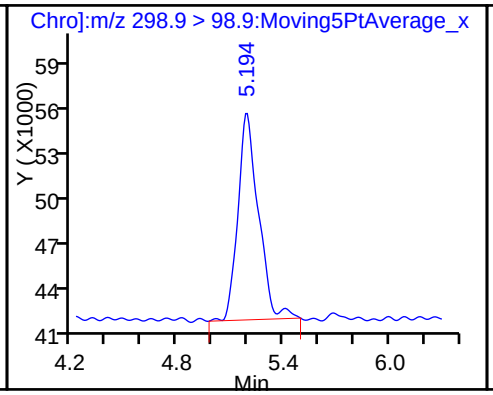
3 Perfluoropentanoic acid



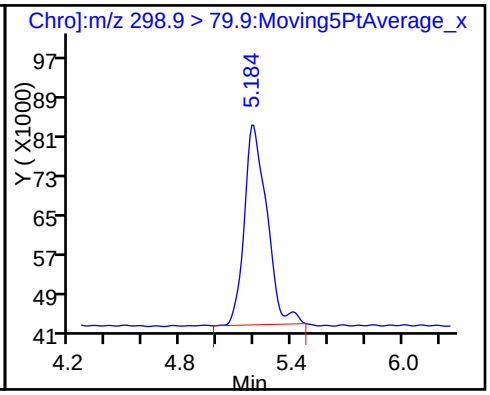
4 Perfluorobutane Sulfonate



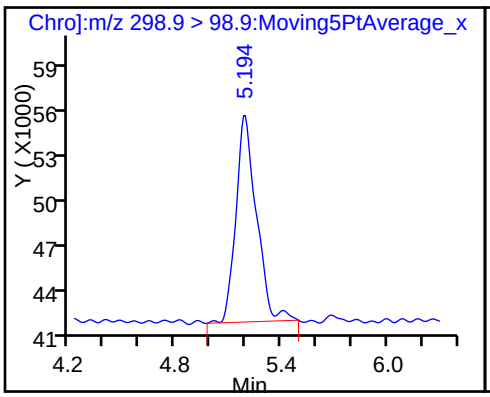
4 Perfluorobutane Sulfonate



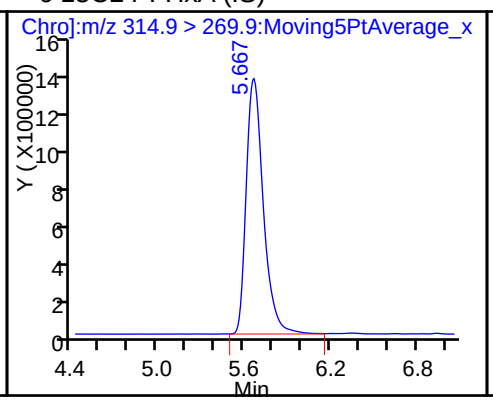
5 Perfluorobutanesulfonic acid



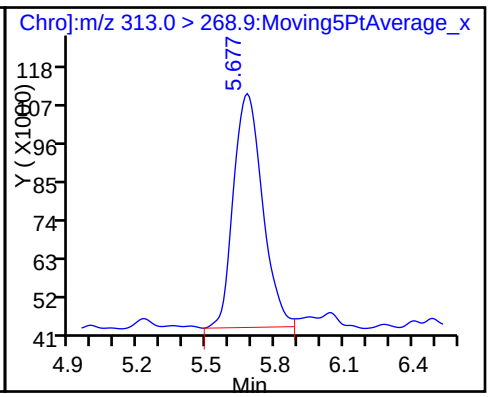
5 Perfluorobutanesulfonic acid



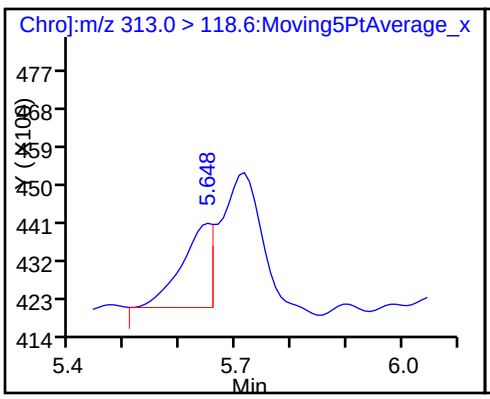
* 6 13C2 PFHxA (IS)



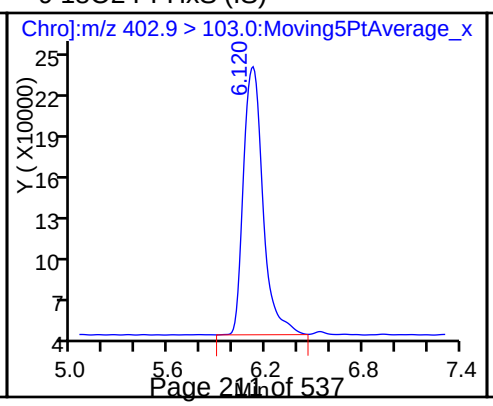
7 Perfluorohexanoic acid



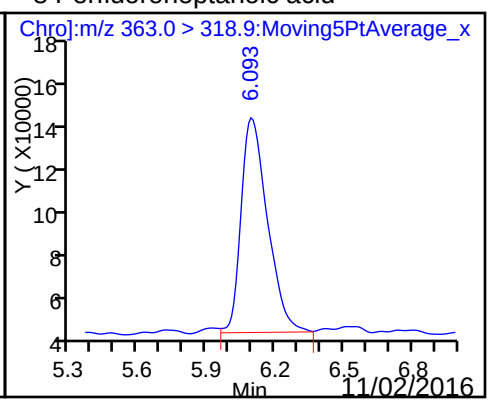
7 Perfluorohexanoic acid



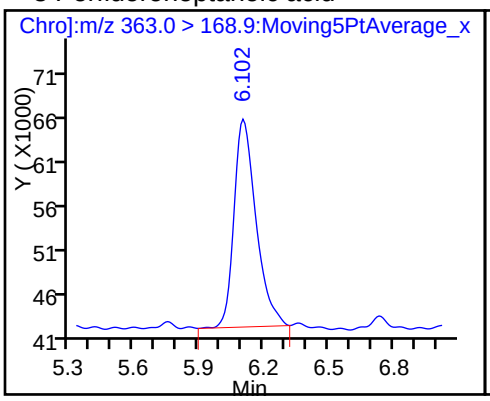
* 9 18O2 PFHxS (IS)



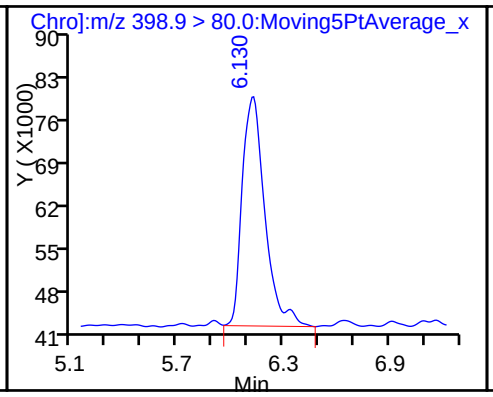
8 Perfluoroheptanoic acid



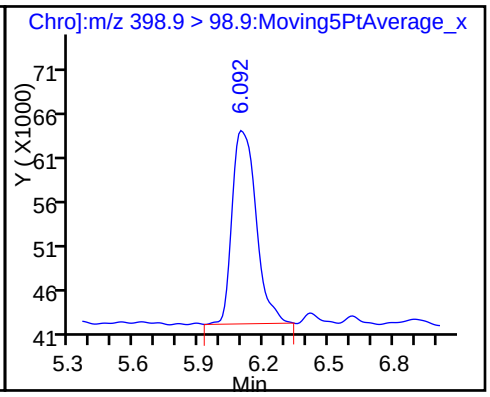
8 Perfluoroheptanoic acid



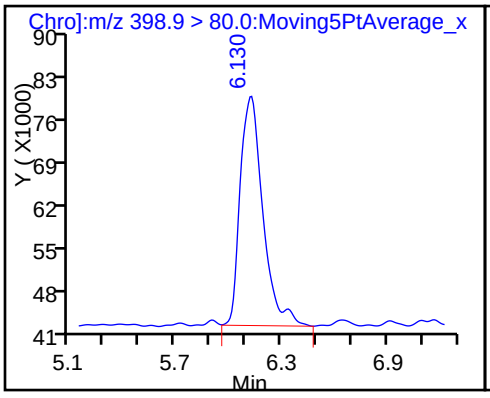
10 Perfluorohexane Sulfonate



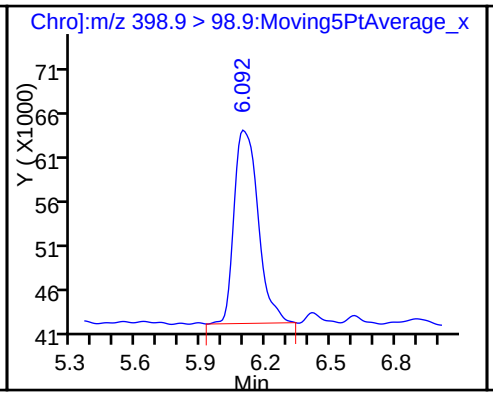
10 Perfluorohexane Sulfonate



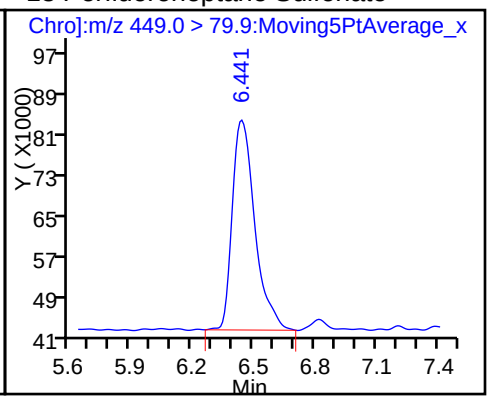
11 Perfluorohexanesulfonic acid



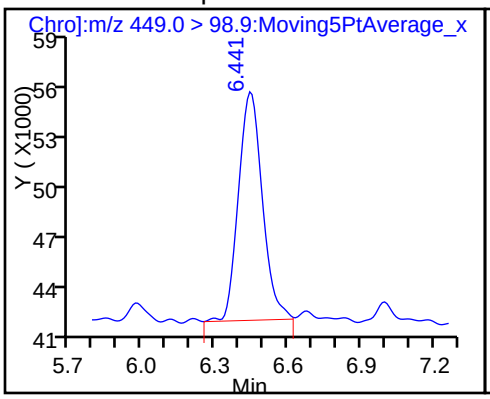
11 Perfluorohexanesulfonic acid



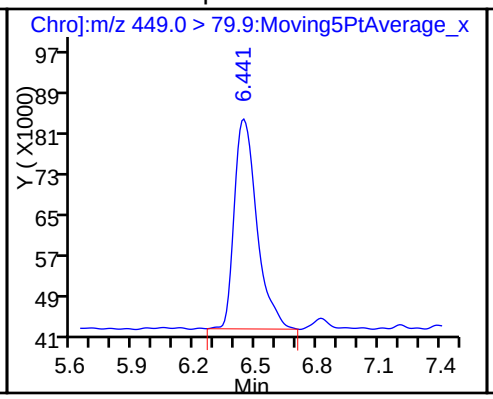
13 Perfluoroheptane Sulfonate



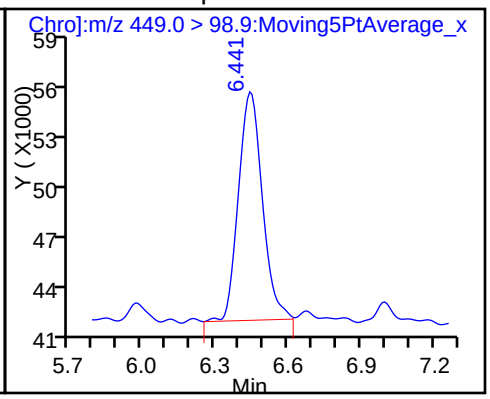
13 Perfluoroheptane Sulfonate



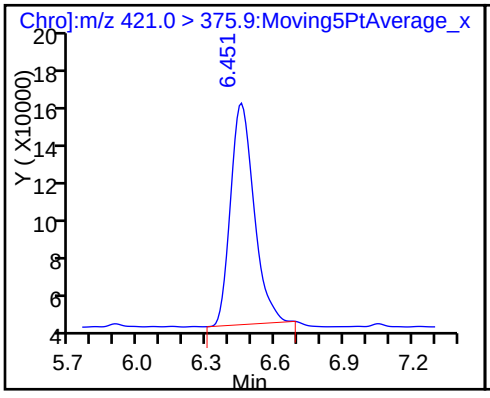
12 Perfluoroheptanesulfonic Acid



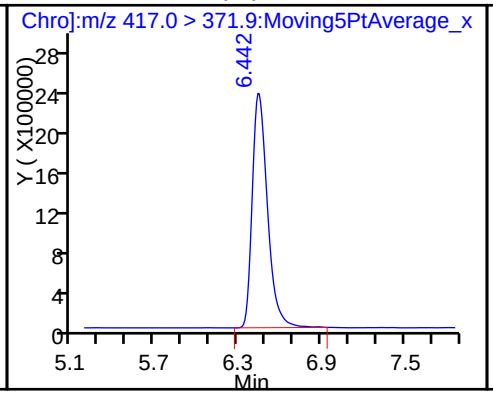
12 Perfluoroheptanesulfonic Acid



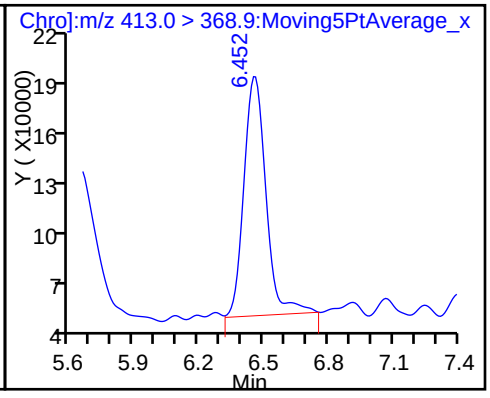
$ 14 13C8 PFOA



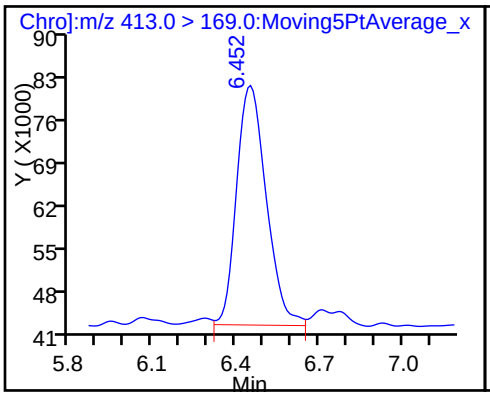
* 15 13C4 PFOA (IS)



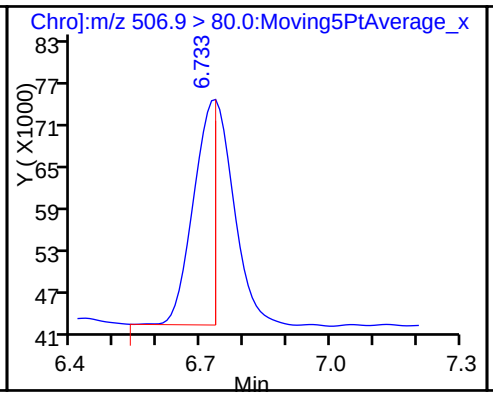
16 Perfluorooctanoic acid



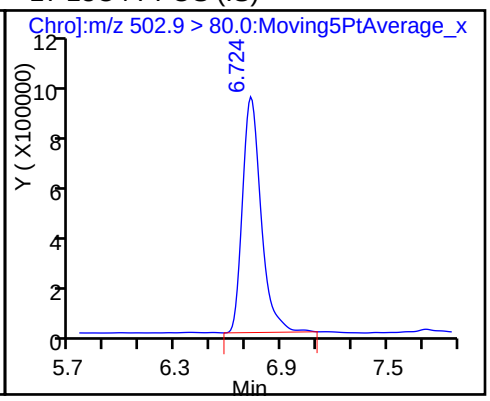
16 Perfluorooctanoic acid



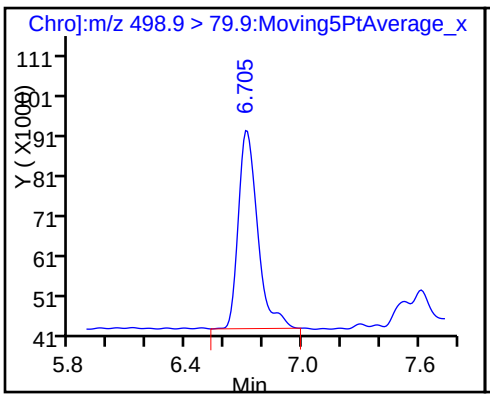
$ 18 13C8 PFOS



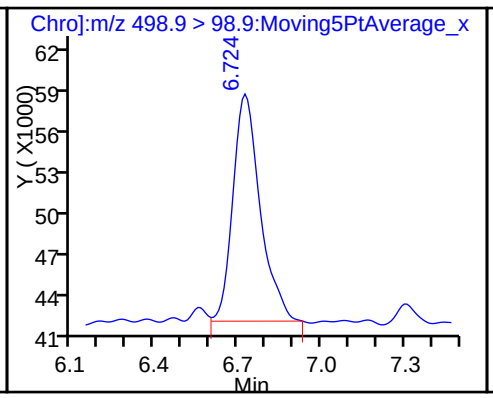
* 17 13C4 PFOS (IS)



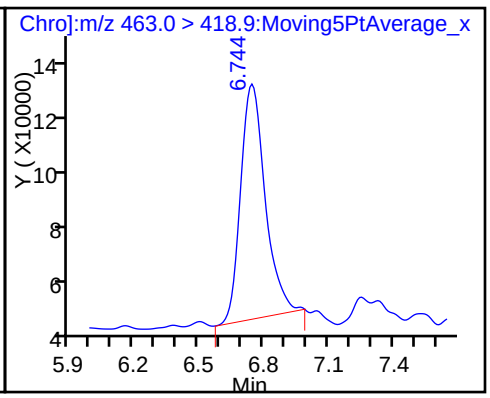
19 Perfluorooctane sulfonic acid



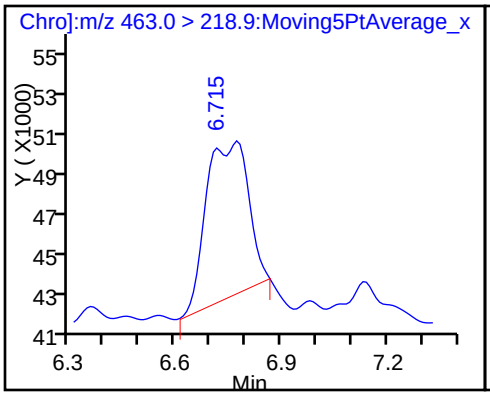
19 Perfluorooctane sulfonic acid



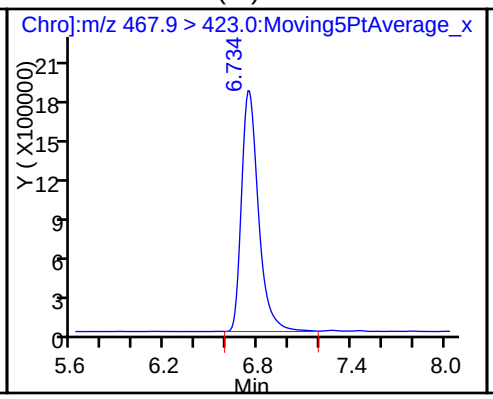
20 Perfluorononanoic acid



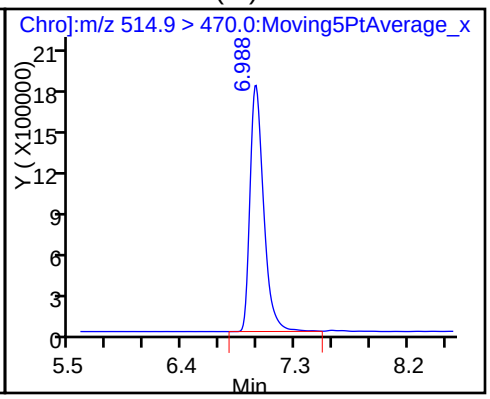
20 Perfluorononanoic acid



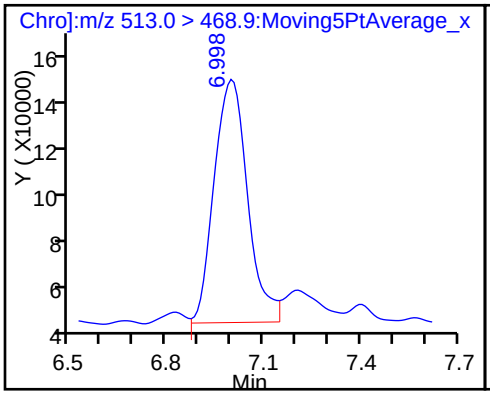
* 21 13C5 PFNA (IS)



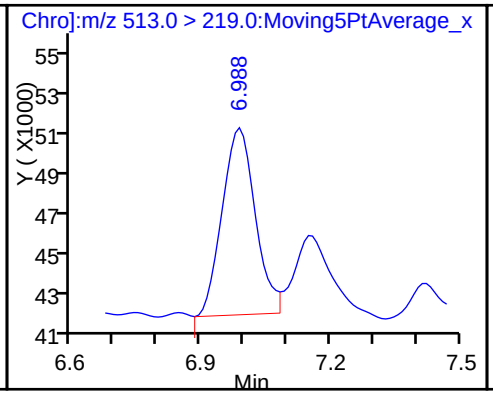
* 22 13C2 PFDA (IS)



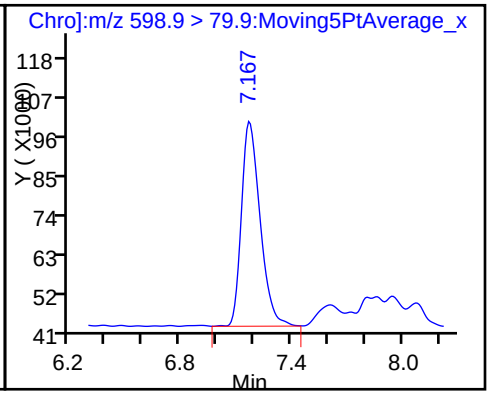
23 Perfluorodecanoic acid



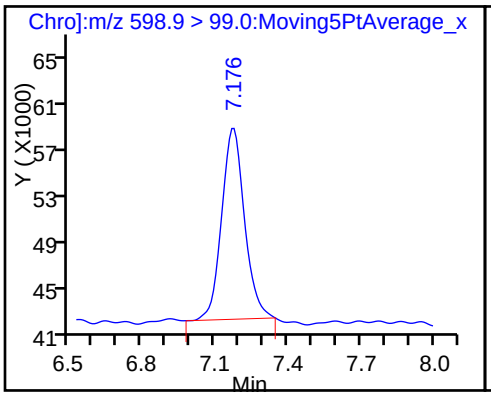
23 Perfluorodecanoic acid



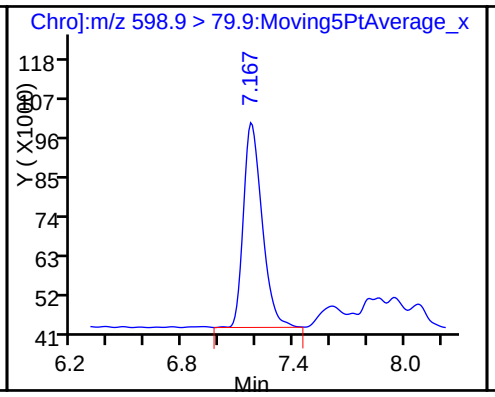
24 Perfluorodecane Sulfonic acid



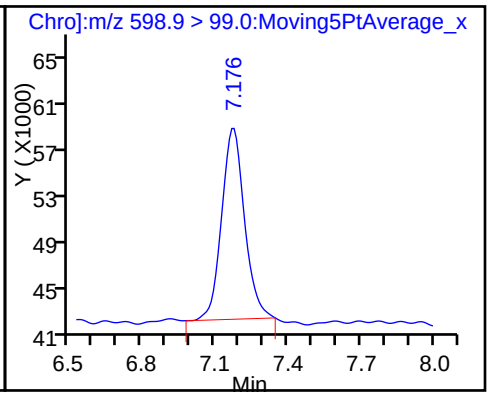
24 Perfluorodecane Sulfonic acid



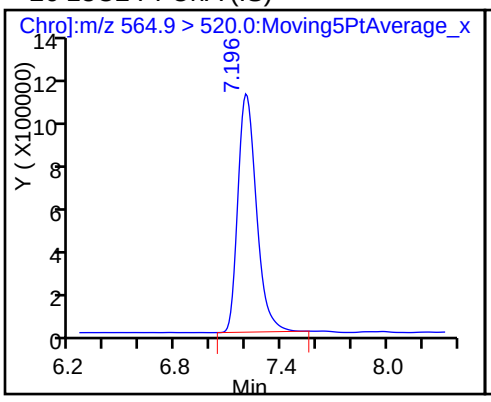
25 Perfluorodecane Sulfonate



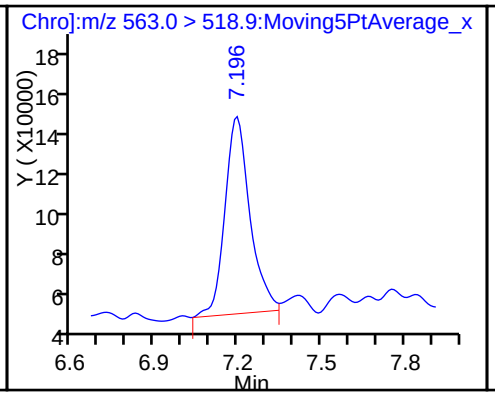
25 Perfluorodecane Sulfonate



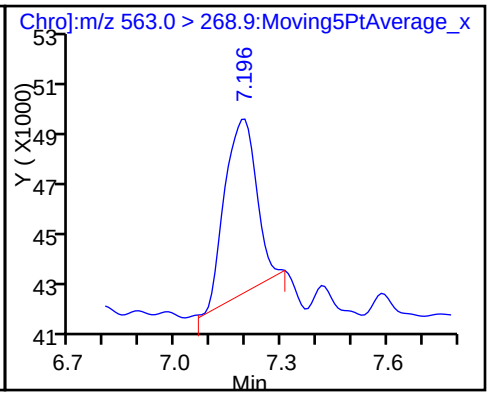
* 26 13C2 PFUnA (IS)



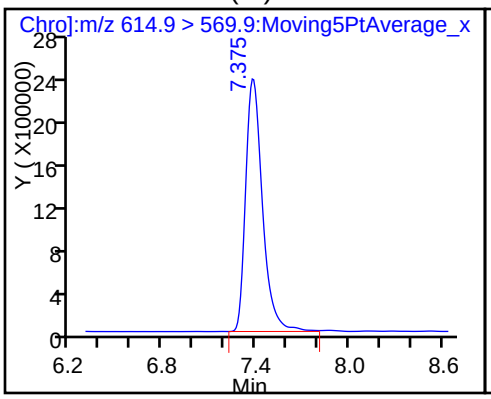
27 Perfluoroundecanoic acid



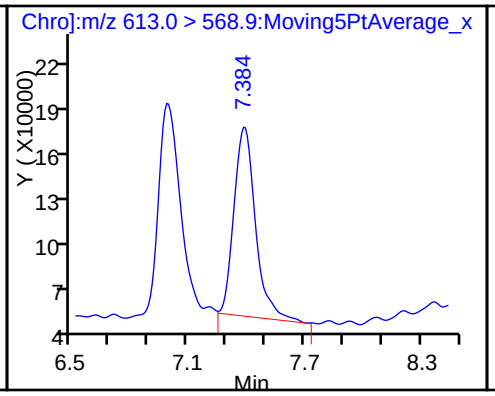
27 Perfluoroundecanoic acid



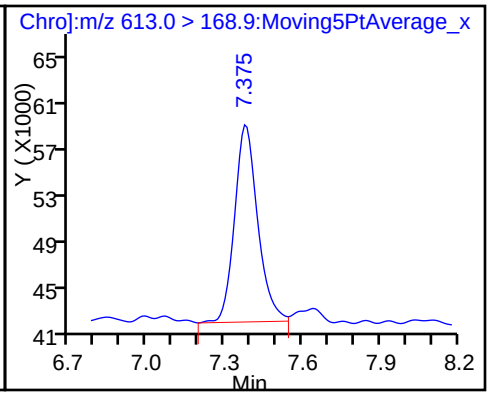
* 28 13C2 PFDoA (IS)



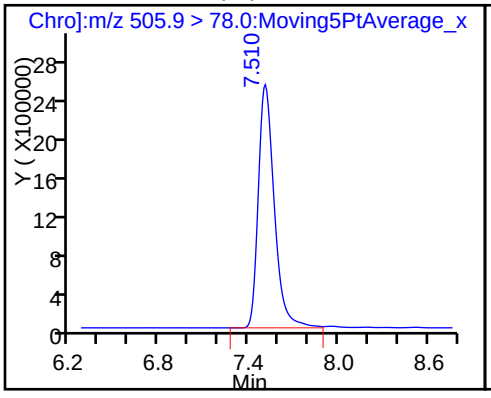
29 Perfluorododecanoic acid



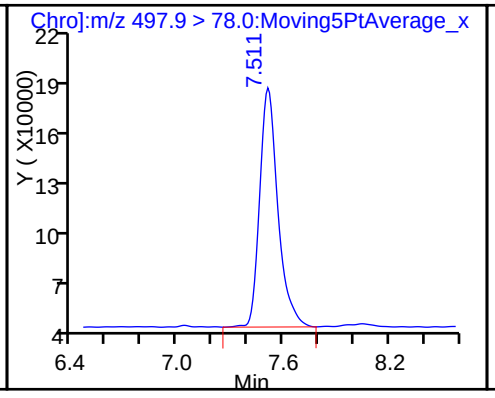
29 Perfluorododecanoic acid



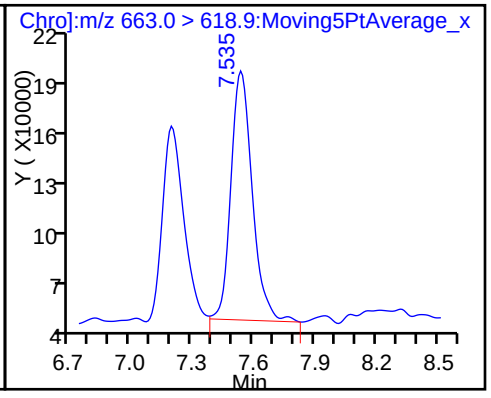
* 31 13C8 FOSA (IS)



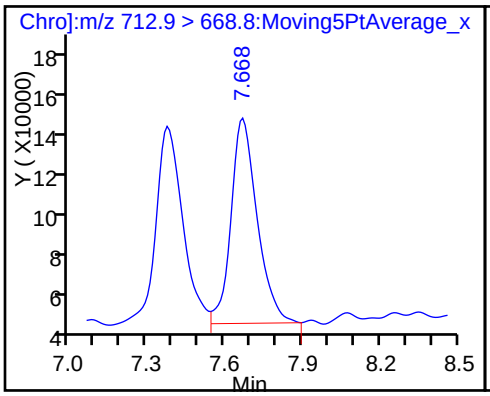
32 Perfluorooctane Sulfonamide



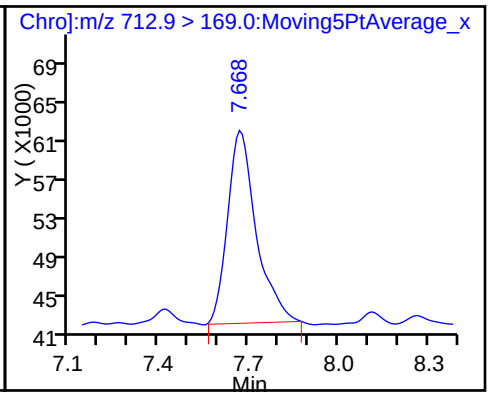
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07008.d
Lims ID: STD0010
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 07-Sep-2016 13:30:59 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0010, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:20 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:10:47

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.973	4.067	-0.094		10162406	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.973	4.068	-0.095	1.000	1737929	1.67			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.071	5.138	-0.067	0.896	1342235	1.00			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.194	5.260	-0.066	0.850	610357	0.8422			R
298.9 > 98.9	5.213	5.260	-0.047	0.853	153249		3.98(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.194	5.260	-0.066	0.850	610357	0.8422			
298.9 > 98.9	5.213	5.260	-0.047	0.853	153249		3.98(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.657	5.743	-0.086		11211542	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.648	5.743	-0.095	0.998	1130265	1.04			
313.0 > 118.6	5.667	5.743	-0.076	1.002	9693		116.61(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.177	-0.066		1668113	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.093	6.178	-0.085	0.944	1560380	1.04			
363.0 > 168.9	6.093	6.178	-0.085	0.944	374599		4.17(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.187	-0.076	1.000	669924	0.9494			R
398.9 > 98.9	6.121	6.187	-0.066	1.002	207506		3.23(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.187	-0.076	1.000	669924	0.9494			
398.9 > 98.9	6.121	6.187	-0.066	1.002	207506		3.23(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.526	-0.085	0.958	643613	0.9258			
449.0 > 98.9	6.422	6.526	-0.104	0.955	162826		3.95(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.526	-0.085	0.958	643613	0.9258			
449.0 > 98.9	6.422	6.526	-0.104	0.955	162826		3.95(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.527	-0.085	0.998	1603293	1.08			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.527	-0.076		17802155	10.0			
16 Perfluorooctanoic acid									R
413.0 > 368.9	6.442	6.527	-0.085	0.999	1988649	1.06			R
413.0 > 169.0	6.452	6.527	-0.075	1.000	737811		2.70(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.704	6.809	-0.105	0.997	410185	1.15			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.809	-0.085		6346166	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.724	6.809	-0.085	1.000	644873	0.9130			
498.9 > 98.9	6.724	6.809	-0.085	1.000	316463		2.04(1.31-2.43)		
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.820	-0.086	0.999	1638516	1.09			
463.0 > 218.9	6.744	6.820	-0.076	1.000	204180		8.02(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.829	-0.085		14014651	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	7.073	-0.085		13822037	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.988	7.073	-0.085	1.000	1367978	1.00			
513.0 > 219.0	6.988	7.073	-0.085	1.000	96995		14.10(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.176	7.262	-0.086	1.067	618725	0.8527			
598.9 > 99.0	7.186	7.262	-0.076	1.069	204042		3.03(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.176	7.262	-0.086	1.067	618725	0.8527			
598.9 > 99.0	7.186	7.262	-0.076	1.069	204042		3.03(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.196	7.290	-0.094		7722923	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.205	7.291	-0.086	1.001	1098311	0.9549			R
563.0 > 268.9	7.205	7.291	-0.086	1.001	150130		7.32(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.469	-0.085		17801803	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.479	-0.085	1.001	1824629	0.99			
613.0 > 168.9	7.384	7.479	-0.095	1.000	250666		7.28(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.519	0.0		18897015	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.520	-0.009	0.999	2153920	1.11			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.630	-0.085	1.022	1807576	0.9692			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.762	-0.085	1.040	1579506	1.10			
712.9 > 169.0	7.677	7.762	-0.085	1.040	224761		7.03(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	50.00	Units: uL

Report Date: 08-Sep-2016 09:39:21 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07008.d

Injection Date: 07-Sep-2016 13:30:59 Instrument ID: LC_LCMS5

Lims ID: STD0010

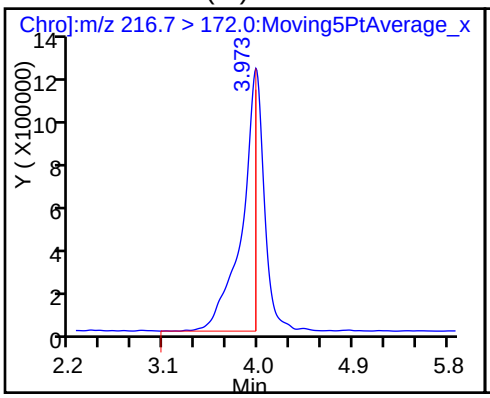
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

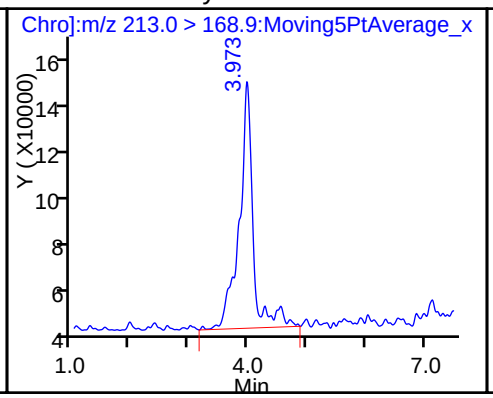
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

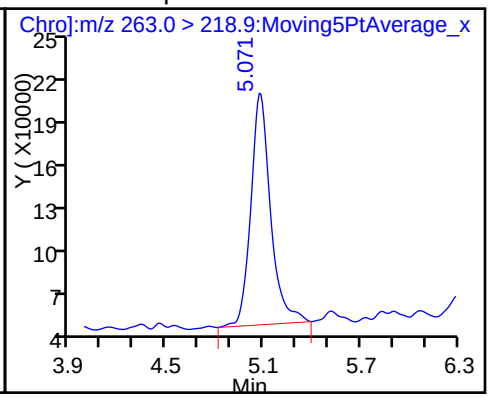
* 1 13C4 PFBA (IS)



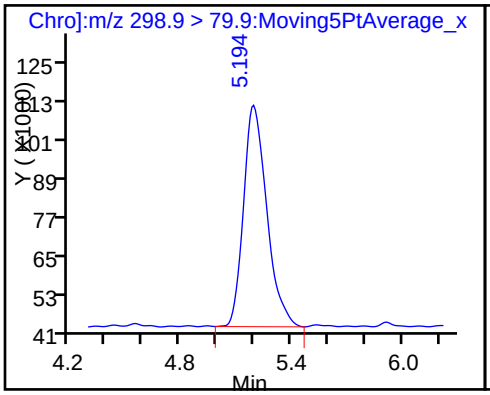
2 Perfluorobutyric acid



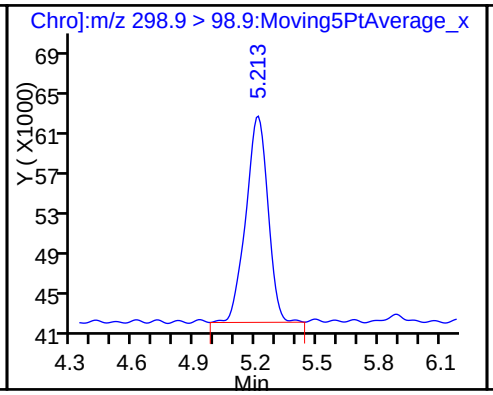
3 Perfluoropentanoic acid



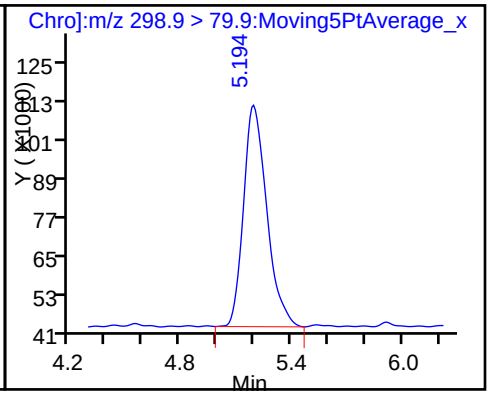
4 Perfluorobutane Sulfonate



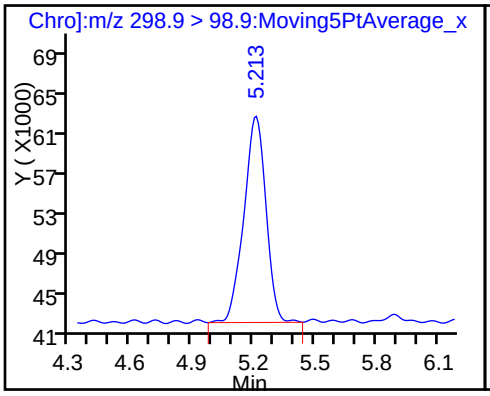
4 Perfluorobutane Sulfonate



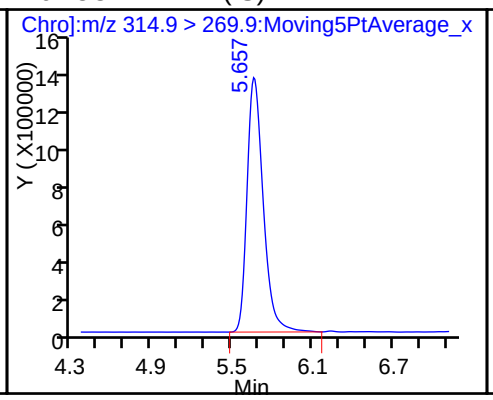
5 Perfluorobutanesulfonic acid



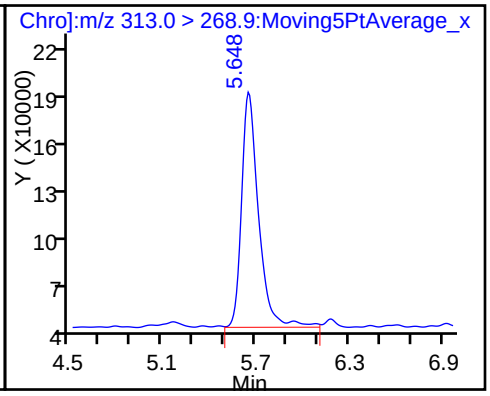
5 Perfluorobutanesulfonic acid



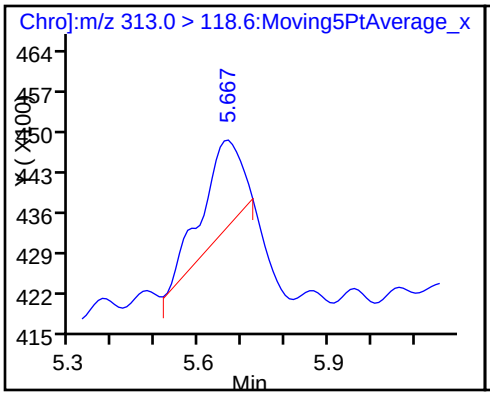
* 6 13C2 PFHxA (IS)



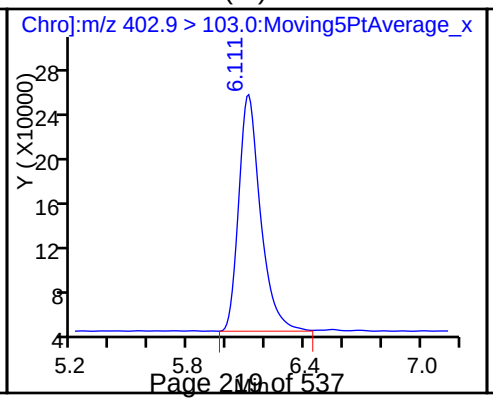
7 Perfluorohexanoic acid



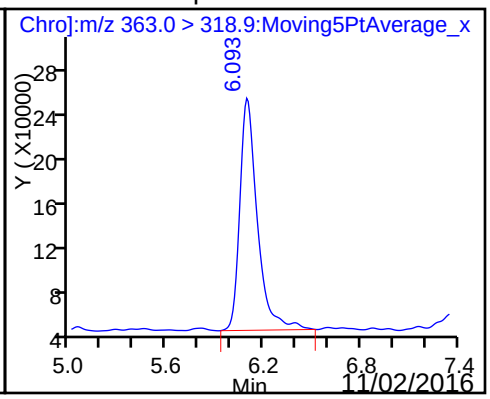
7 Perfluorohexanoic acid



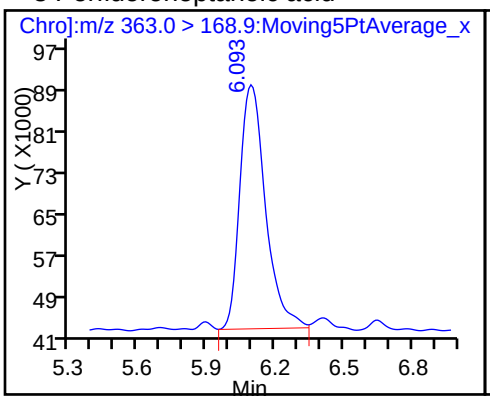
* 9 18O2 PFHxS (IS)



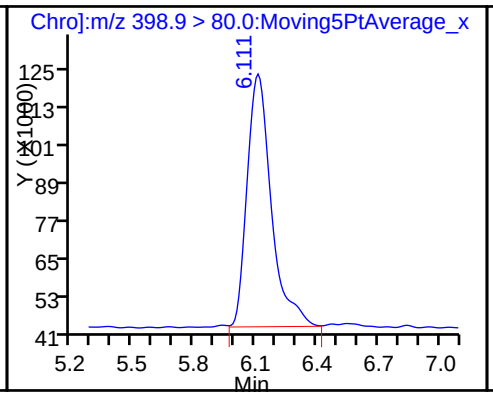
8 Perfluoroheptanoic acid



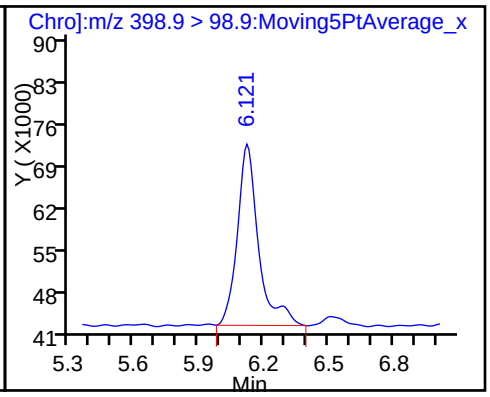
8 Perfluoroheptanoic acid



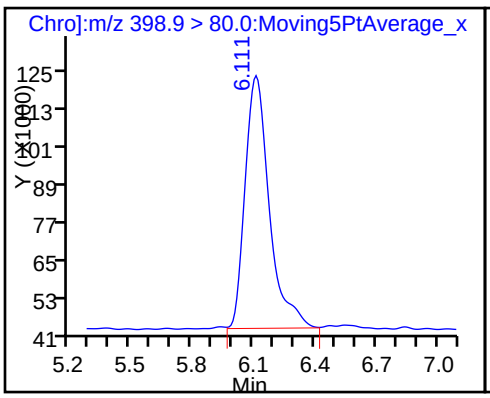
10 Perfluorohexane Sulfonate



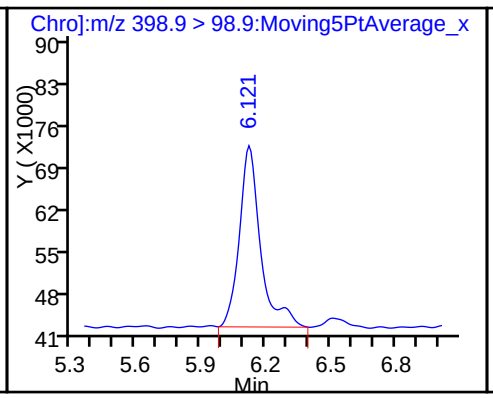
10 Perfluorohexane Sulfonate



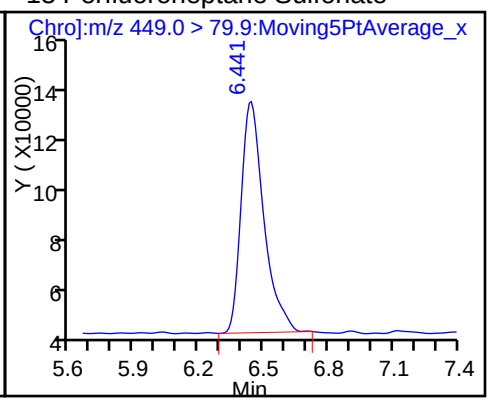
11 Perfluorohexanesulfonic acid



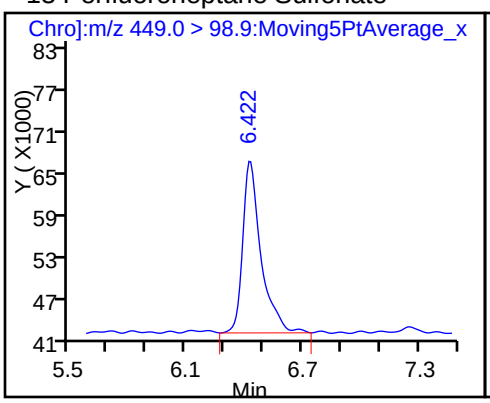
11 Perfluorohexanesulfonic acid



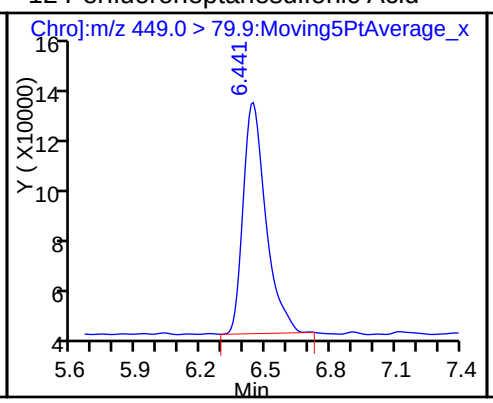
13 Perfluoroheptane Sulfonate



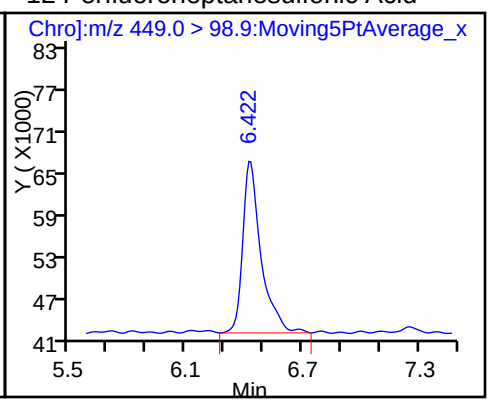
13 Perfluoroheptane Sulfonate



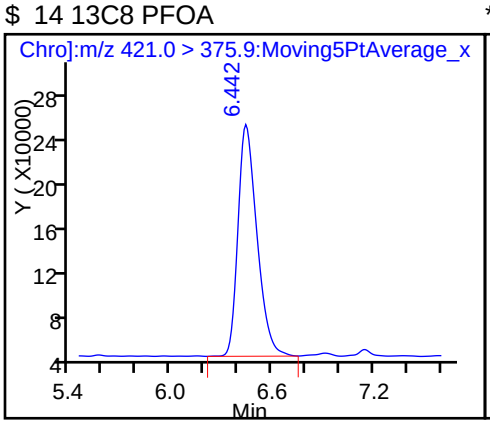
12 Perfluoroheptanesulfonic Acid



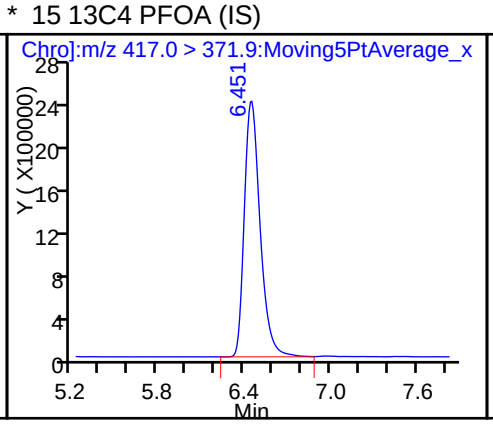
12 Perfluoroheptanesulfonic Acid



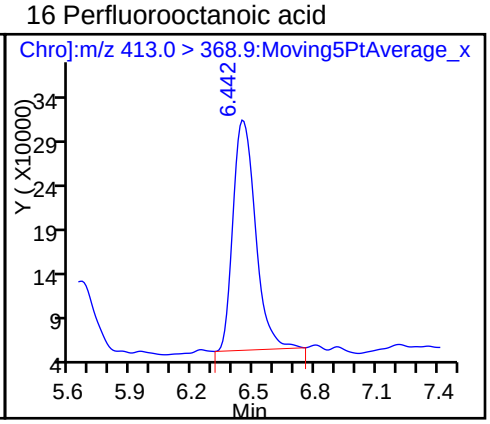
$ 14 13C8 PFOA



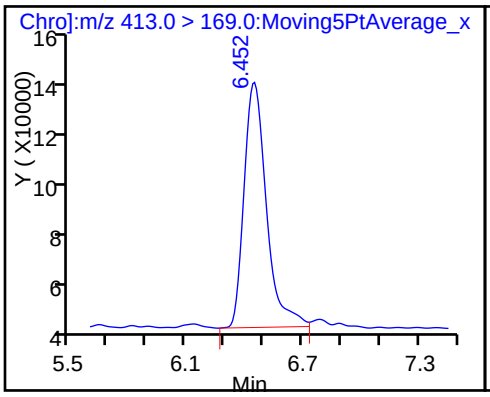
* 15 13C4 PFOA (IS)



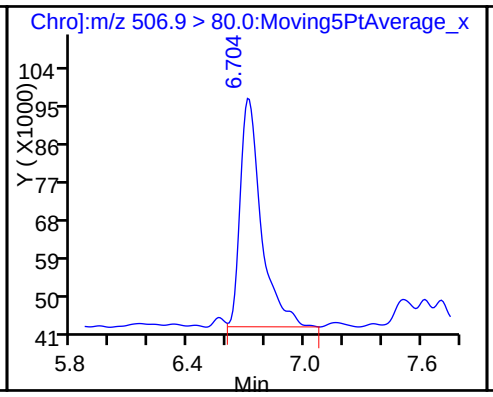
16 Perfluorooctanoic acid



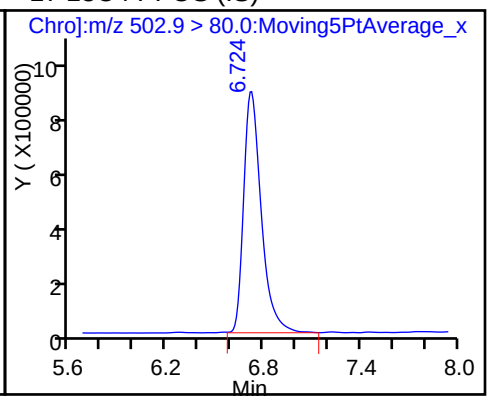
16 Perfluorooctanoic acid



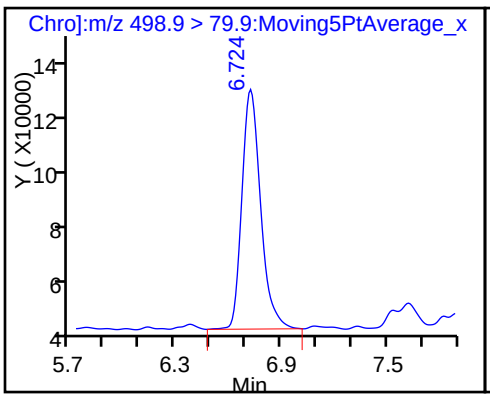
$ 18 13C8 PFOS



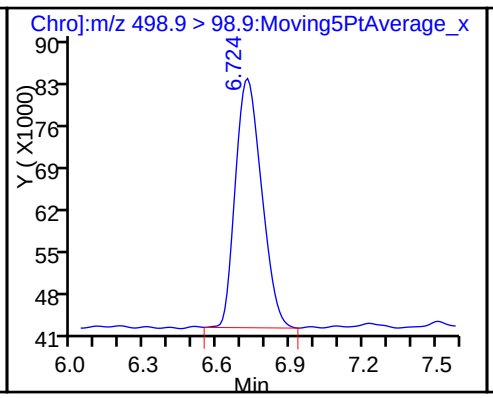
* 17 13C4 PFOS (IS)



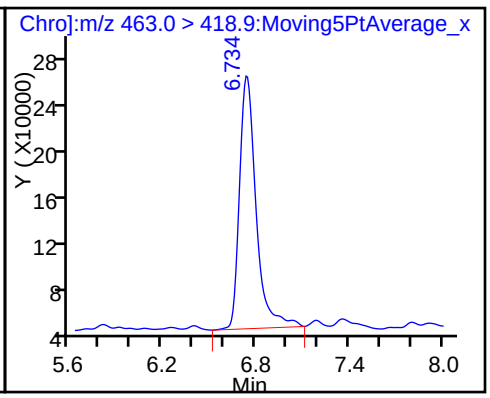
19 Perfluorooctane sulfonic acid



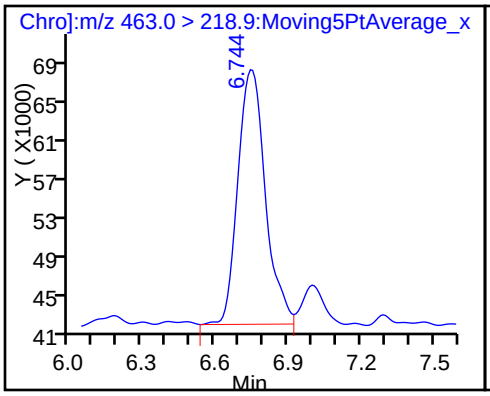
19 Perfluorooctane sulfonic acid



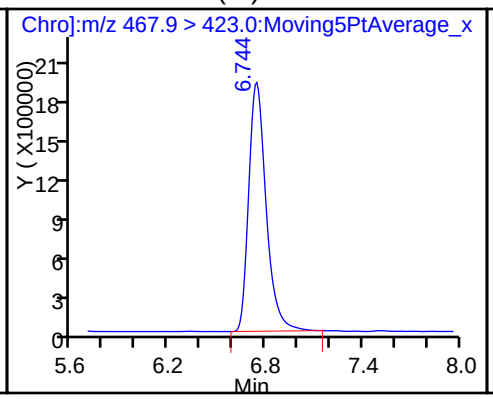
20 Perfluorononanoic acid



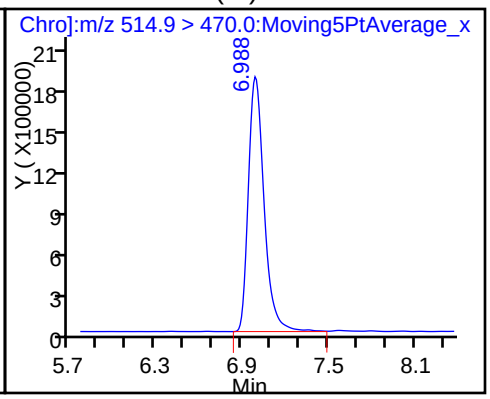
20 Perfluorononanoic acid



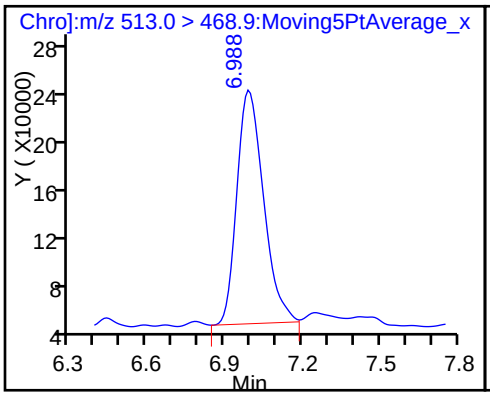
* 21 13C5 PFNA (IS)



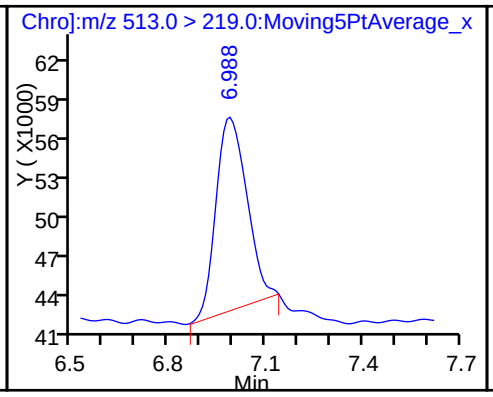
* 22 13C2 PFDA (IS)



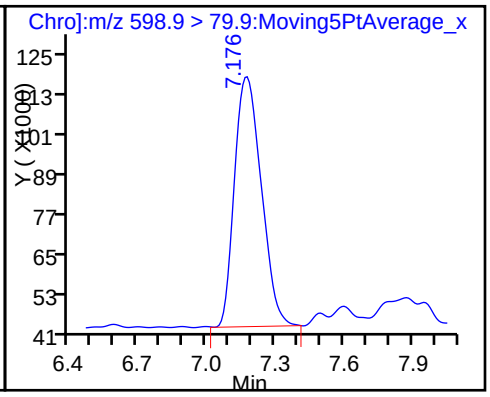
23 Perfluorodecanoic acid



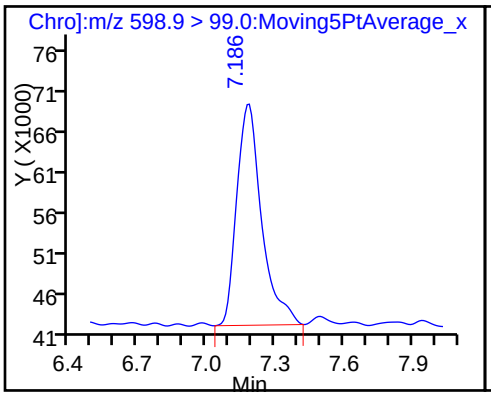
23 Perfluorodecanoic acid



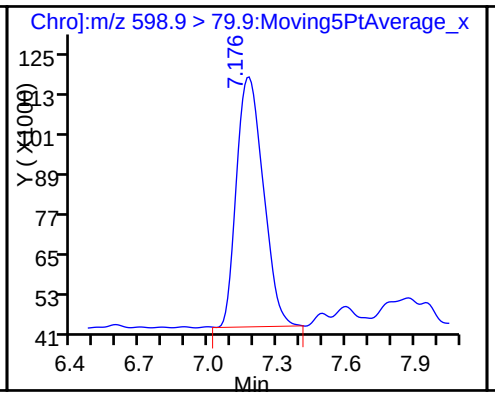
24 Perfluorodecane Sulfonic acid



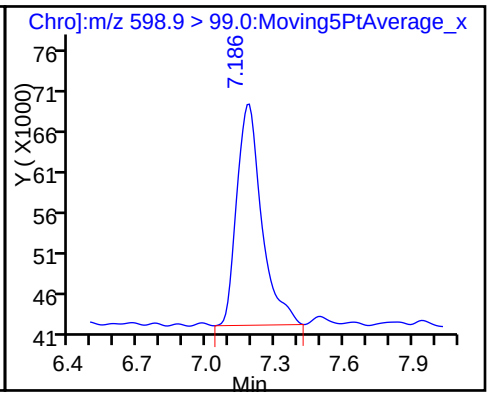
24 Perfluorodecane Sulfonic acid



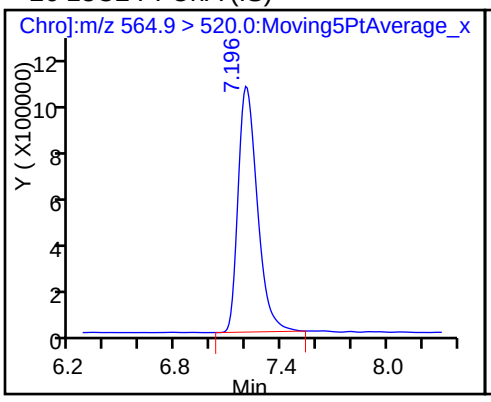
25 Perfluorodecane Sulfonate



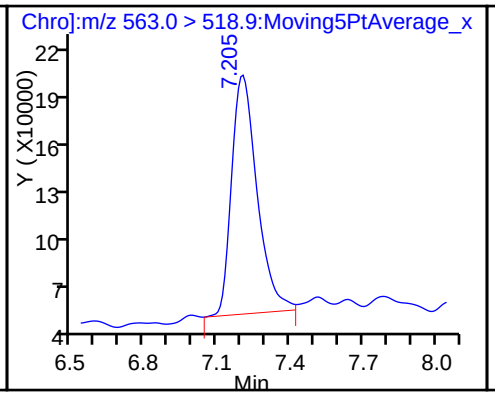
25 Perfluorodecane Sulfonate



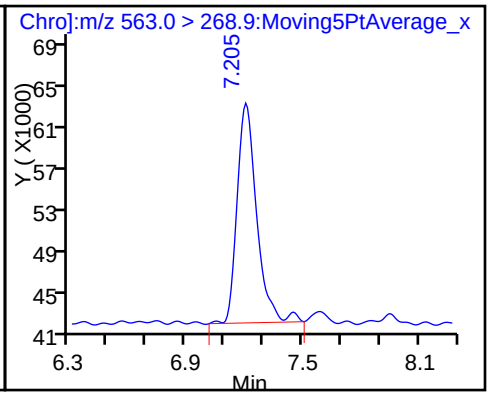
* 26 13C2 PFUnA (IS)



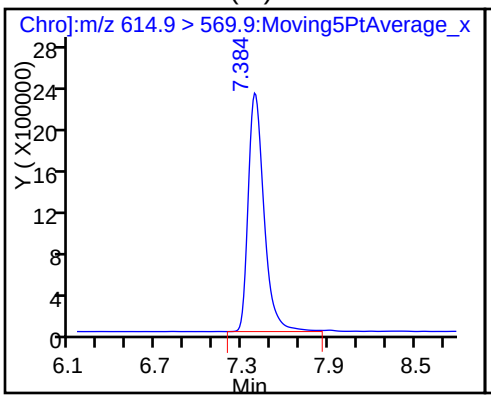
27 Perfluoroundecanoic acid



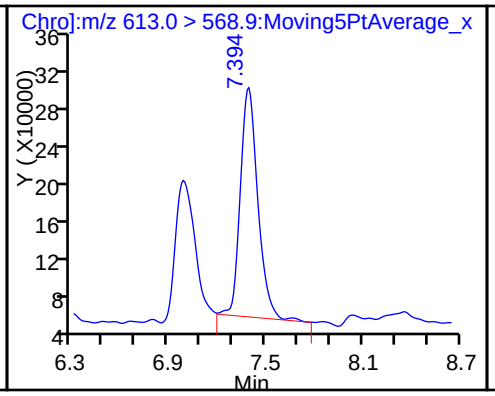
27 Perfluoroundecanoic acid



* 28 13C2 PFDoA (IS)



29 Perfluorododecanoic acid



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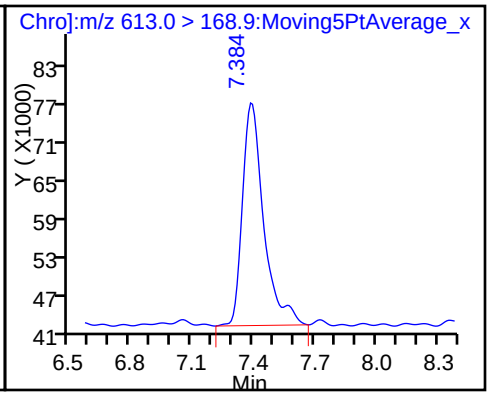
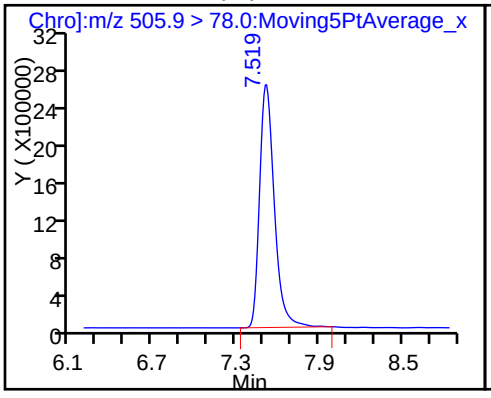
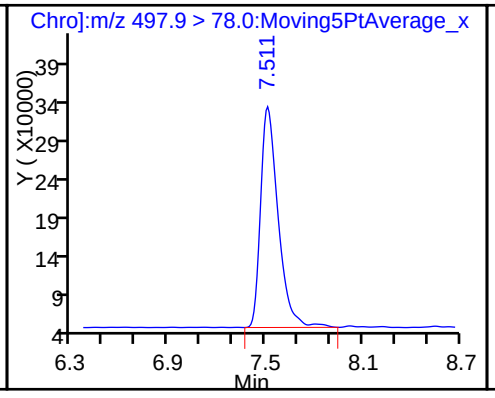


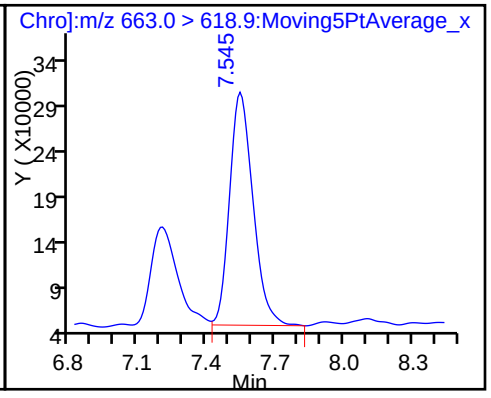
* 31 13C8 FOSA (IS)



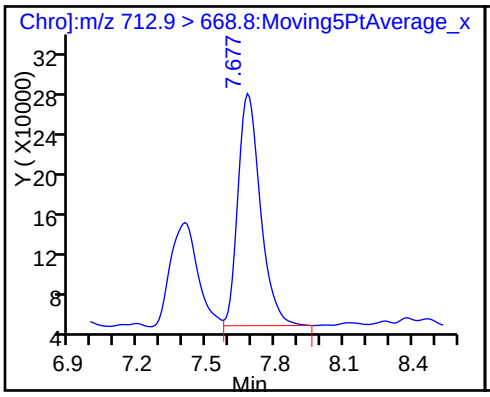
32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



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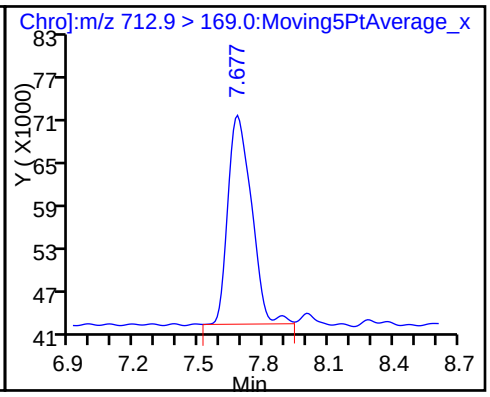


TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07009.d
Lims ID: STD0020
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 07-Sep-2016 13:43:18 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0020, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:24 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:11:27

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.973	3.973	0.0		16809458	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.982	3.982	0.0	1.002	3578176	2.10			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.071	5.071	0.0	0.895	2517033	1.94			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.194	5.194	0.0	0.851	1296922	1.83			
298.9 > 98.9	5.194	5.194	0.0	0.851	401831		3.23(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.194	5.194	0.0	0.851	1296922	1.83			
298.9 > 98.9	5.194	5.194	0.0	0.851	401831		3.23(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.667	5.667	0.0		11170652	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.658	5.658	0.0	0.998	2058442	1.99			
313.0 > 118.6	5.677	5.658	0.019	1.002	86083		23.91(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.102	6.102	0.0		1637355	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.946	3155486	2.07			
363.0 > 168.9	6.093	6.102	-0.009	0.944	802804		3.93(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	1.002	1386079	2.10			R
398.9 > 98.9	6.111	6.111	0.0	1.002	467389		2.97(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	1.002	1386079	2.10			
398.9 > 98.9	6.111	6.111	0.0	1.002	467389		2.97(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.441	0.0	0.958	1451982	2.18			
449.0 > 98.9	6.432	6.441	-0.009	0.957	418565		3.47(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.441	0.0	0.958	1451982	2.18			
449.0 > 98.9	6.432	6.441	-0.009	0.957	418565		3.47(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.442	0.0	0.998	3440830	2.28			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.451	0.0		18486208	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.452	6.452	0.0	1.000	4104854	2.19			
413.0 > 169.0	6.452	6.452	0.0	1.000	1255241		3.27(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	1.001	829518	2.50			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.724	0.0		6145817	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.715	0.0	0.999	1399481	2.08			R
498.9 > 98.9	6.715	6.715	0.0	0.999	503725		2.78(1.31-2.43)		
20 Perfluorononanoic acid									
463.0 > 418.9	6.734	6.734	0.0	0.999	3273833	2.21			
463.0 > 218.9	6.744	6.734	0.010	1.000	438339		7.47(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.744	0.0		14006335	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	6.988	0.0		13763884	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.988	6.988	0.0	1.000	2767550	2.06			
513.0 > 219.0	6.979	6.988	-0.009	0.999	259561		10.66(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.176	7.176	0.0	1.067	1367917	1.95			
598.9 > 99.0	7.186	7.176	0.010	1.069	401067		3.41(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.176	7.176	0.0	1.067	1367917	1.95			
598.9 > 99.0	7.186	7.176	0.010	1.069	401067		3.41(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.196	7.196	0.0		7969187	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.196	7.196	0.0	1.000	2270492	2.05			R
563.0 > 268.9	7.196	7.196	0.0	1.000	287609		7.89(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.375	7.375	0.0		18054259	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.384	7.384	0.0	1.001	3566747	1.96			
613.0 > 168.9	7.375	7.384	-0.009	1.000	431365		8.27(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.510	0.0		19068164	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.501	7.501	0.0	0.999	3805671	1.95			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.023	3942584	2.10			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.677	0.0	1.041	2855857	1.98			
712.9 > 169.0	7.668	7.677	-0.009	1.040	440776		6.48(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_CAL_stock_00033	Amount Added: 100.00	Units: uL

Report Date: 08-Sep-2016 09:39:24 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07009.d

Injection Date: 07-Sep-2016 13:43:18 Instrument ID: LC_LCMS5

Lims ID: STD0020

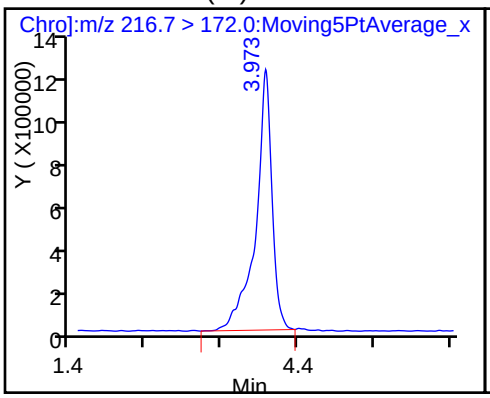
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6

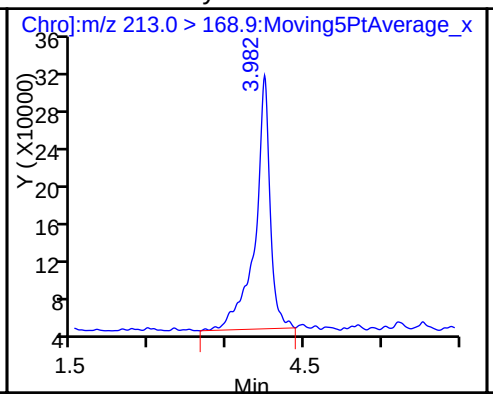
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

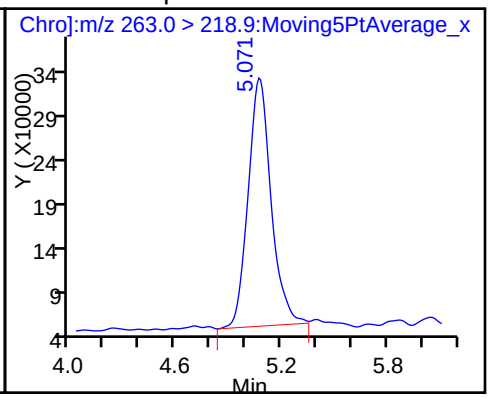
* 1 13C4 PFBA (IS)



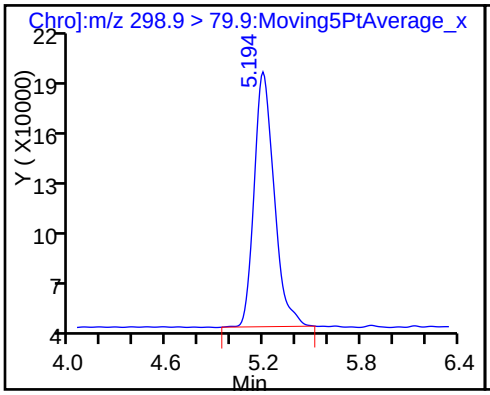
2 Perfluorobutyric acid



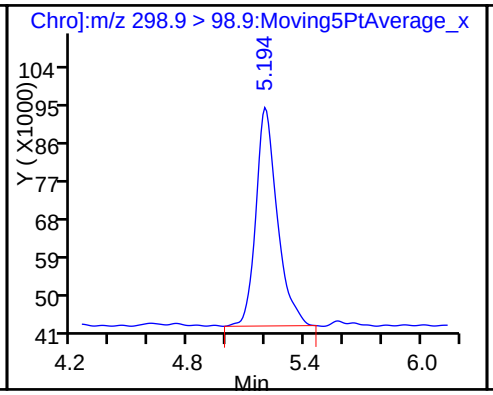
3 Perfluoropentanoic acid



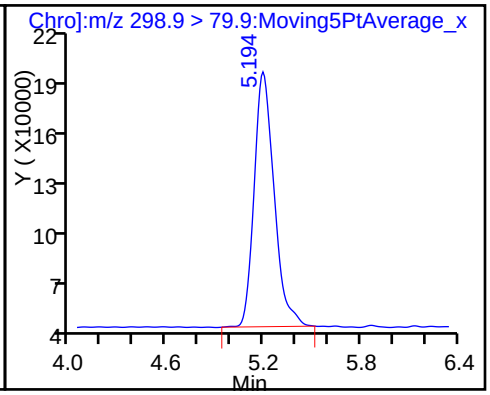
4 Perfluorobutane Sulfonate



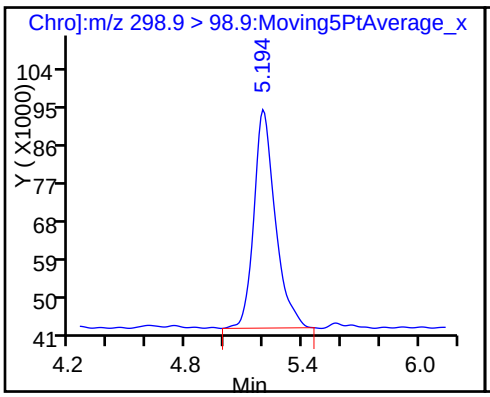
4 Perfluorobutane Sulfonate



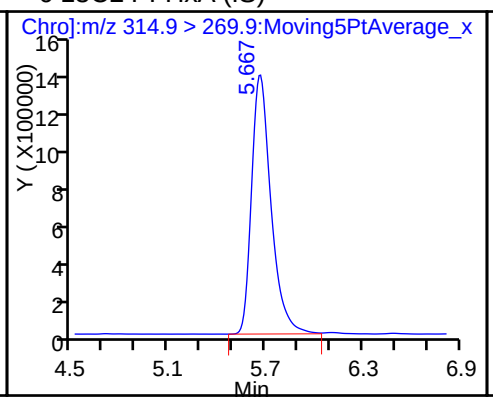
5 Perfluorobutanesulfonic acid



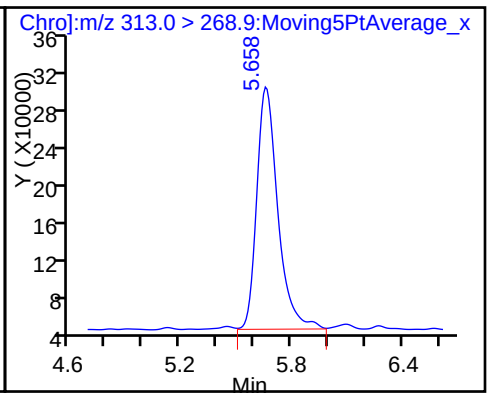
5 Perfluorobutanesulfonic acid



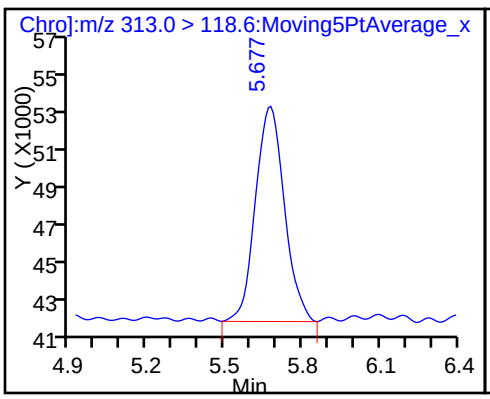
* 6 13C2 PFHxA (IS)



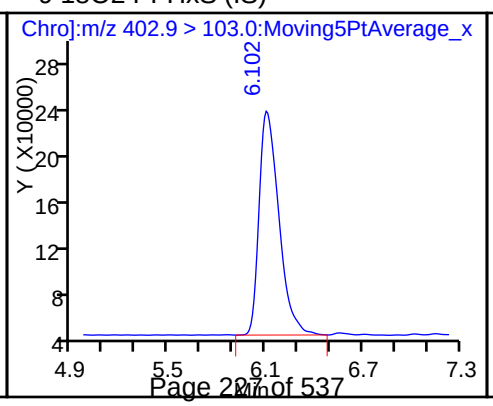
7 Perfluorohexanoic acid



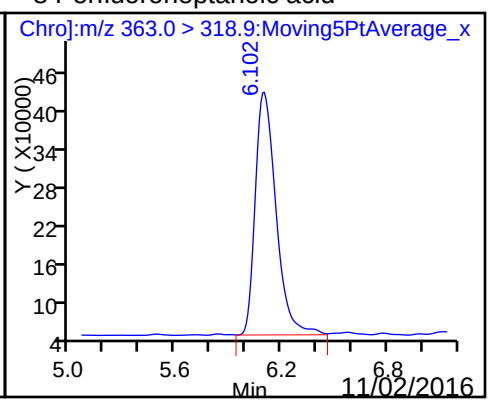
7 Perfluorohexanoic acid



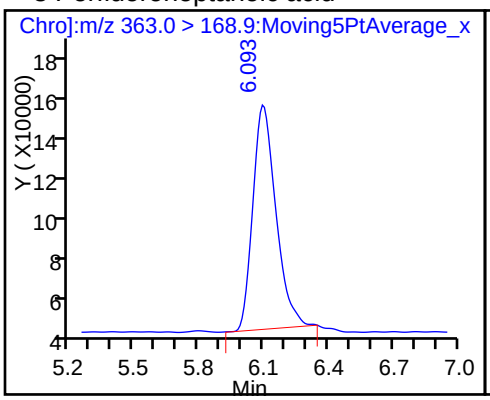
* 9 18O2 PFHxS (IS)



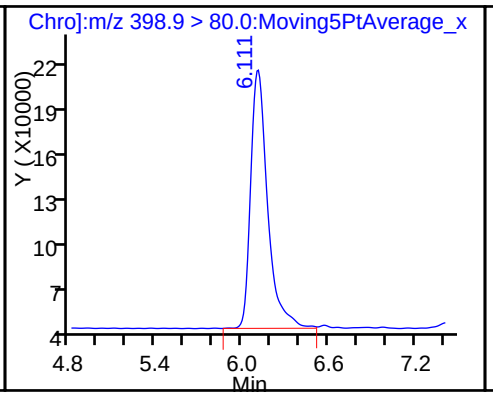
8 Perfluoroheptanoic acid



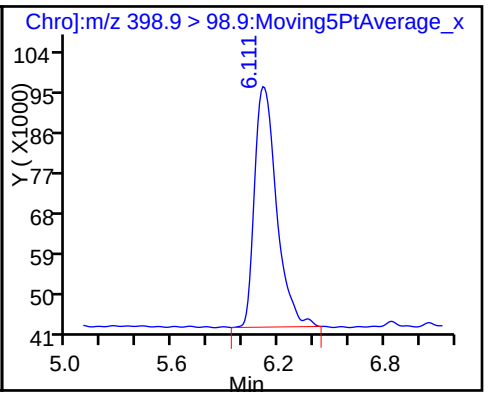
8 Perfluoroheptanoic acid



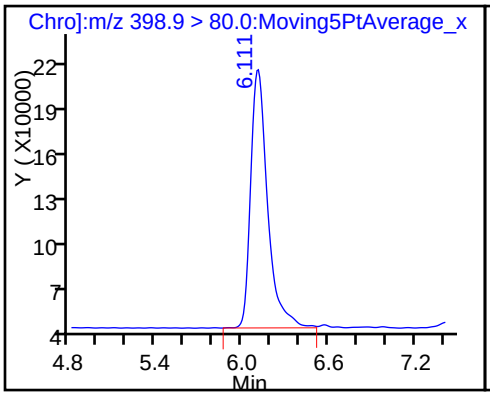
10 Perfluorohexane Sulfonate



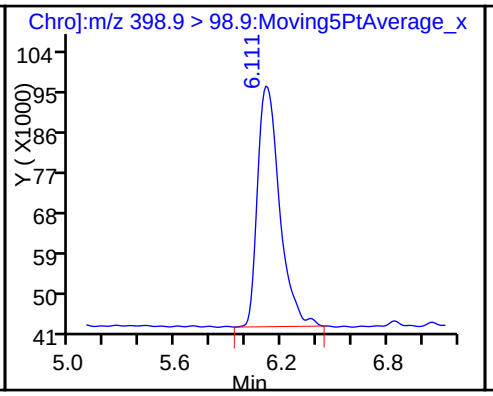
10 Perfluorohexane Sulfonate



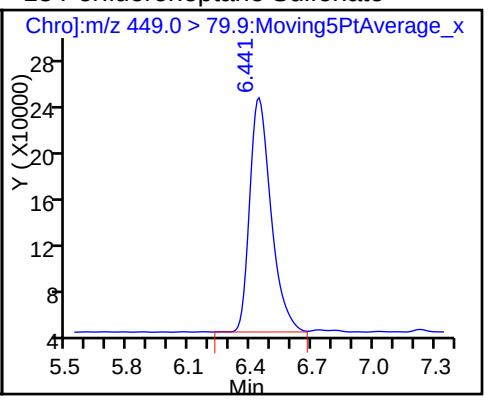
11 Perfluorohexanesulfonic acid



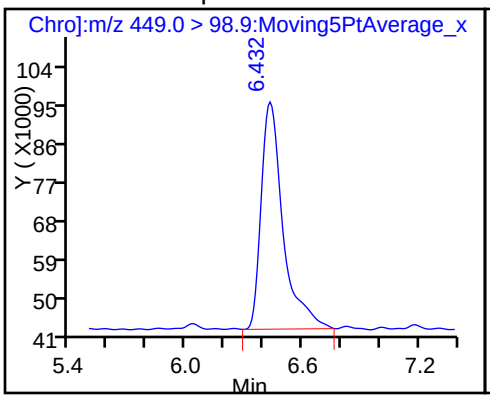
11 Perfluorohexanesulfonic acid



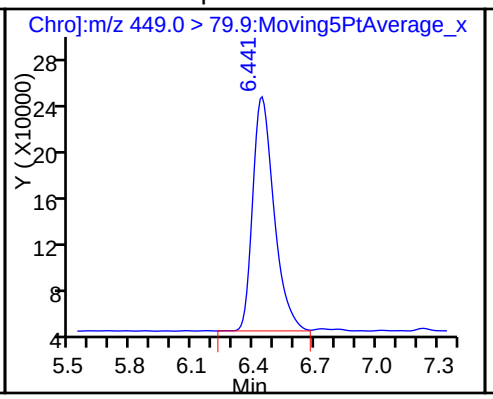
13 Perfluoroheptane Sulfonate



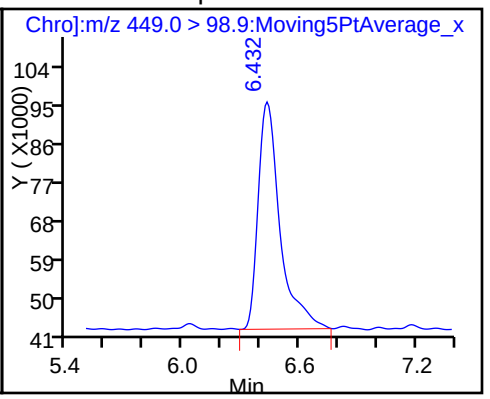
13 Perfluoroheptane Sulfonate



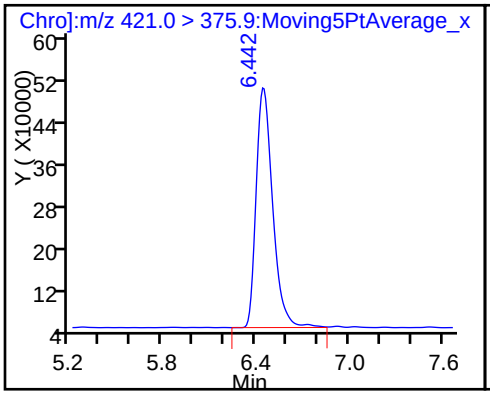
12 Perfluoroheptanesulfonic Acid



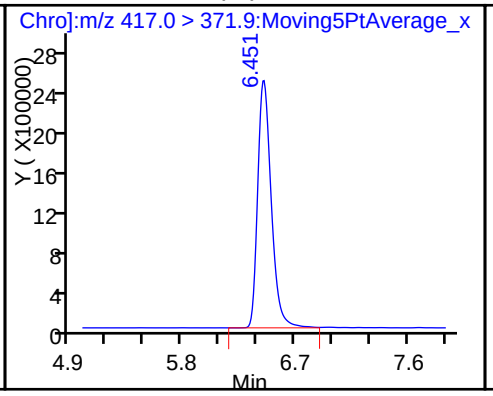
12 Perfluoroheptanesulfonic Acid



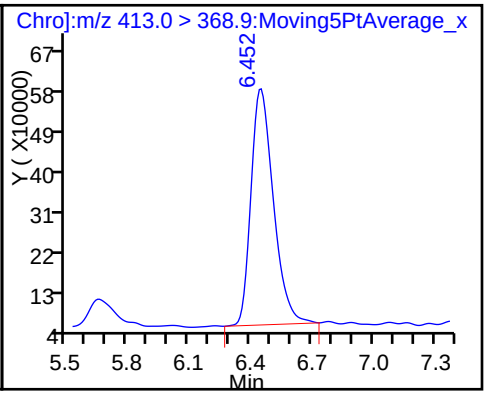
$ 14 13C8 PFOA



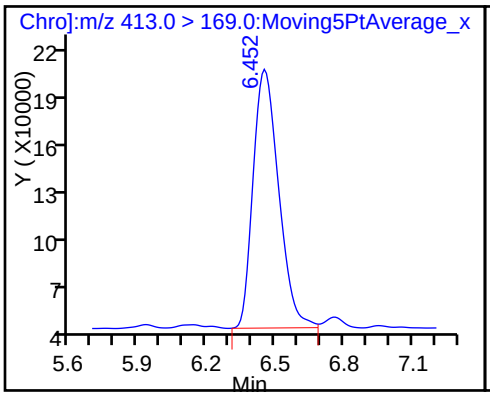
* 15 13C4 PFOA (IS)



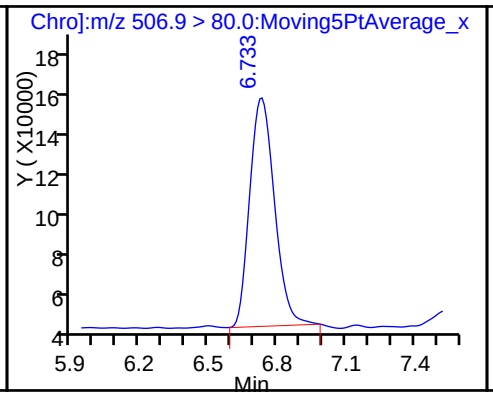
16 Perfluorooctanoic acid



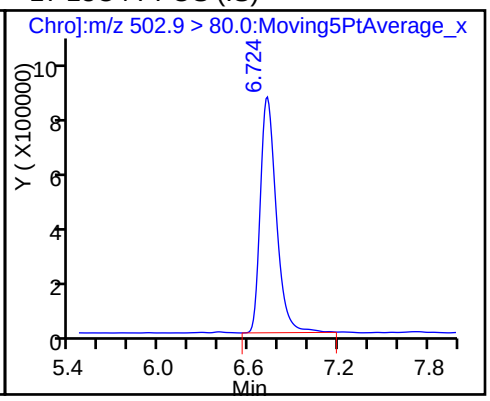
16 Perfluorooctanoic acid



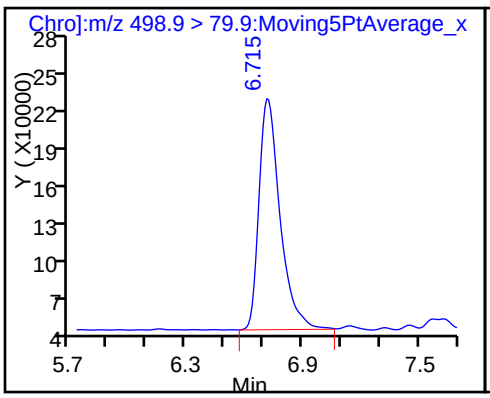
$ 18 13C8 PFOS



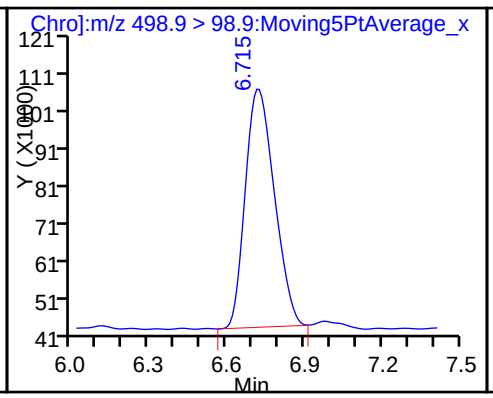
* 17 13C4 PFOS (IS)



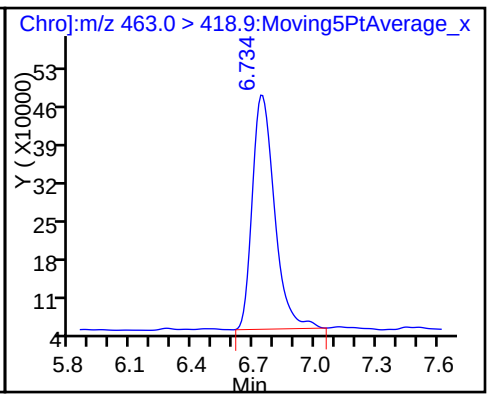
19 Perfluorooctane sulfonic acid



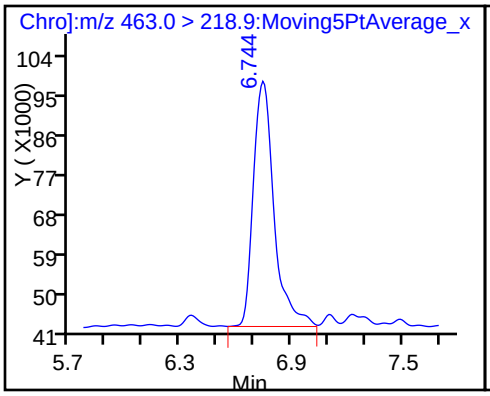
19 Perfluorooctane sulfonic acid



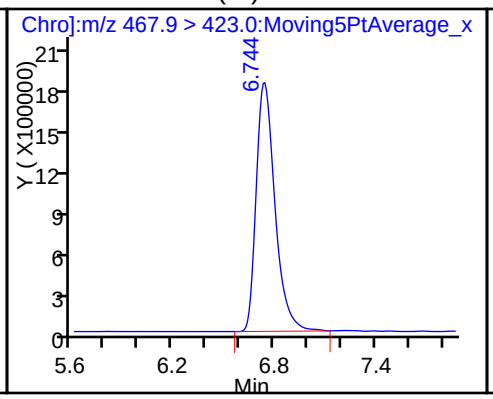
20 Perfluorononanoic acid



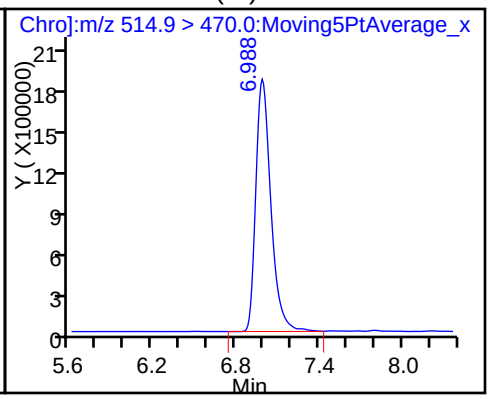
20 Perfluorononanoic acid



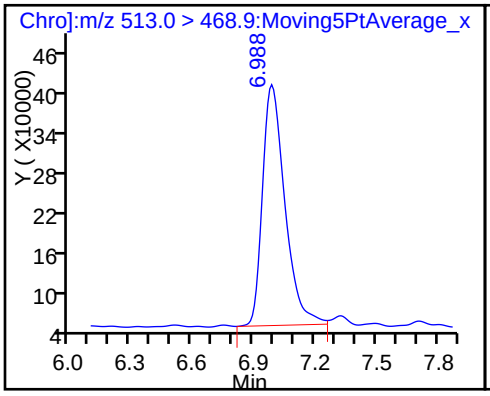
* 21 13C5 PFNA (IS)



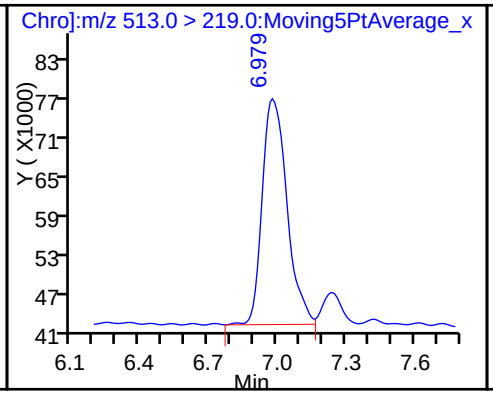
* 22 13C2 PFDA (IS)



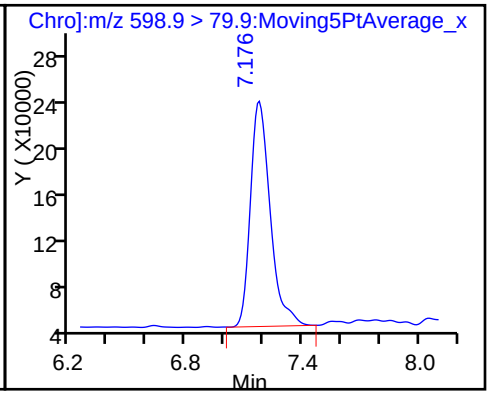
23 Perfluorodecanoic acid



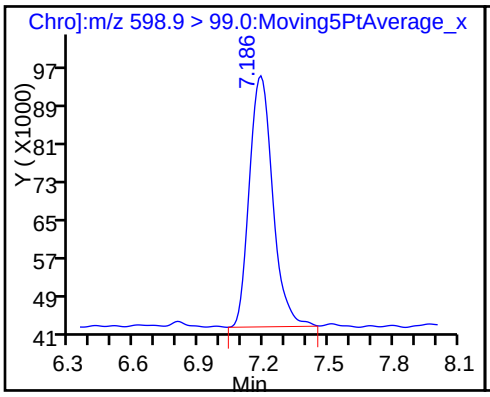
23 Perfluorodecanoic acid



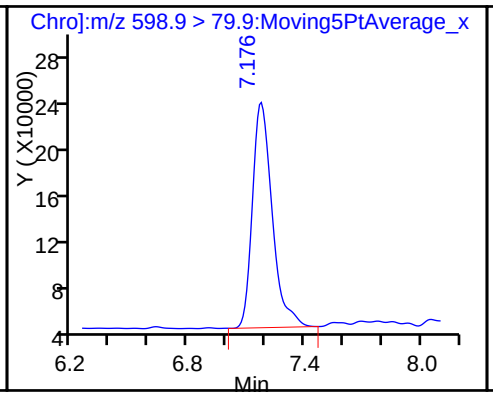
24 Perfluorodecane Sulfonic acid



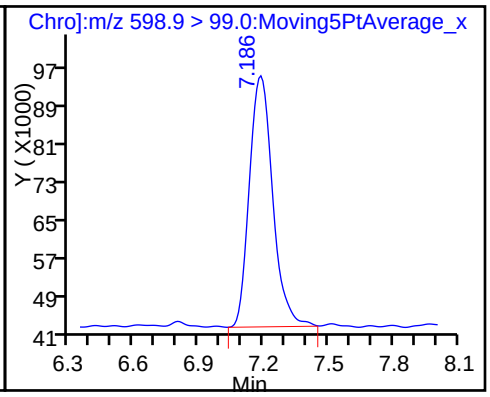
24 Perfluorodecane Sulfonic acid



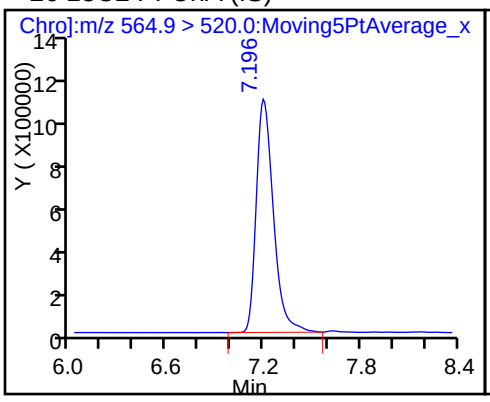
25 Perfluorodecane Sulfonate



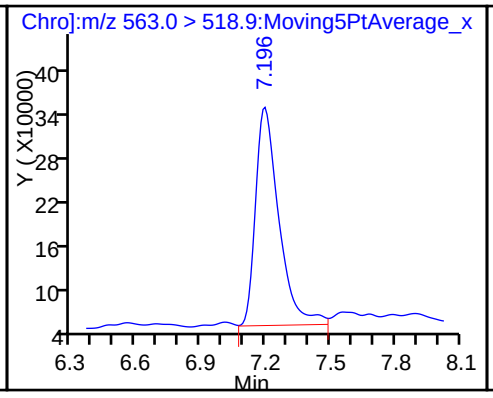
25 Perfluorodecane Sulfonate



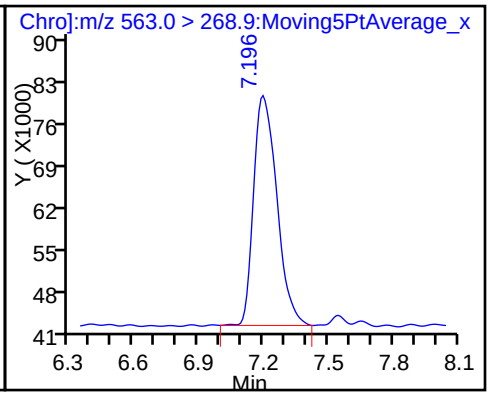
* 26 13C2 PFUnA (IS)



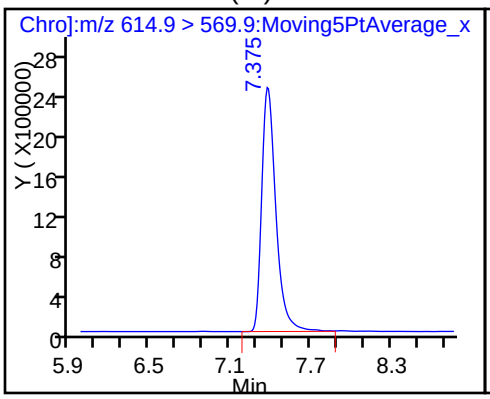
27 Perfluoroundecanoic acid



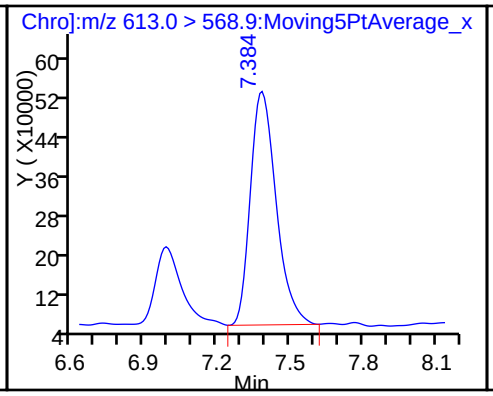
27 Perfluoroundecanoic acid



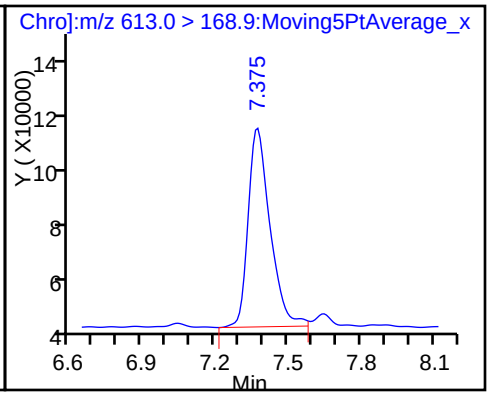
* 28 13C2 PFDoA (IS)



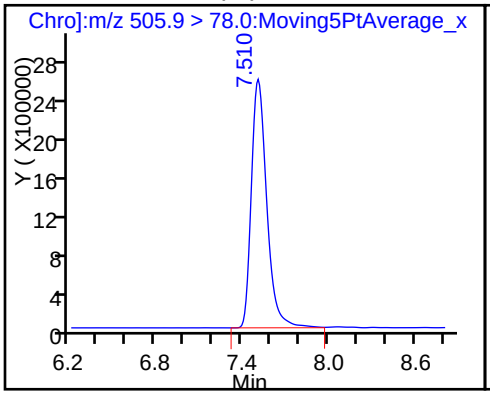
29 Perfluorododecanoic acid



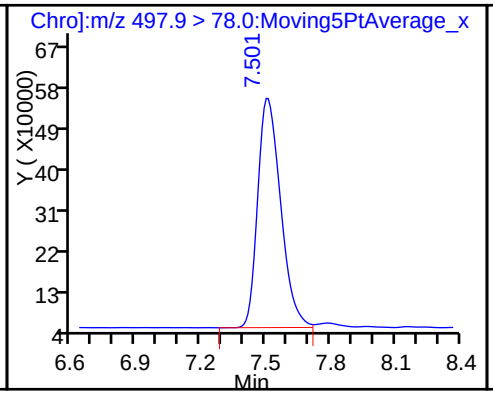
29 Perfluorododecanoic acid



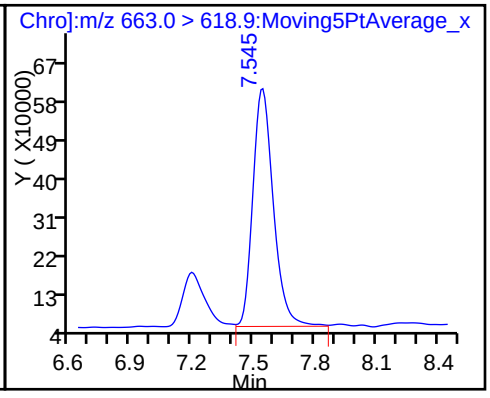
* 31 13C8 FOSA (IS)



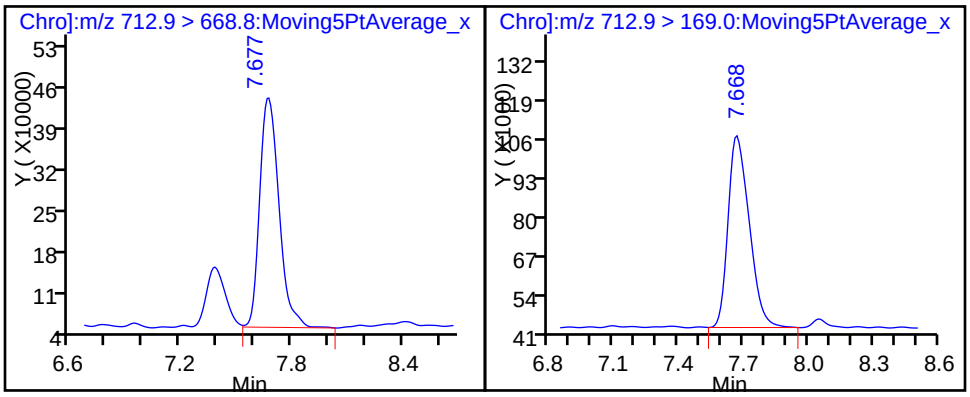
32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07010.d
Lims ID: STD0050
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 07-Sep-2016 13:55:38 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0050, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:27 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:11:38

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	3.973	0.019		17208862	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.992	3.982	0.010	1.000	8413081	4.96			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.081	5.071	0.010	0.895	6442983	4.97			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.203	5.194	0.009	0.850	3295719	3.97			
298.9 > 98.9	5.213	5.194	0.019	0.852	989985		3.33(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.203	5.194	0.009	0.850	3295719	3.97			
298.9 > 98.9	5.213	5.194	0.019	0.852	989985		3.33(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.667	0.009		11335228	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.667	5.658	0.009	0.998	5129038	5.02			
313.0 > 118.6	5.658	5.658	0.0	0.997	142751		35.93(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.102	0.018		1927896	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.112	6.102	0.010	0.947	7481391	4.58			
363.0 > 168.9	6.102	6.102	0.0	0.946	1997584		3.75(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.111	0.010	1.000	3253049	4.27			R
398.9 > 98.9	6.121	6.111	0.010	1.000	1094126		2.97(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.111	0.010	1.000	3253049	4.27			
398.9 > 98.9	6.121	6.111	0.010	1.000	1094126		2.97(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.441	0.010	0.958	3048256	4.49			
449.0 > 98.9	6.451	6.441	0.010	0.958	1022261		2.98(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.441	0.010	0.958	3048256	4.49			
449.0 > 98.9	6.451	6.441	0.010	0.958	1022261		2.98(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.442	0.019	1.001	8539760	5.24			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.451	0.0		20164158	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.452	0.009	1.002	10130189	5.05			
413.0 > 169.0	6.452	6.452	0.0	1.000	3128192		3.24(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	1.000	1958056	5.89			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.724	0.009		6295387	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.734	6.715	0.019	1.000	3368736	4.94			R
498.9 > 98.9	6.734	6.715	0.019	1.000	1342934		2.51(1.31-2.43)		
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.734	0.019	1.000	6871618	4.84			
463.0 > 218.9	6.753	6.734	0.019	1.000	971493		7.07(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.744	0.009		13576510	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	6.988	0.0		14222081	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.998	6.988	0.010	1.001	6546413	4.75			R
513.0 > 219.0	6.998	6.988	0.010	1.001	666422		9.82(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.176	0.010	1.067	3310649	4.63			
598.9 > 99.0	7.186	7.176	0.010	1.067	949313		3.49(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.176	0.010	1.067	3310649	4.63			
598.9 > 99.0	7.186	7.176	0.010	1.067	949313		3.49(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.205	7.196	0.009		8185069	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.205	7.196	0.009	1.000	4916834	4.46			R
563.0 > 268.9	7.215	7.196	0.019	1.001	537832		9.14(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.375	0.009		17531803	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.384	7.384	0.0	1.000	8277966	4.74			
613.0 > 168.9	7.394	7.384	0.010	1.001	1134798		7.29(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.510	0.009		18488367	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.501	0.019	1.000	9270254	4.93			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.022	9056472	5.00			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.677	0.0	1.040	6853416	4.90			
712.9 > 169.0	7.677	7.677	0.0	1.040	1065724		6.43(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00084	Amount Added:	10.00	Units: uL

Report Date: 08-Sep-2016 09:39:28 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07010.d

Injection Date: 07-Sep-2016 13:55:38 Instrument ID: LC_LCMS5

Lims ID: STD0050

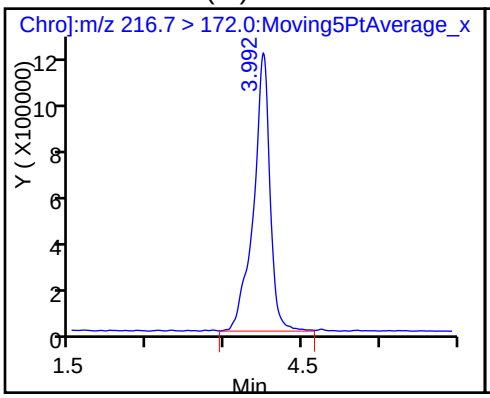
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 7

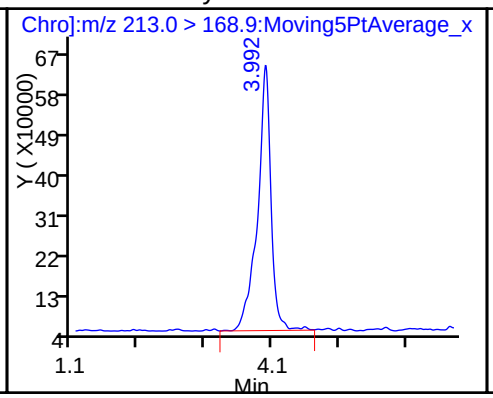
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

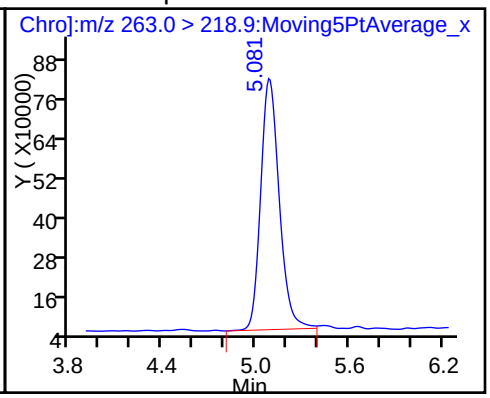
* 1 13C4 PFBA (IS)



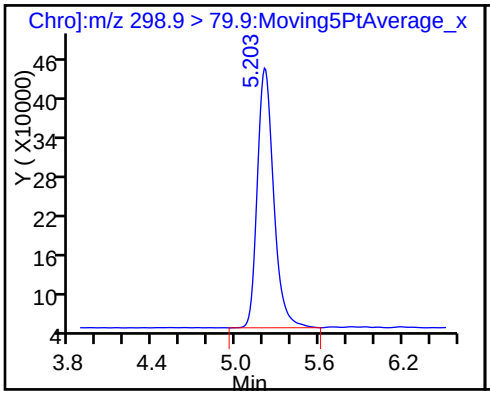
2 Perfluorobutyric acid



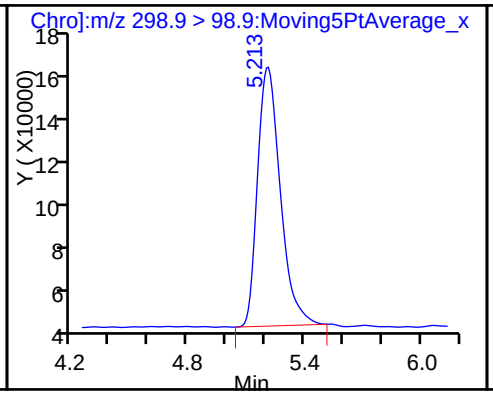
3 Perfluoropentanoic acid



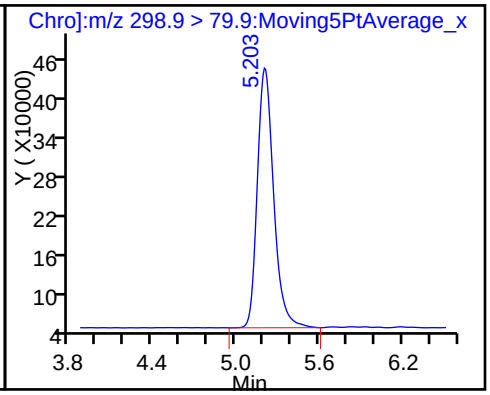
4 Perfluorobutane Sulfonate



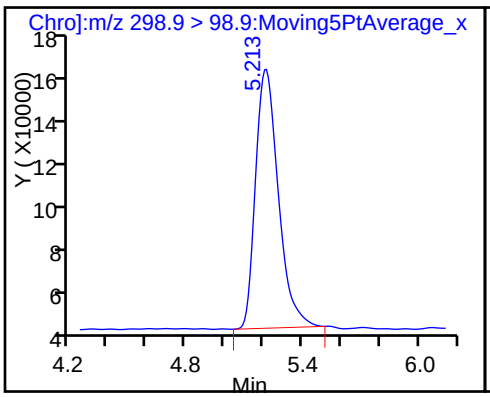
4 Perfluorobutane Sulfonate



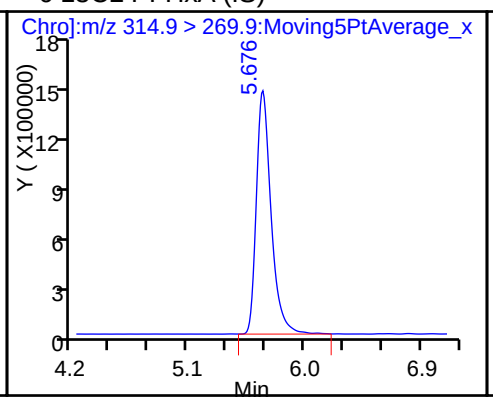
5 Perfluorobutanesulfonic acid



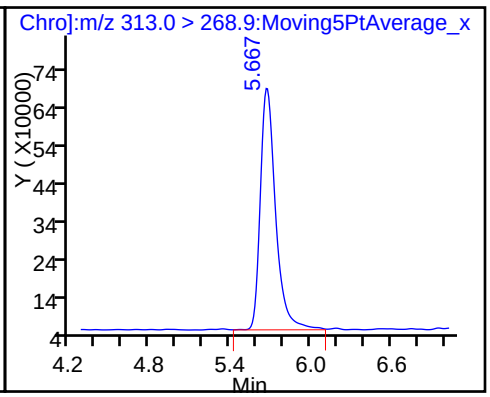
5 Perfluorobutanesulfonic acid



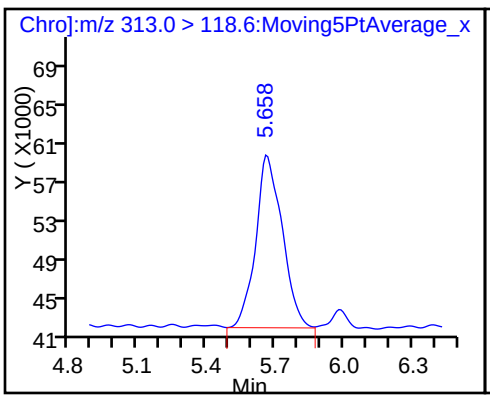
* 6 13C2 PFHxA (IS)



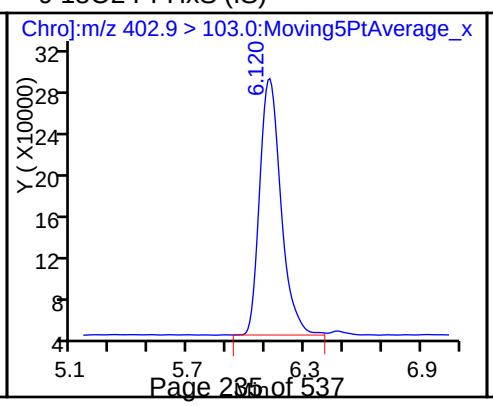
7 Perfluorohexanoic acid



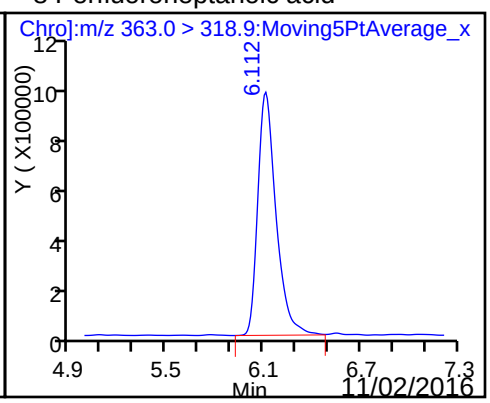
7 Perfluorohexanoic acid



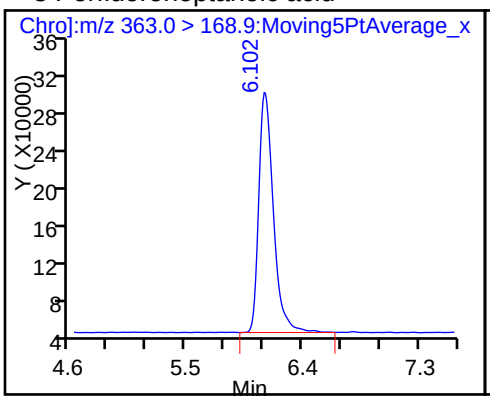
* 9 18O2 PFHxS (IS)



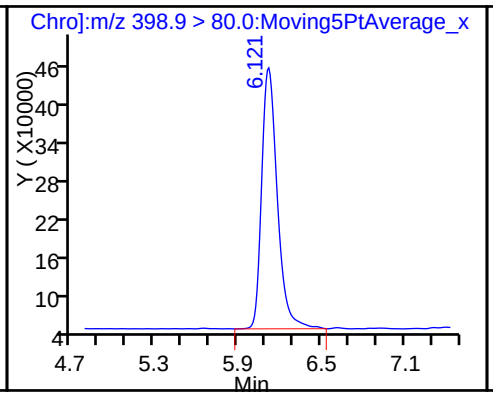
8 Perfluoroheptanoic acid



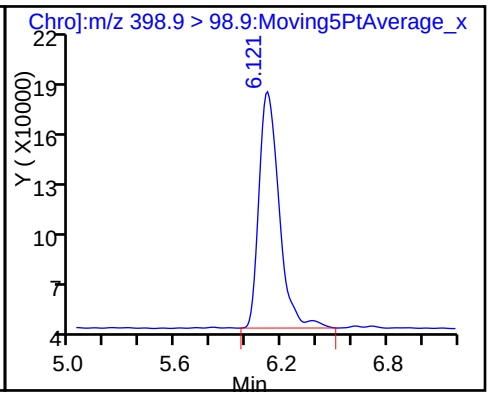
8 Perfluoroheptanoic acid



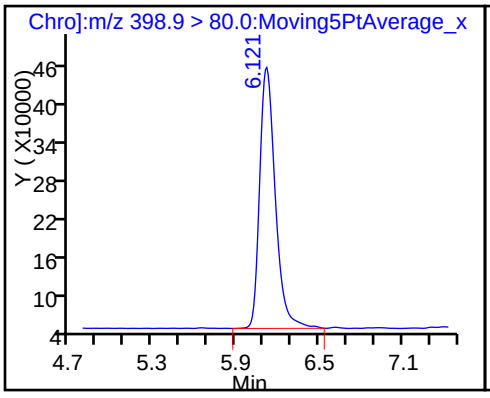
10 Perfluorohexane Sulfonate



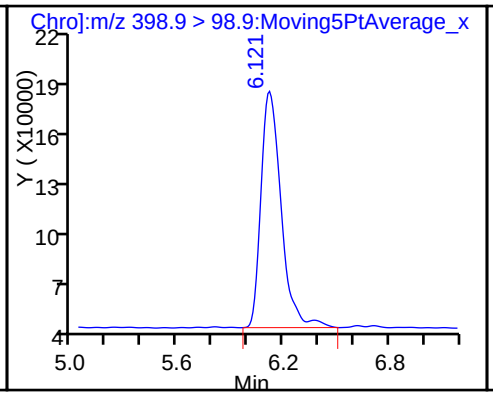
10 Perfluorohexane Sulfonate



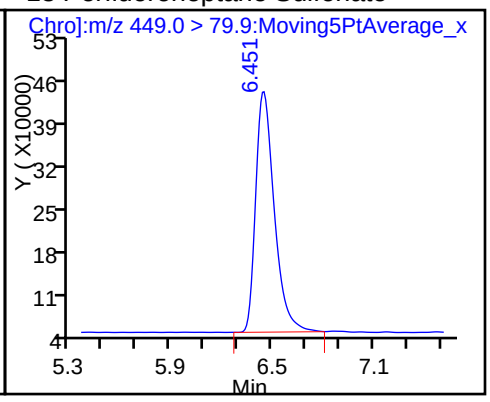
11 Perfluorohexanesulfonic acid



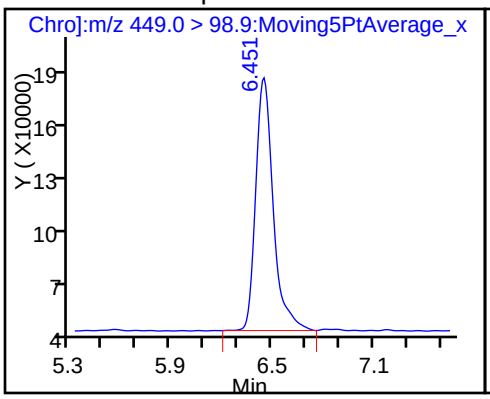
11 Perfluorohexanesulfonic acid



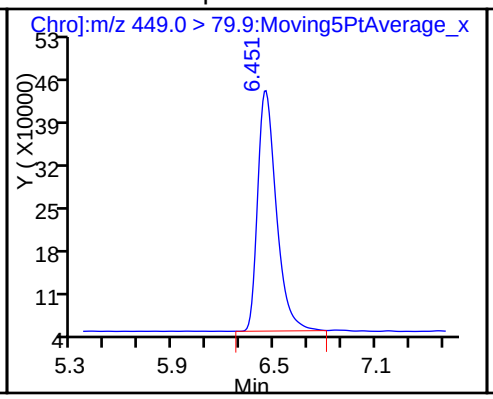
13 Perfluoroheptane Sulfonate



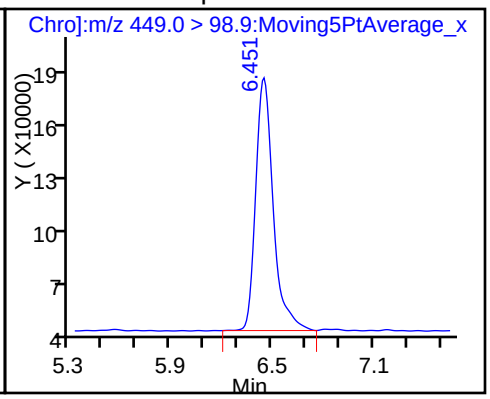
13 Perfluoroheptane Sulfonate



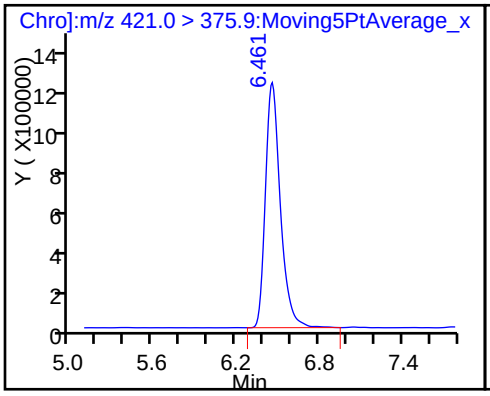
12 Perfluoroheptanesulfonic Acid



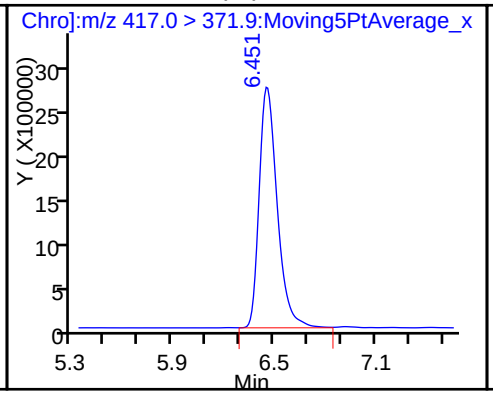
12 Perfluoroheptanesulfonic Acid



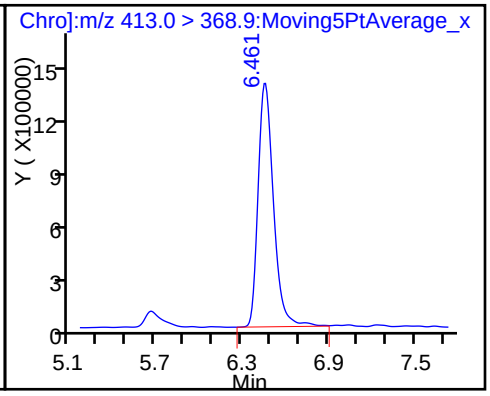
$ 14 13C8 PFOA



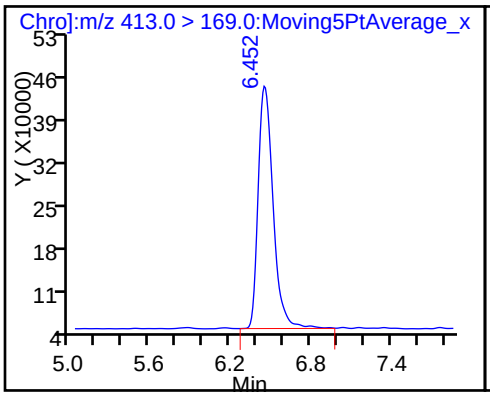
* 15 13C4 PFOA (IS)



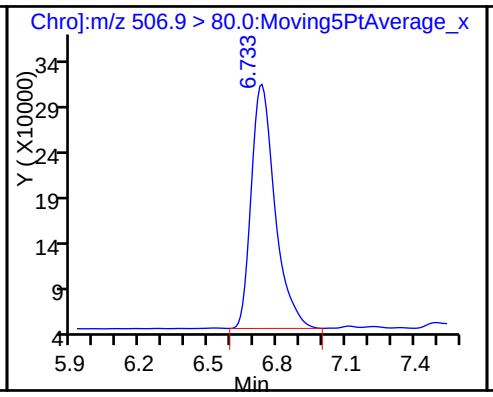
16 Perfluorooctanoic acid



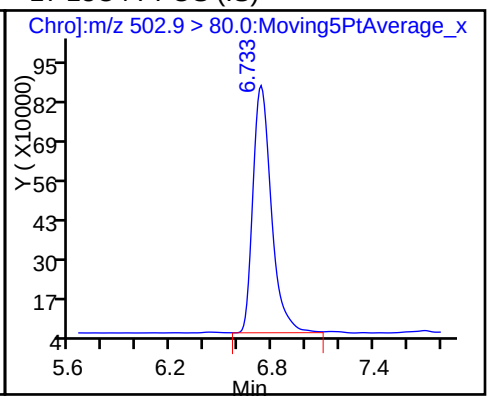
16 Perfluorooctanoic acid



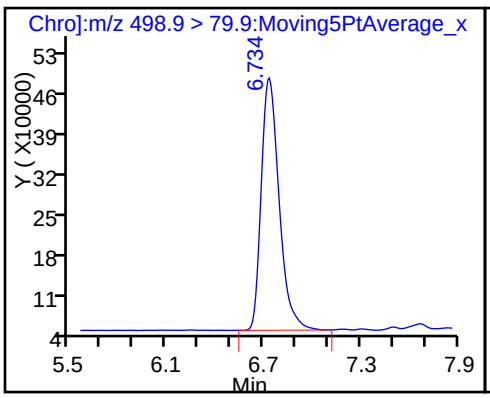
$ 18 13C8 PFOS



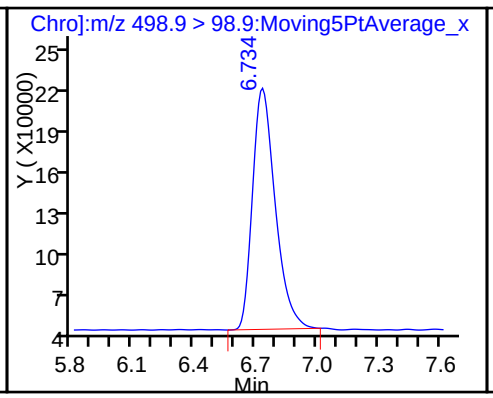
* 17 13C4 PFOS (IS)



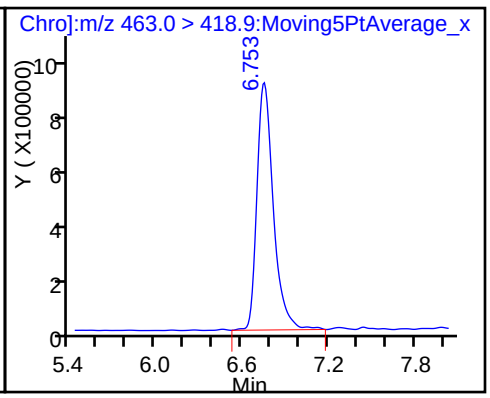
19 Perfluorooctane sulfonic acid



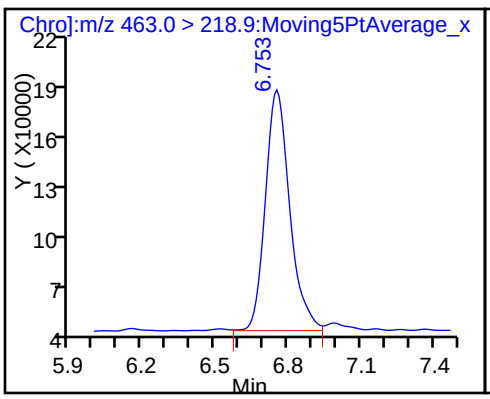
19 Perfluorooctane sulfonic acid



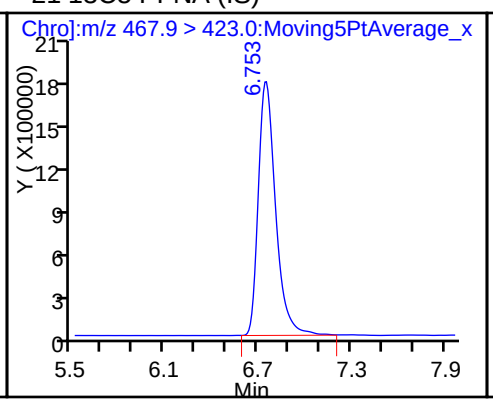
20 Perfluorononanoic acid



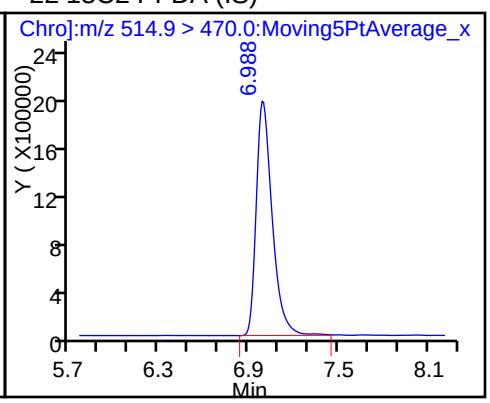
20 Perfluorononanoic acid



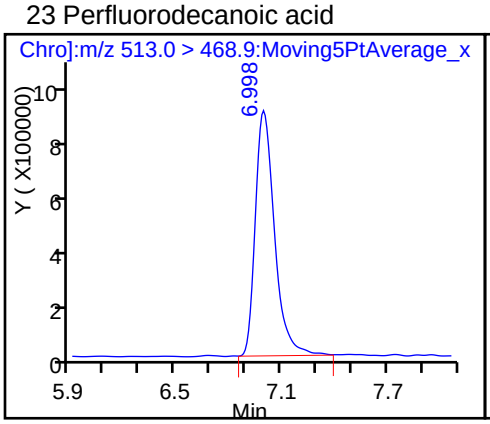
* 21 13C5 PFNA (IS)



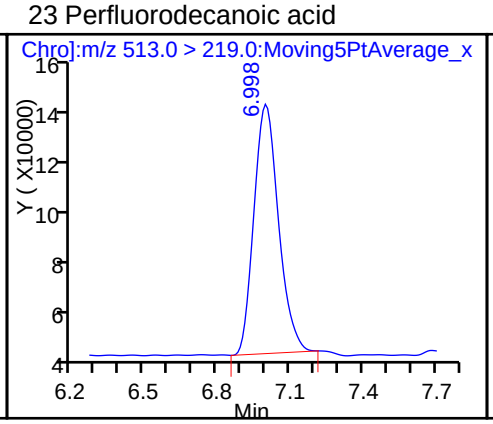
* 22 13C2 PFDA (IS)



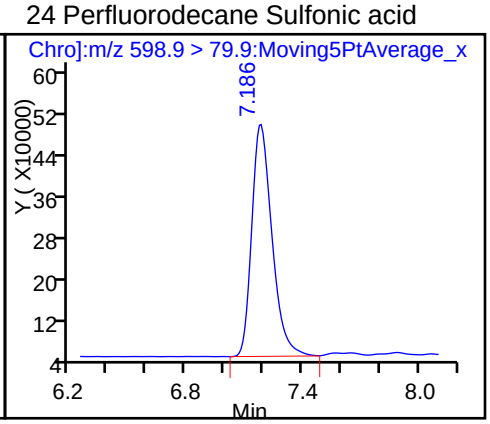
23 Perfluorodecanoic acid



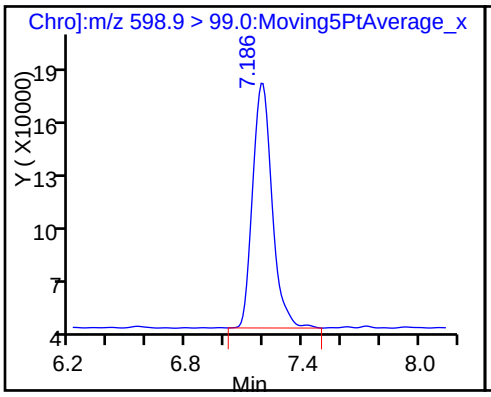
23 Perfluorodecanoic acid



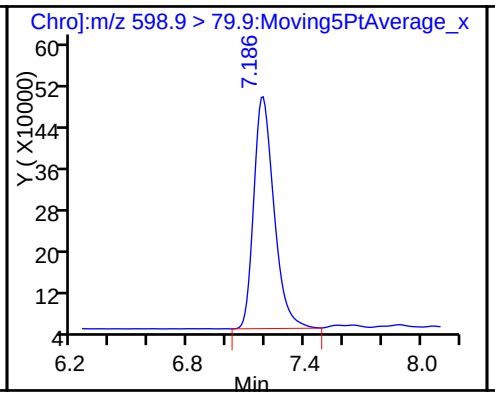
24 Perfluorodecane Sulfonic acid



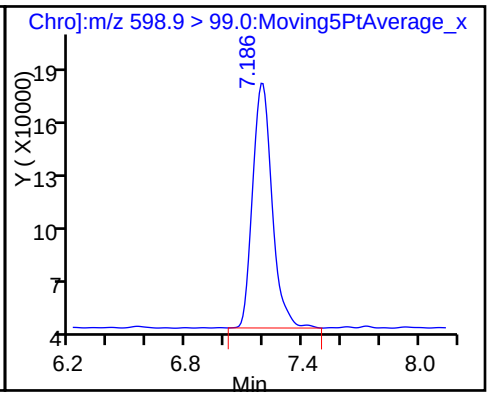
24 Perfluorodecane Sulfonic acid



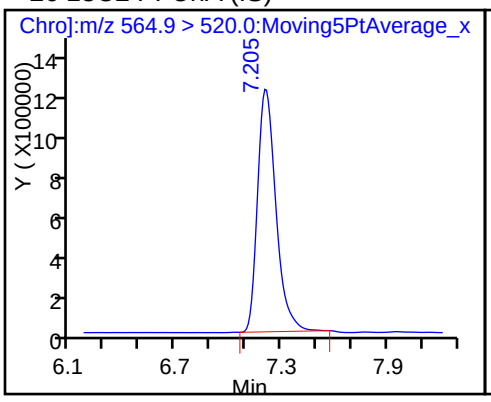
25 Perfluorodecane Sulfonate



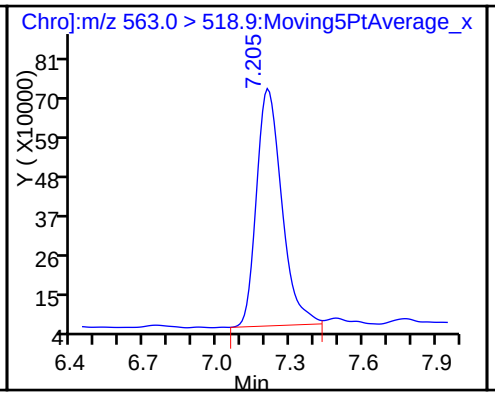
25 Perfluorodecane Sulfonate



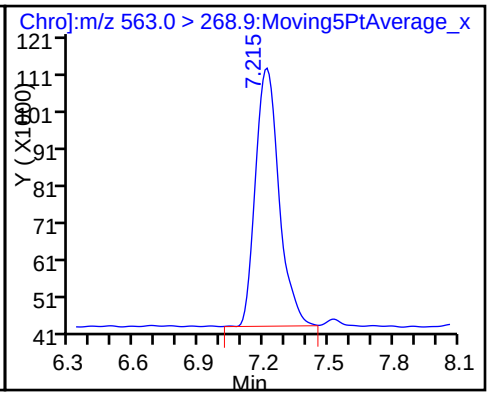
* 26 13C2 PFUnA (IS)



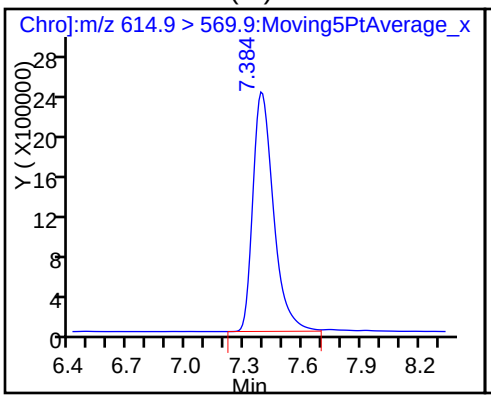
27 Perfluoroundecanoic acid



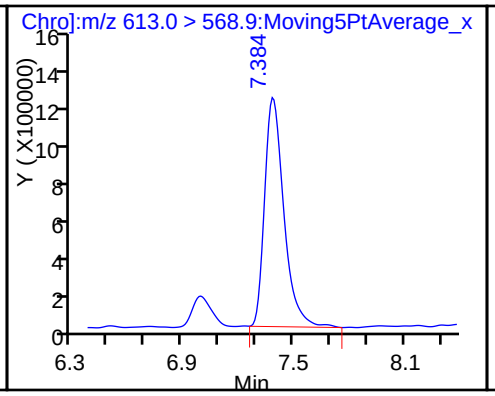
27 Perfluoroundecanoic acid



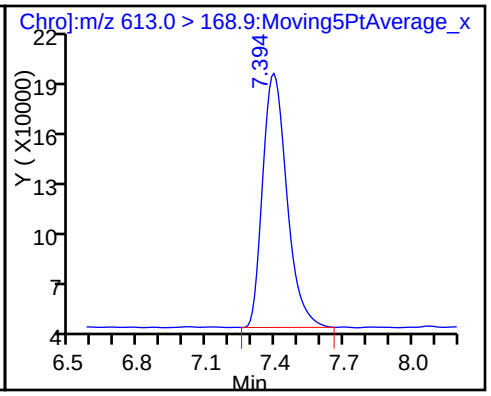
* 28 13C2 PFDoA (IS)



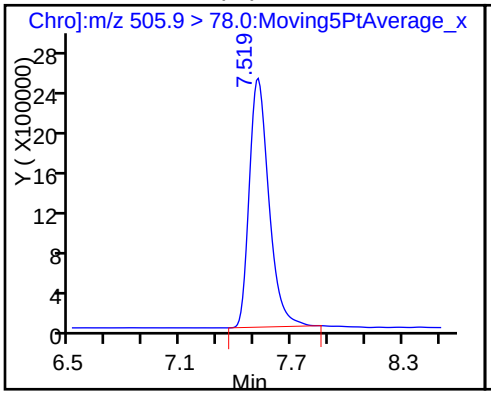
29 Perfluorododecanoic acid



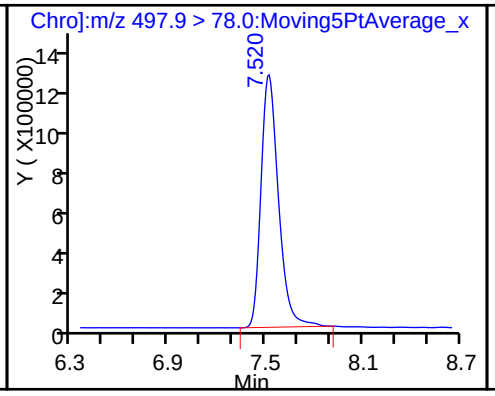
29 Perfluorododecanoic acid



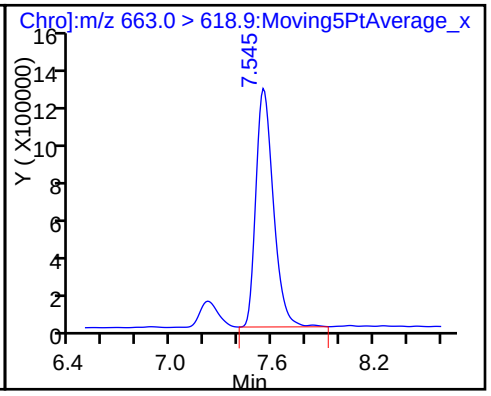
* 31 13C8 FOSA (IS)



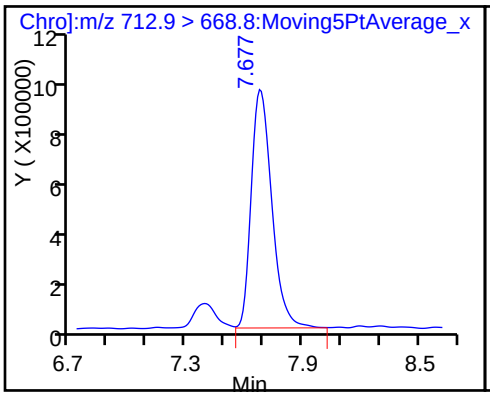
32 Perfluorooctane Sulfonamide



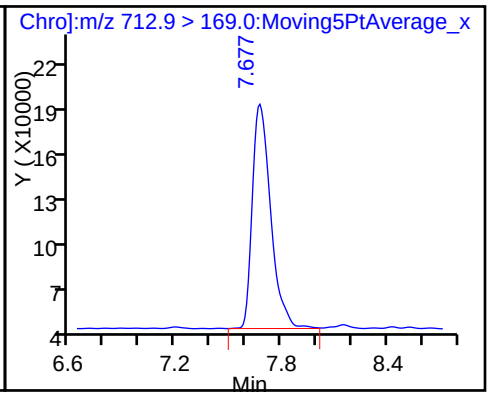
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07011.d
Lims ID: STD0100
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 07-Sep-2016 14:07:55 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0100, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:31 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:11:50

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	3.973	0.028		15456301	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.011	3.982	0.029	1.002	15704439	10.4			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.090	5.071	0.019	0.895	12276275	10.6			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.194	0.019	0.850	5937014	8.83			
298.9 > 98.9	5.222	5.194	0.028	0.852	1890906		3.14(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.194	0.019	0.850	5937014	8.83			
298.9 > 98.9	5.222	5.194	0.028	0.852	1890906		3.14(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.658	0.028	1.000	9282197	10.2			
313.0 > 118.6	5.677	5.658	0.019	0.998	287718		32.26(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.686	5.667	0.019		10155445	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.130	6.102	0.028		1564324	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.121	6.102	0.019	0.946	14157185	10.8			
363.0 > 168.9	6.112	6.102	0.010	0.945	3498723		4.05(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.111	0.010	0.998	5974112	9.78			R
398.9 > 98.9	6.121	6.111	0.010	0.998	1798613		3.32(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.111	0.010	0.998	5974112	9.78			
398.9 > 98.9	6.121	6.111	0.010	0.998	1798613		3.32(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.460	6.441	0.019	0.959	5971797	9.71			
449.0 > 98.9	6.451	6.441	0.010	0.958	1839695		3.25(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.460	6.441	0.019	0.959	5971797	9.71			
449.0 > 98.9	6.451	6.441	0.010	0.958	1839695		3.25(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.442	0.019	0.999	13669467	10.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.470	6.451	0.019		16320157	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.452	0.009	0.999	17183901	10.7			
413.0 > 169.0	6.471	6.452	0.019	1.000	5522133		3.11(2.86-5.31)		
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.734	6.715	0.019	1.000	6338189	10.3			R
498.9 > 98.9	6.734	6.715	0.019	1.000	2471917		2.56(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.724	0.009		5718788	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	1.000	3322860	11.1			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.734	0.019	1.000	12980652	10.0			
463.0 > 218.9	6.753	6.734	0.019	1.000	1904868		6.81(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.744	0.009		12405599	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	6.988	0.009		12533240	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.998	6.988	0.010	1.000	12328985	10.2			R
513.0 > 219.0	6.998	6.988	0.010	1.000	1193077		10.33(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.176	0.010	1.067	6160461	9.48			
598.9 > 99.0	7.186	7.176	0.010	1.067	1855730		3.32(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.176	0.010	1.067	6160461	9.48			
598.9 > 99.0	7.186	7.176	0.010	1.067	1855730		3.32(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.196	0.019		7285027	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.196	0.019	1.000	10133146	10.5			R
563.0 > 268.9	7.205	7.196	0.009	0.999	1471390		6.89(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.375	0.018		16236998	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.384	0.010	1.000	16534345	10.3			
613.0 > 168.9	7.394	7.384	0.010	1.000	2067261		8.00(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.501	0.029	1.001	16521491	9.37			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.510	0.009		17348817	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.554	7.545	0.009	1.022	16361498	9.76			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.686	7.677	0.009	1.040	13234167	10.2			
712.9 > 169.0	7.696	7.677	0.019	1.041	2048574		6.46(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC-LCS_00084	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL

Report Date: 08-Sep-2016 09:39:32 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07011.d

Injection Date: 07-Sep-2016 14:07:55 Instrument ID: LC_LCMS5

Lims ID: STD0100

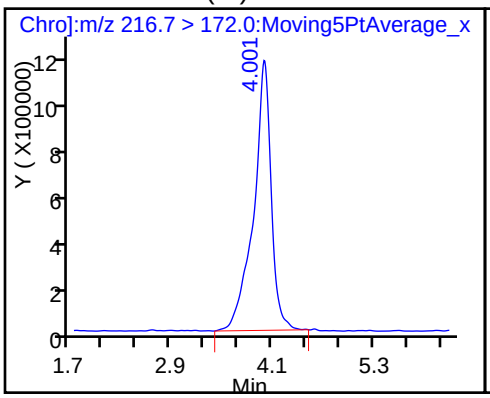
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8

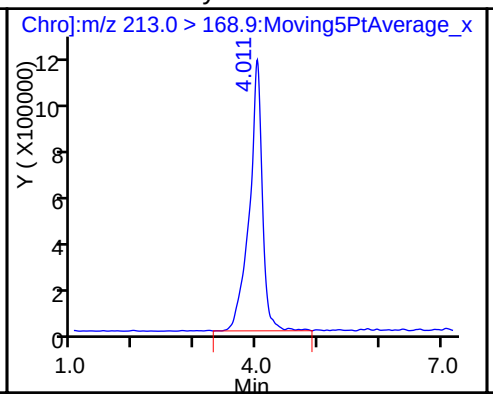
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

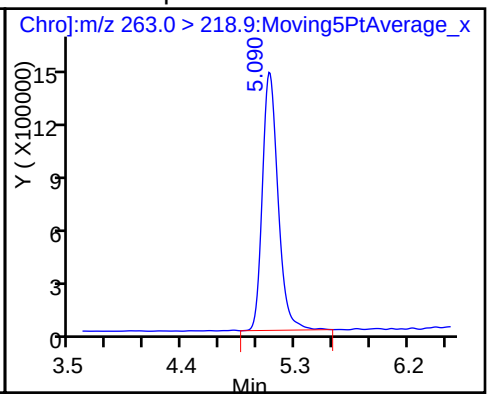
* 1 13C4 PFBA (IS)



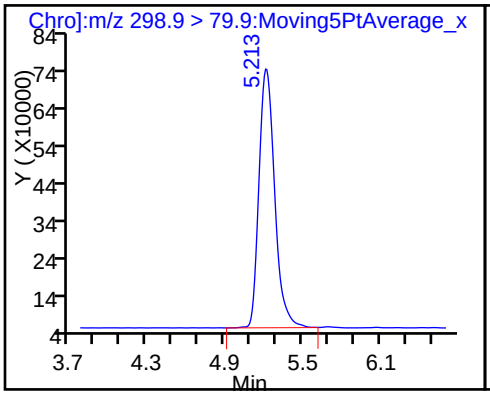
2 Perfluorobutyric acid



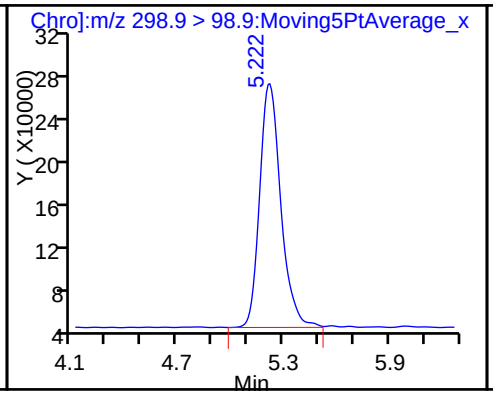
3 Perfluoropentanoic acid



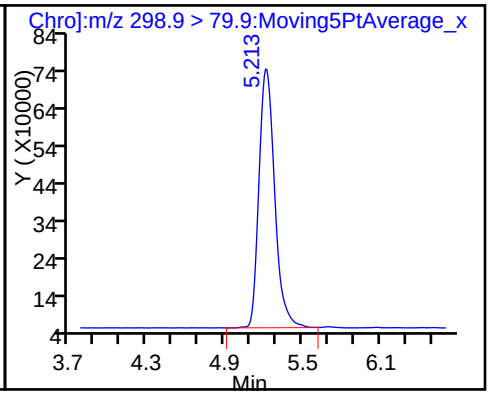
4 Perfluorobutane Sulfonate



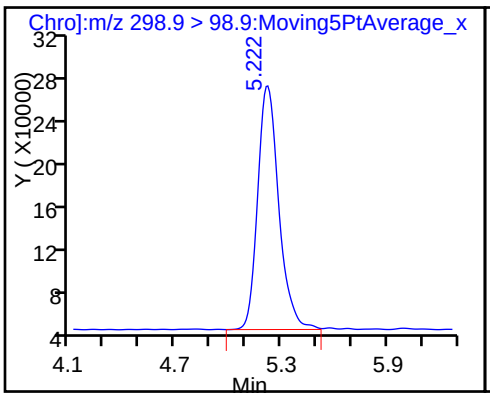
4 Perfluorobutane Sulfonate



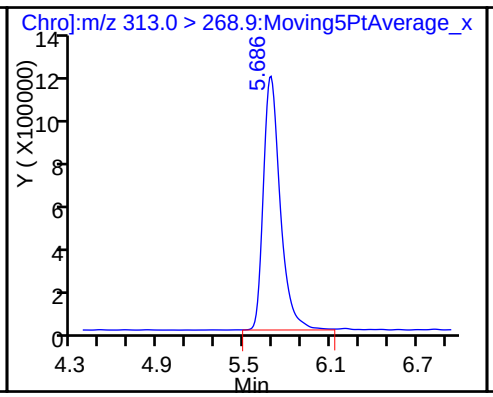
5 Perfluorobutanesulfonic acid



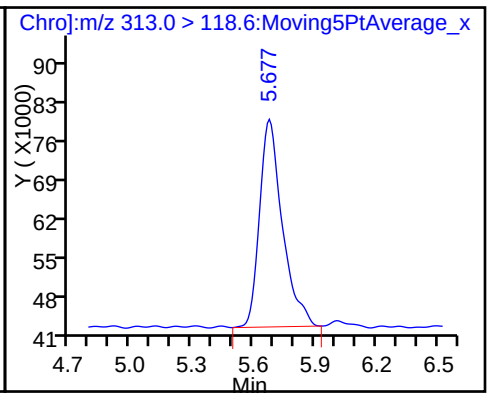
5 Perfluorobutanesulfonic acid



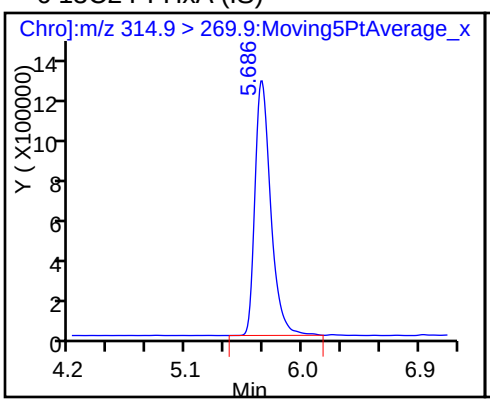
7 Perfluorohexanoic acid



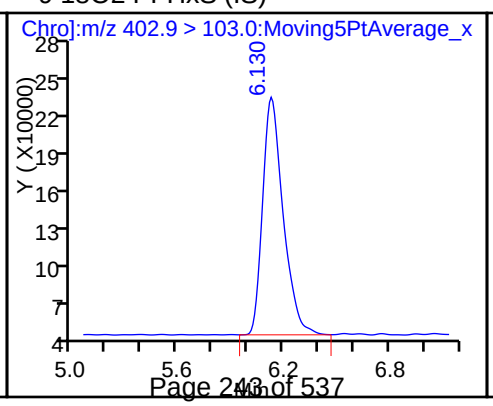
7 Perfluorohexanoic acid



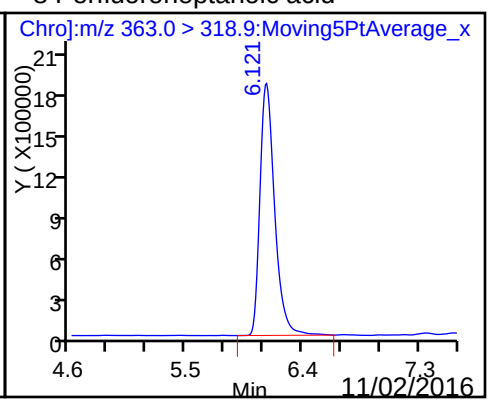
* 6 13C2 PFHxA (IS)



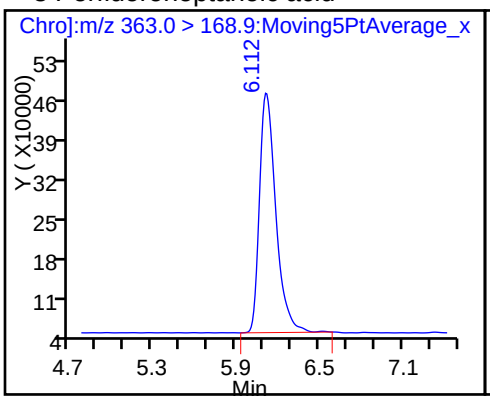
* 9 18O2 PFHxS (IS)



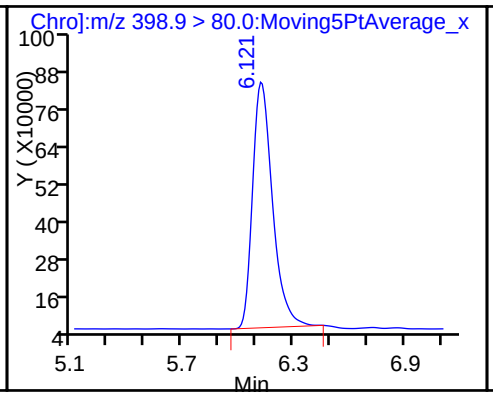
8 Perfluoroheptanoic acid



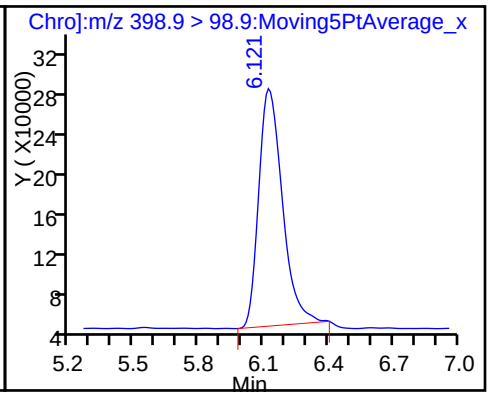
8 Perfluoroheptanoic acid



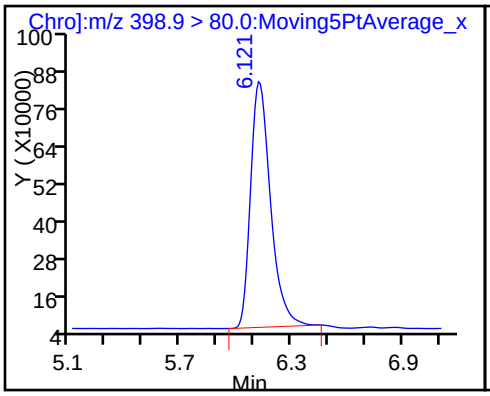
10 Perfluorohexane Sulfonate



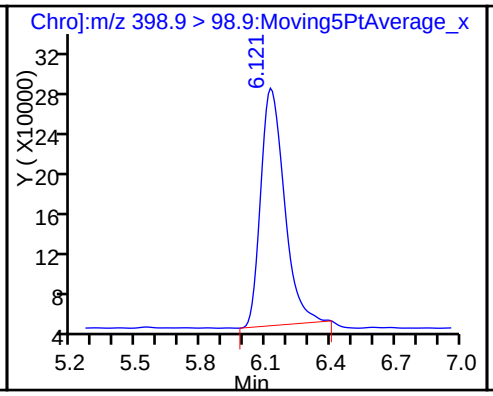
10 Perfluorohexane Sulfonate



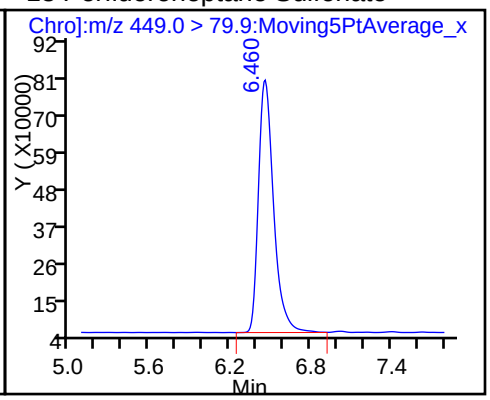
11 Perfluorohexanesulfonic acid



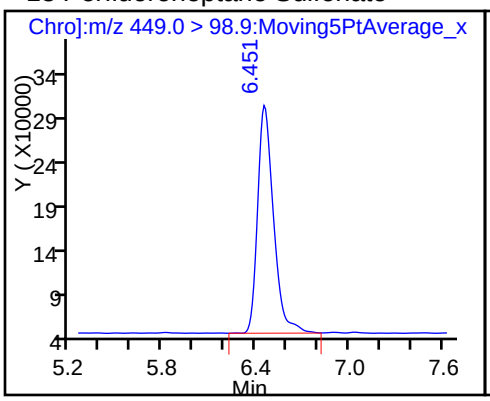
11 Perfluorohexanesulfonic acid



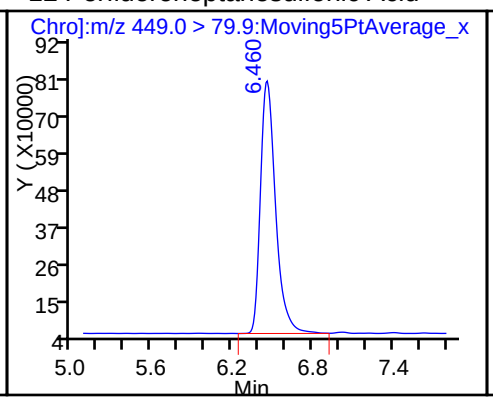
13 Perfluoroheptane Sulfonate



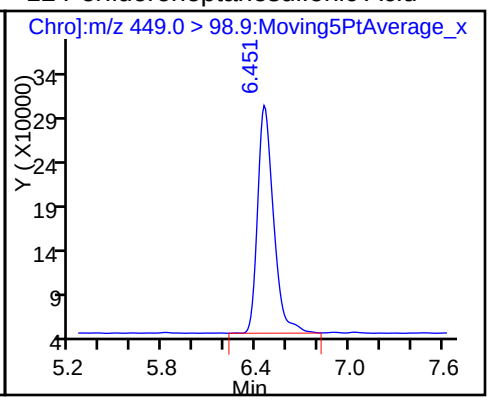
13 Perfluoroheptane Sulfonate



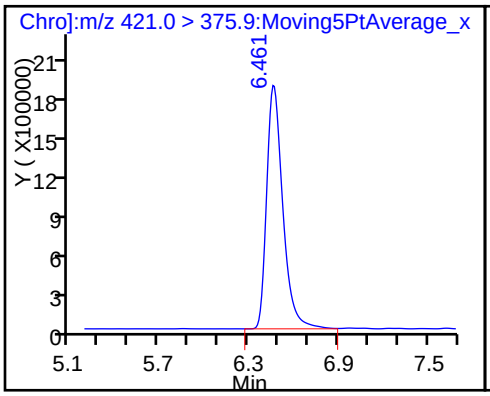
12 Perfluoroheptanesulfonic Acid



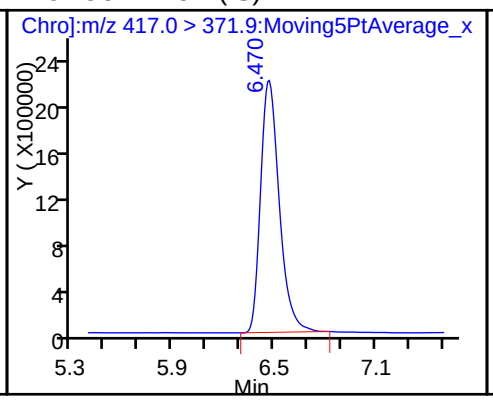
12 Perfluoroheptanesulfonic Acid



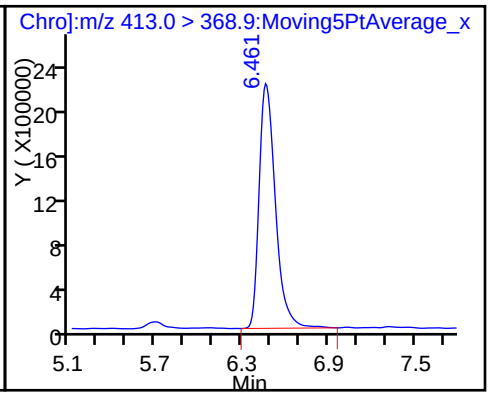
$ 14 13C8 PFOA



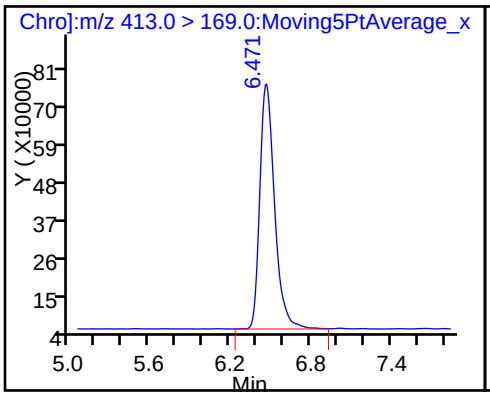
* 15 13C4 PFOA (IS)



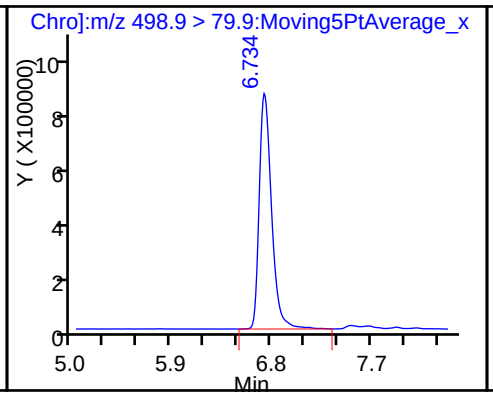
16 Perfluorooctanoic acid



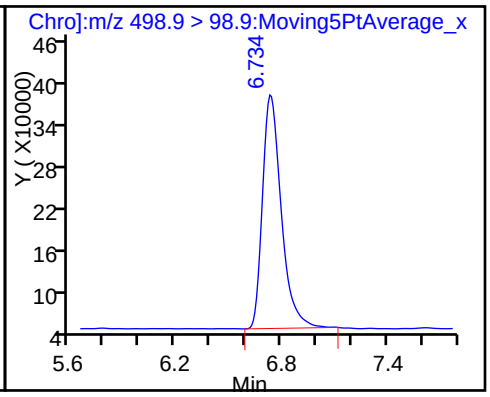
16 Perfluorooctanoic acid



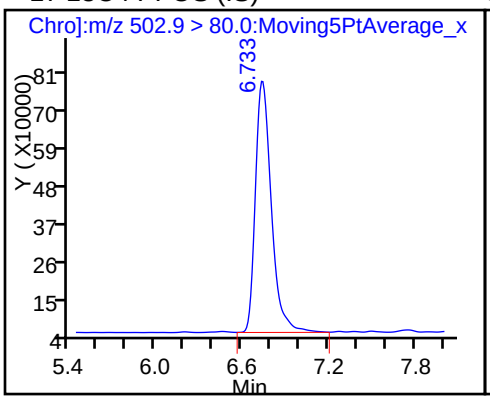
19 Perfluorooctane sulfonic acid



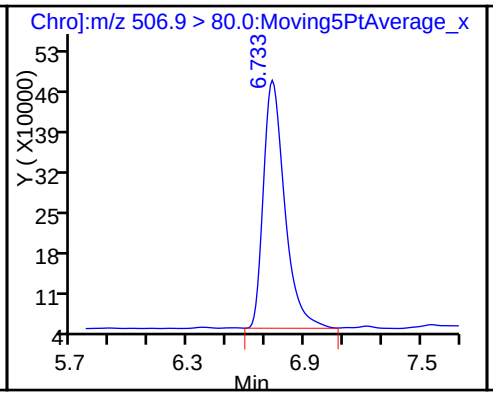
19 Perfluorooctane sulfonic acid



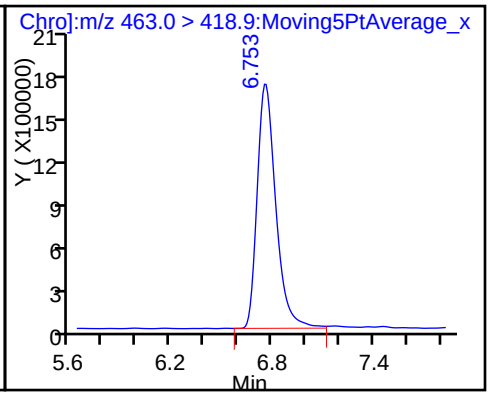
* 17 13C4 PFOS (IS)



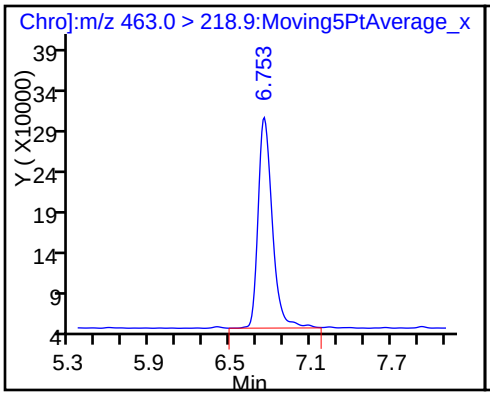
$ 18 13C8 PFOS



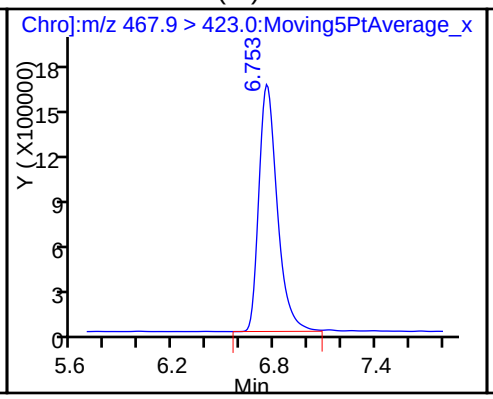
20 Perfluorononanoic acid



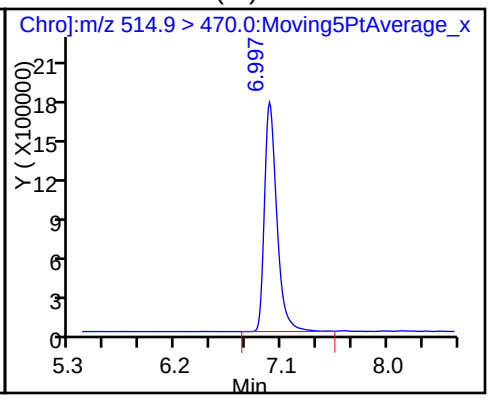
20 Perfluorononanoic acid



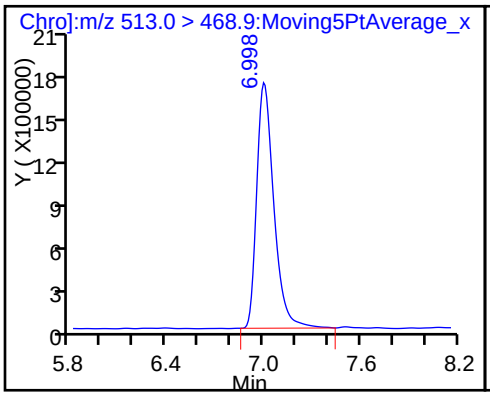
* 21 13C5 PFNA (IS)



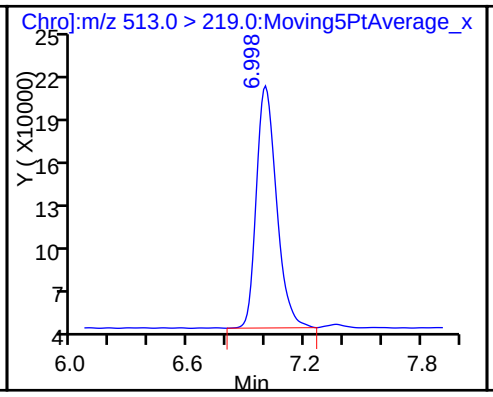
* 22 13C2 PFDA (IS)



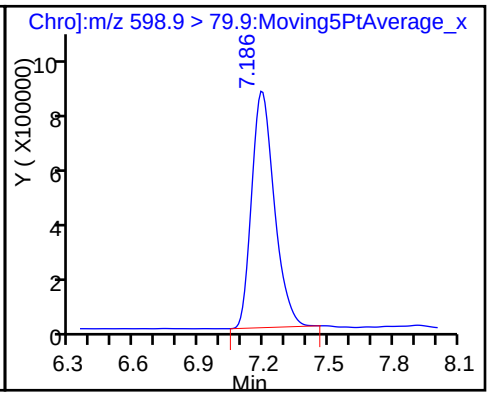
23 Perfluorodecanoic acid



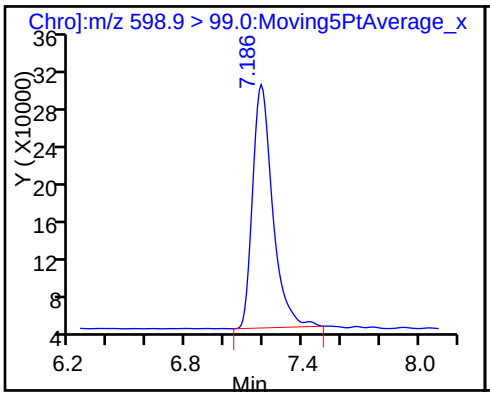
23 Perfluorodecanoic acid



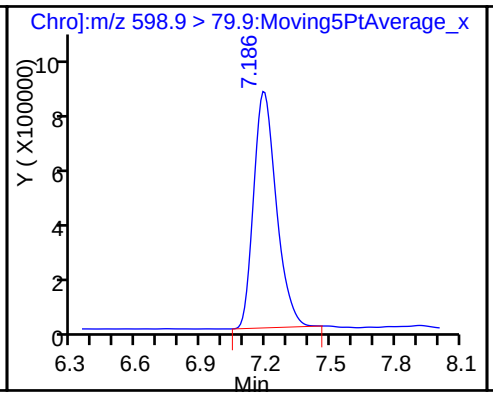
24 Perfluorodecane Sulfonic acid



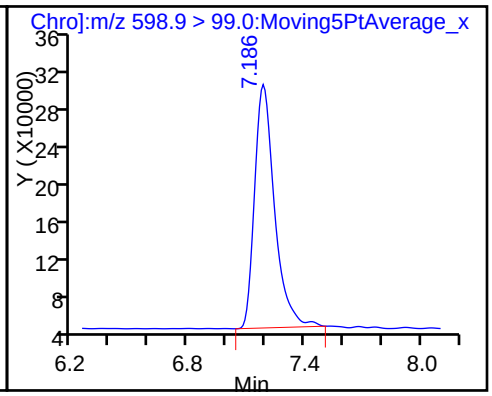
24 Perfluorodecane Sulfonic acid



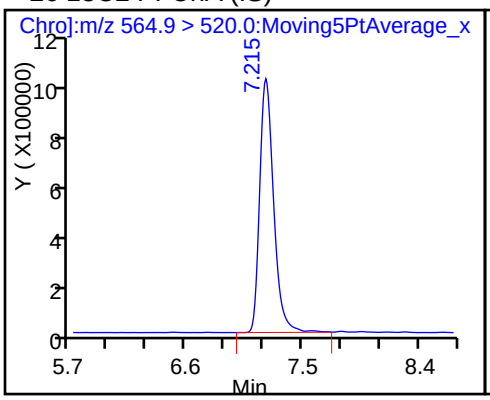
25 Perfluorodecane Sulfonate



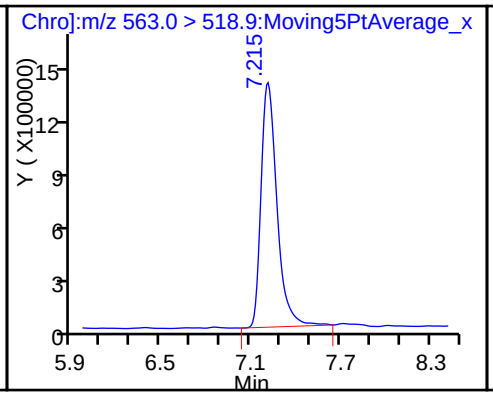
25 Perfluorodecane Sulfonate



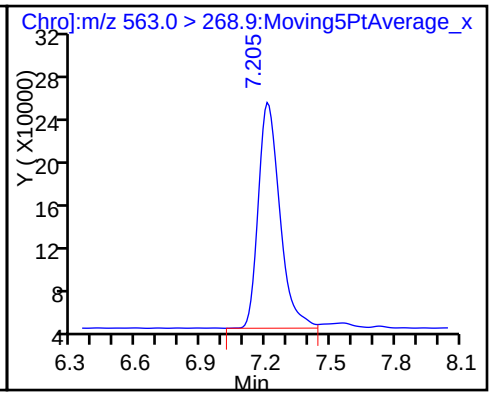
* 26 13C2 PFUnA (IS)



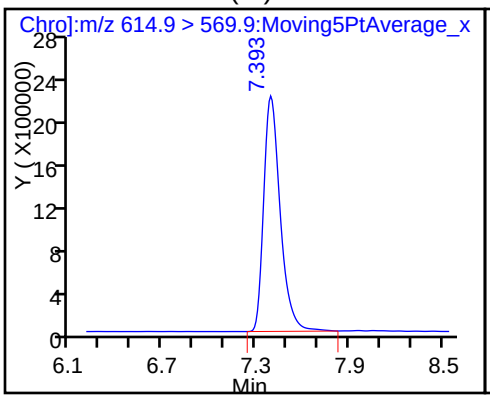
27 Perfluoroundecanoic acid



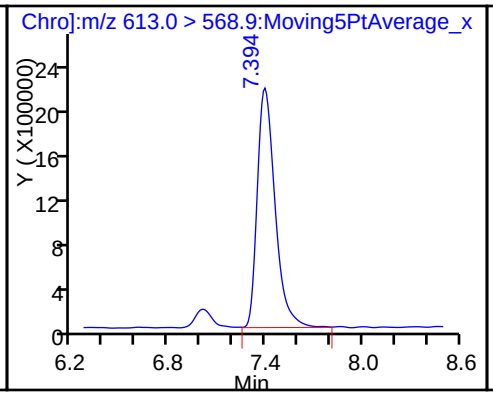
27 Perfluoroundecanoic acid



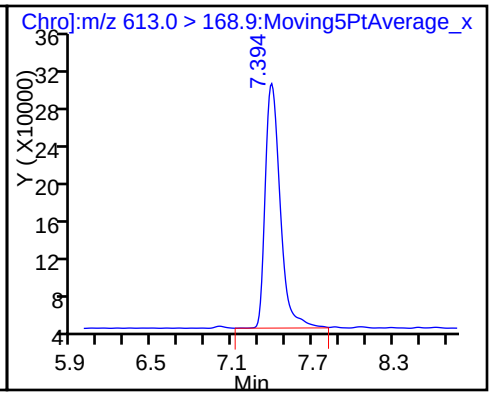
* 28 13C2 PFDoA (IS)



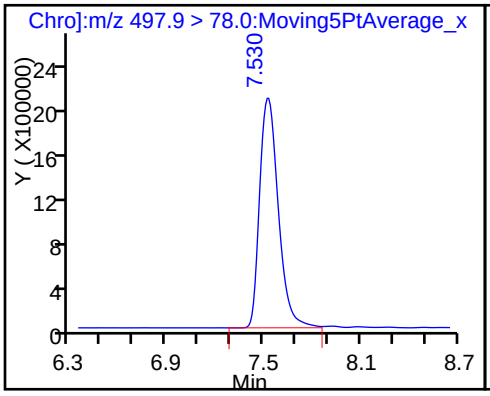
29 Perfluorododecanoic acid



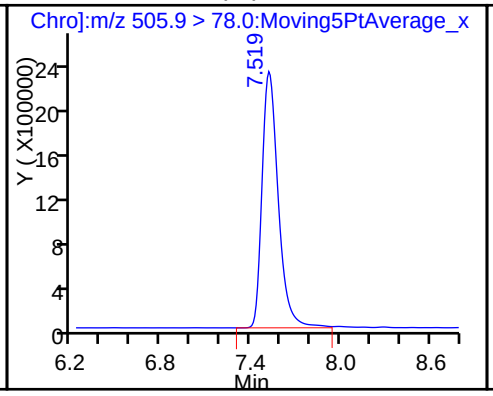
29 Perfluorododecanoic acid



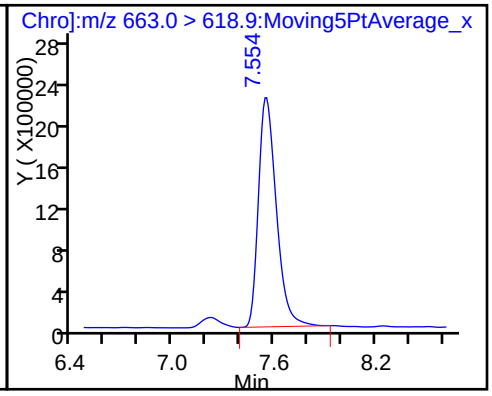
32 Perfluorooctane Sulfonamide



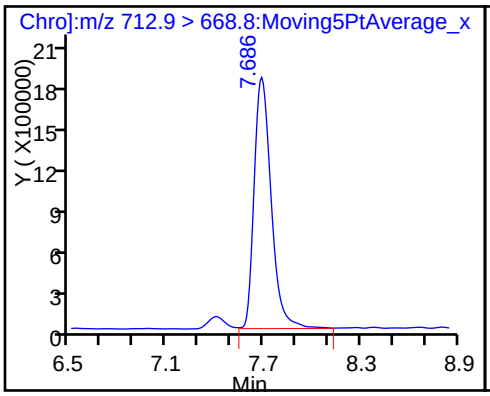
* 31 13C8 FOSA (IS)



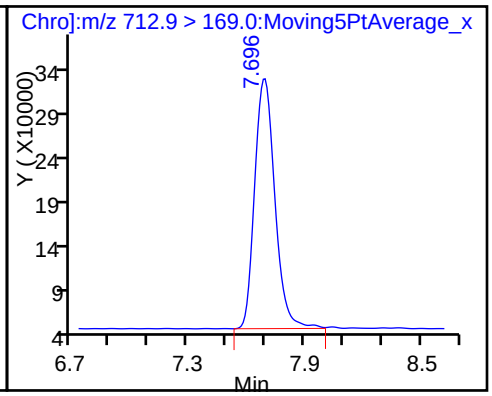
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07012.d
Lims ID: STD0200
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 07-Sep-2016 14:20:13 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0200, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:34 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:12:01

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	3.973	0.019		16431318	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.992	3.982	0.010	1.000	32331849	20.3			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.081	5.071	0.010	0.895	25531864	19.3			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.203	5.194	0.009	0.850	12391653	17.2			R
298.9 > 98.9	5.203	5.194	0.009	0.850	3685591		3.36(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.203	5.194	0.009	0.850	12391653	17.2			
298.9 > 98.9	5.203	5.194	0.009	0.850	3685591		3.36(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.658	0.019	1.000	19559068	18.9			
313.0 > 118.6	5.677	5.658	0.019	1.000	566713		34.51(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.667	0.009		11644511	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.102	0.018		1678175	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.112	6.102	0.010	0.946	28639644	20.8			
363.0 > 168.9	6.112	6.102	0.010	0.946	7130598		4.02(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.111	0.010	1.000	12009436	18.4			R
398.9 > 98.9	6.121	6.111	0.010	1.000	4112701		2.92(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.111	0.010	1.000	12009436	18.4			
398.9 > 98.9	6.121	6.111	0.010	1.000	4112701		2.92(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.441	0.010	0.958	12363031	19.2			
449.0 > 98.9	6.451	6.441	0.010	0.958	3494121		3.54(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.441	0.010	0.958	12363031	19.2			
449.0 > 98.9	6.451	6.441	0.010	0.958	3494121		3.54(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.442	0.019	1.000	28112642	20.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.451	0.010		17192463	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.452	0.009	1.000	34385834	20.3			
413.0 > 169.0	6.461	6.452	0.009	1.000	11205141		3.07(2.86-5.31)		
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.734	6.715	0.019	1.000	12566481	19.4			R
498.9 > 98.9	6.734	6.715	0.019	1.000	4864379		2.58(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.724	0.009		6000901	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	1.000	6998158	22.4			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.734	0.019	1.000	26623499	19.7			
463.0 > 218.9	6.753	6.734	0.019	1.000	3783354		7.04(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.744	0.009		13009978	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	6.988	0.019		13617091	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.007	6.988	0.019	1.000	25163537	19.2			R
513.0 > 219.0	7.007	6.988	0.019	1.000	2437277		10.32(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.195	7.176	0.019	1.069	13182012	19.3			
598.9 > 99.0	7.195	7.176	0.019	1.069	4163501		3.17(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.195	7.176	0.019	1.069	13182012	19.3			
598.9 > 99.0	7.195	7.176	0.019	1.069	4163501		3.17(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.196	0.028		7376019	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.224	7.196	0.028	1.000	20121450	20.7			R
563.0 > 268.9	7.224	7.196	0.028	1.000	2520601		7.98(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.412	7.375	0.037		17296860	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.413	7.384	0.029	1.000	33167835	19.4			
613.0 > 168.9	7.413	7.384	0.029	1.000	4228978		7.84(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.501	0.038	1.000	36847342	19.8			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.510	0.028		18283901	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.564	7.545	0.019	1.020	34774479	19.5			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.705	7.677	0.028	1.040	27352037	19.9			
712.9 > 169.0	7.705	7.677	0.028	1.040	4303647		6.36(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 40.00	Units: uL
PFC-LCS_00084	Amount Added: 40.00	Units: uL

Report Date: 08-Sep-2016 09:39:35 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07012.d

Injection Date: 07-Sep-2016 14:20:13 Instrument ID: LC_LCMS5

Lims ID: STD0200

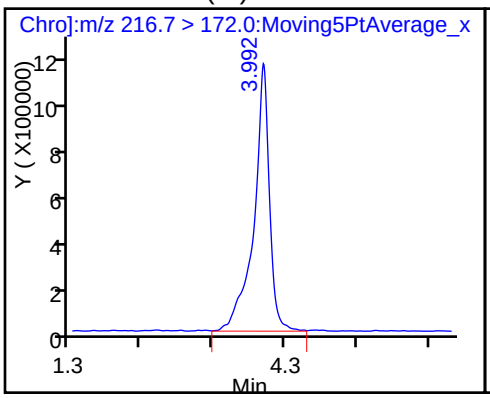
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 9

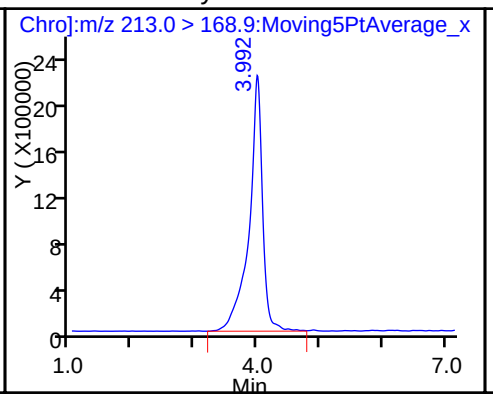
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

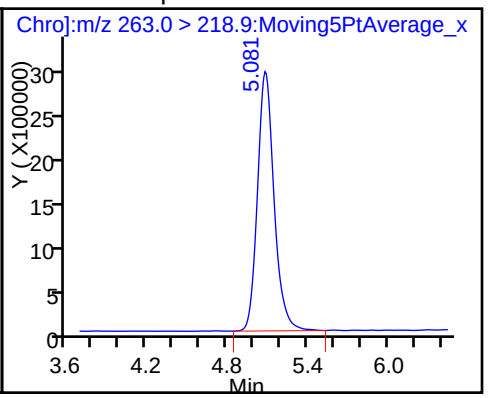
* 1 13C4 PFBA (IS)



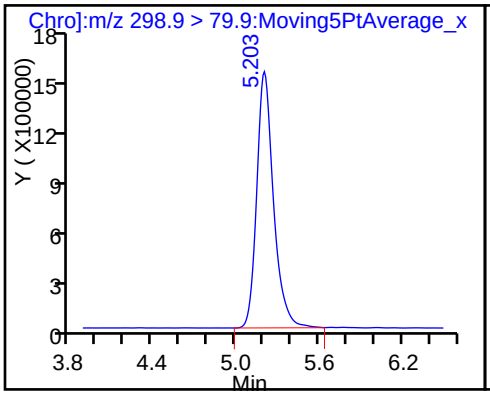
2 Perfluorobutyric acid



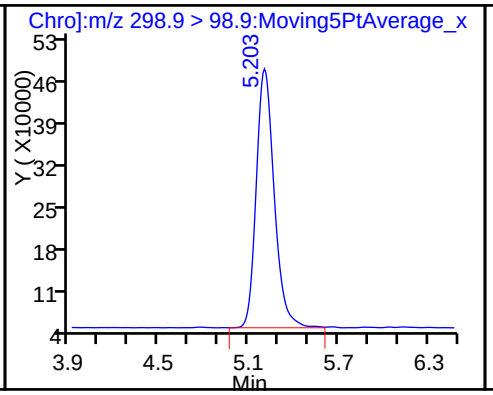
3 Perfluoropentanoic acid



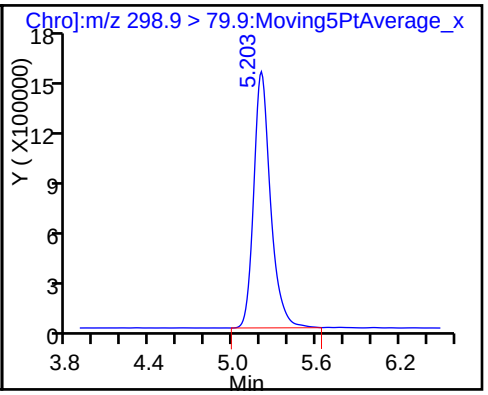
4 Perfluorobutane Sulfonate



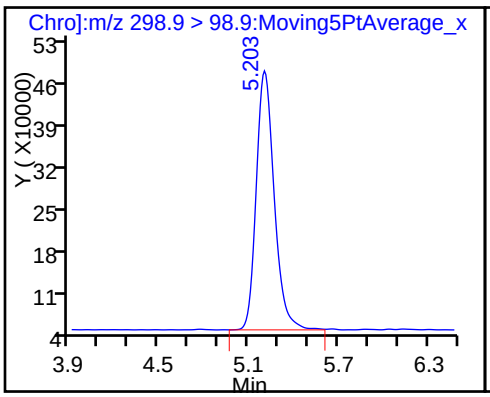
4 Perfluorobutane Sulfonate



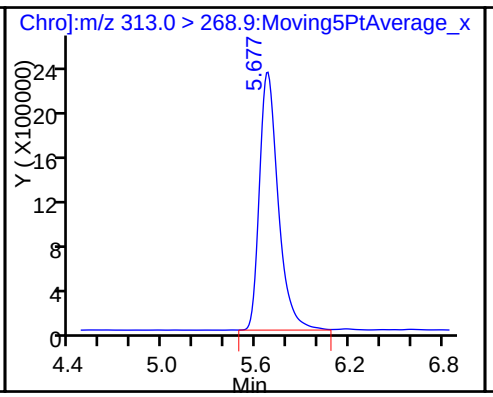
5 Perfluorobutanesulfonic acid



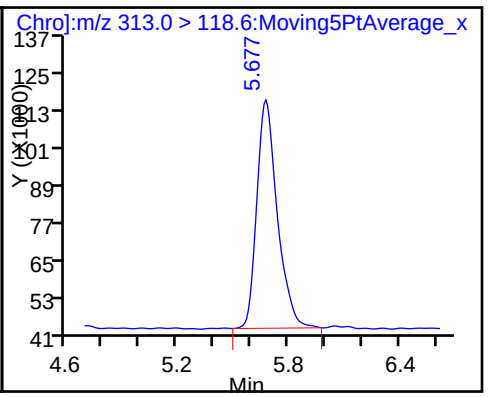
5 Perfluorobutanesulfonic acid



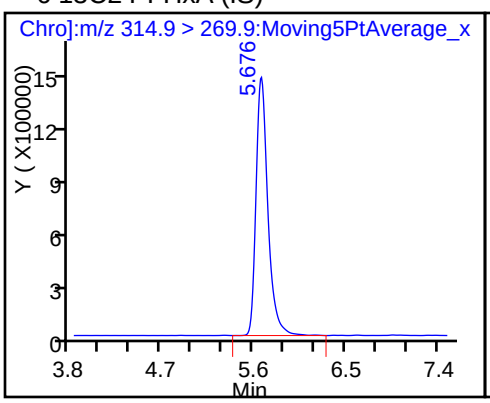
7 Perfluorohexanoic acid



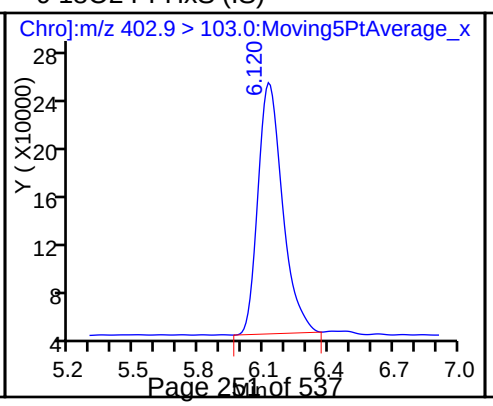
7 Perfluorohexanoic acid



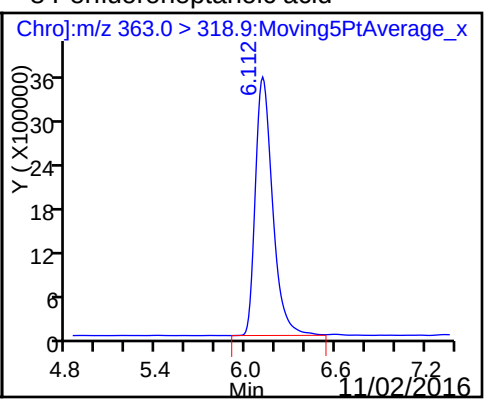
* 6 13C2 PFHxA (IS)



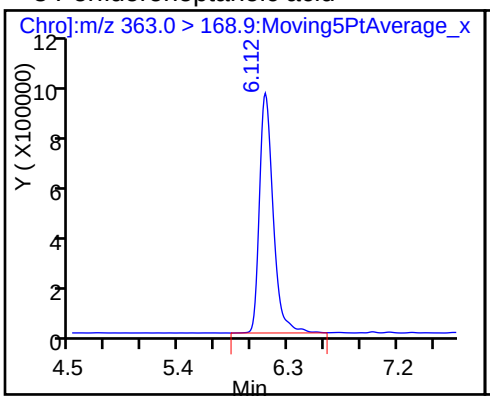
* 9 18O2 PFHxS (IS)



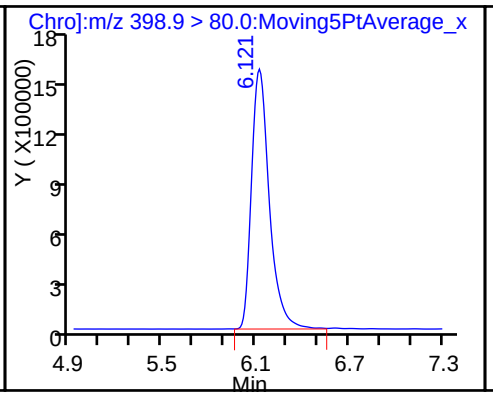
8 Perfluoroheptanoic acid



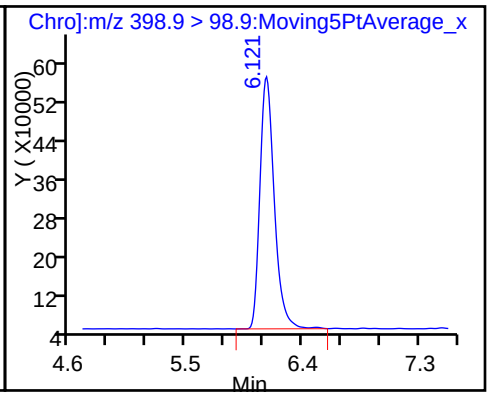
8 Perfluoroheptanoic acid



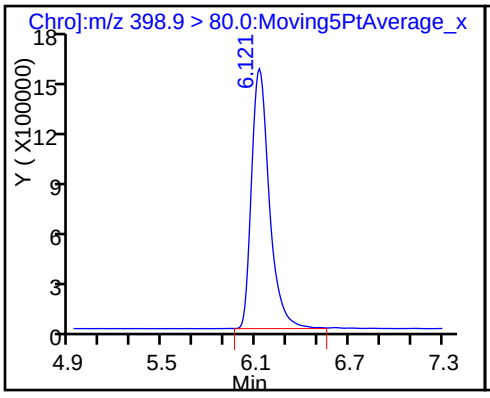
10 Perfluorohexane Sulfonate



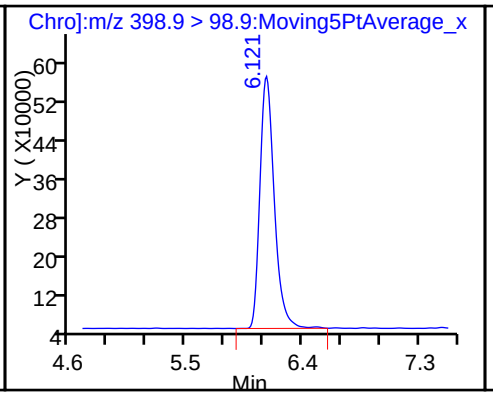
10 Perfluorohexane Sulfonate



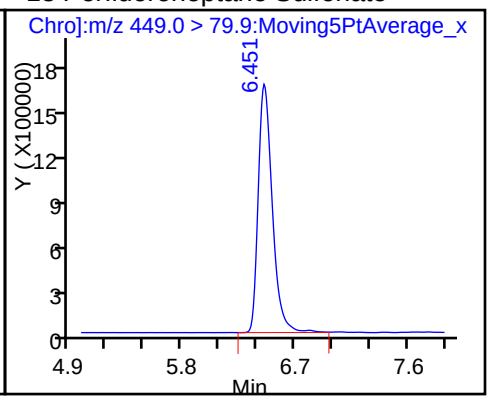
11 Perfluorohexanesulfonic acid



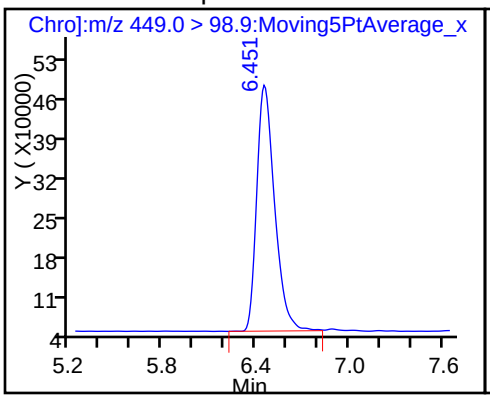
11 Perfluorohexanesulfonic acid



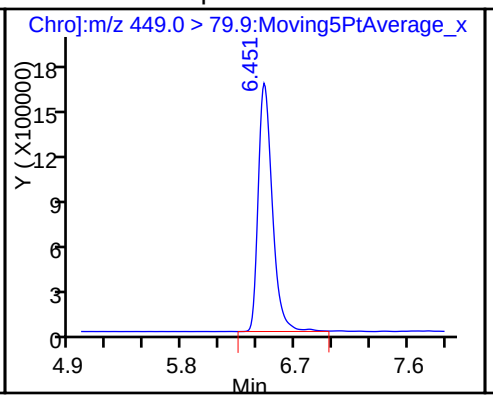
13 Perfluoroheptane Sulfonate



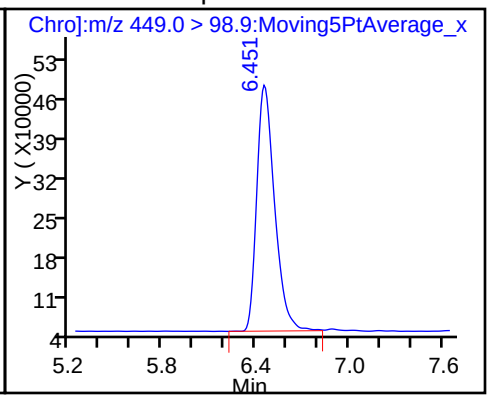
13 Perfluoroheptane Sulfonate



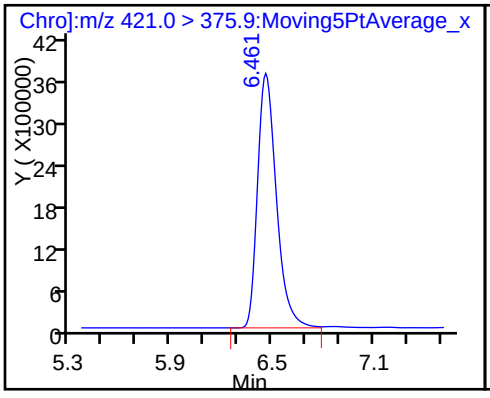
12 Perfluoroheptanesulfonic Acid



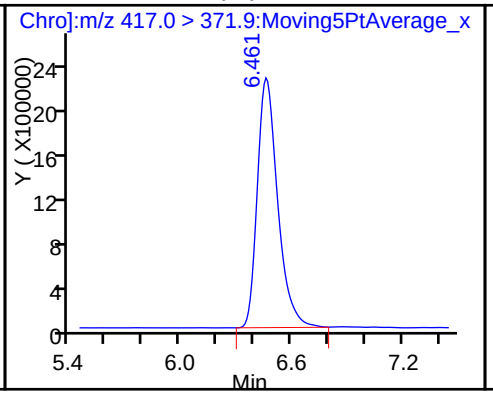
12 Perfluoroheptanesulfonic Acid



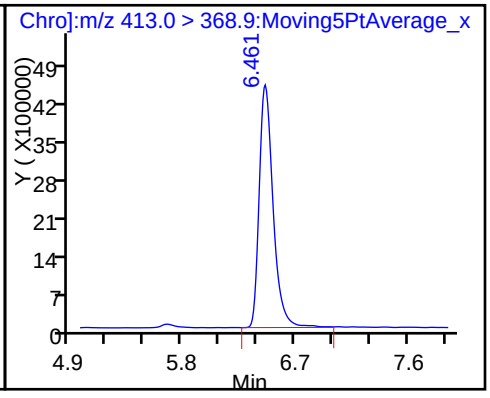
$ 14 13C8 PFOA



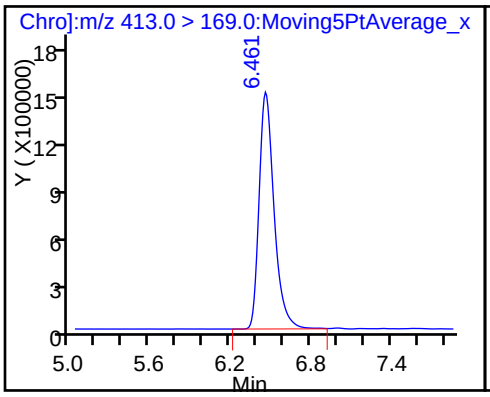
* 15 13C4 PFOA (IS)



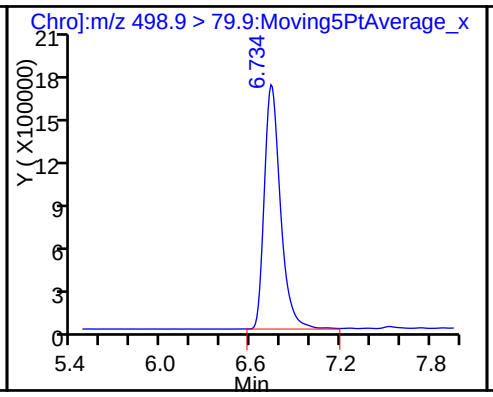
16 Perfluorooctanoic acid



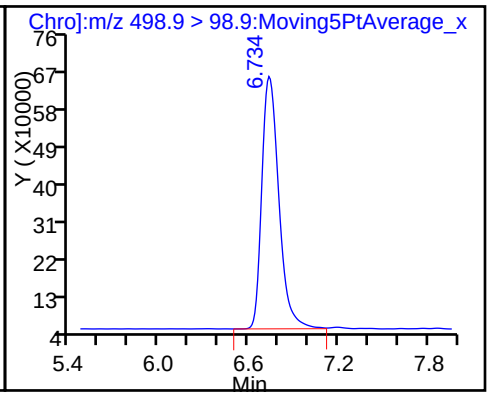
16 Perfluorooctanoic acid



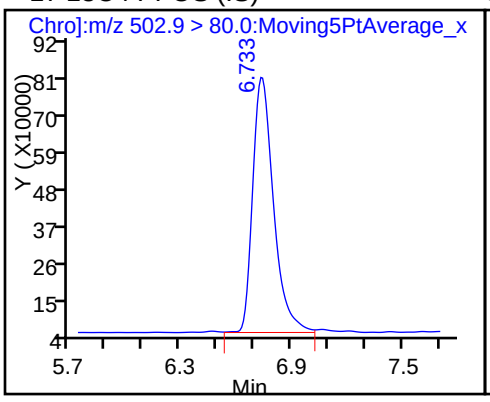
19 Perfluorooctane sulfonic acid



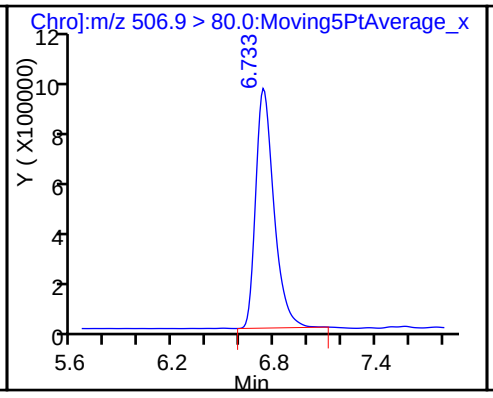
19 Perfluorooctane sulfonic acid



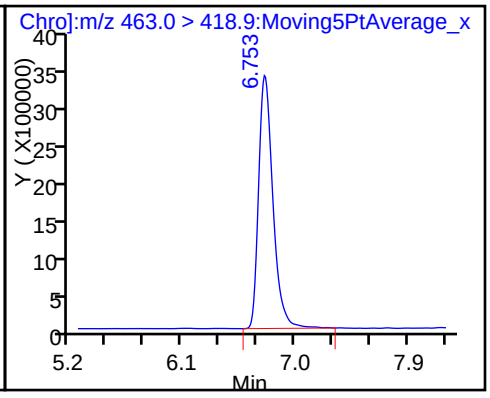
* 17 13C4 PFOS (IS)



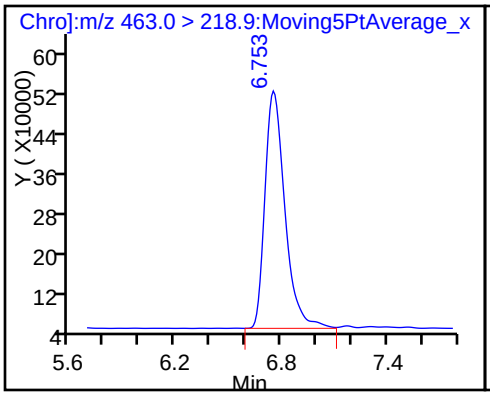
$ 18 13C8 PFOS



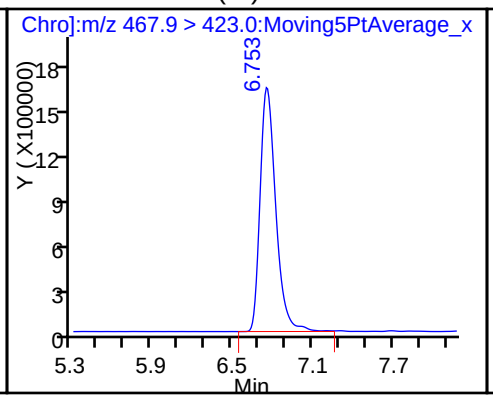
20 Perfluorononanoic acid



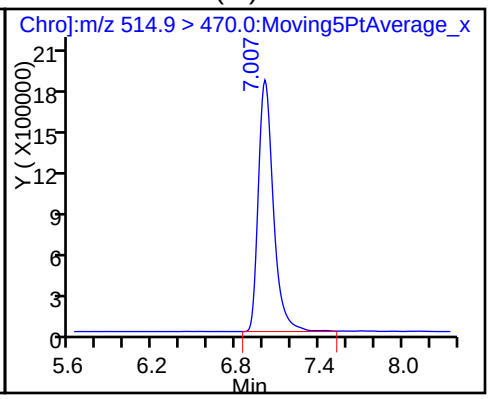
20 Perfluorononanoic acid



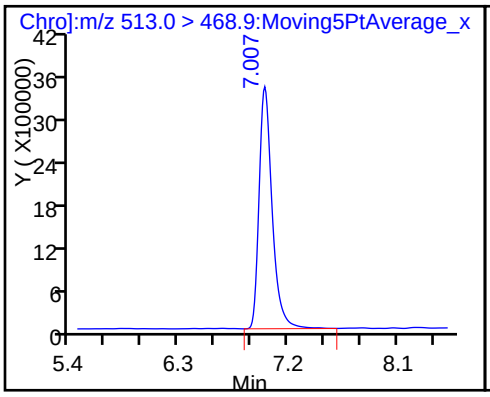
* 21 13C5 PFNA (IS)



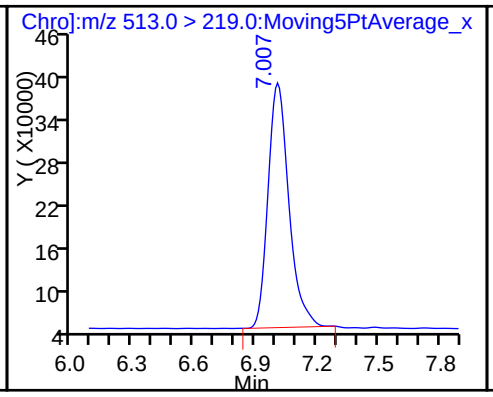
* 22 13C2 PFDA (IS)



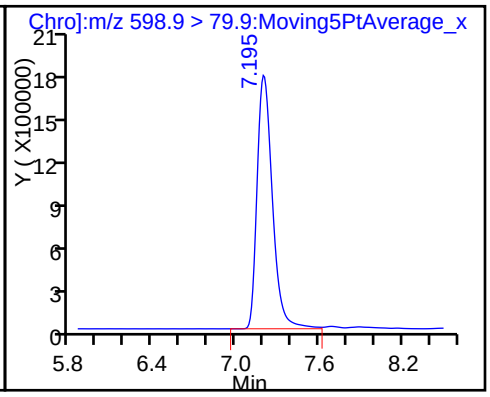
23 Perfluorodecanoic acid



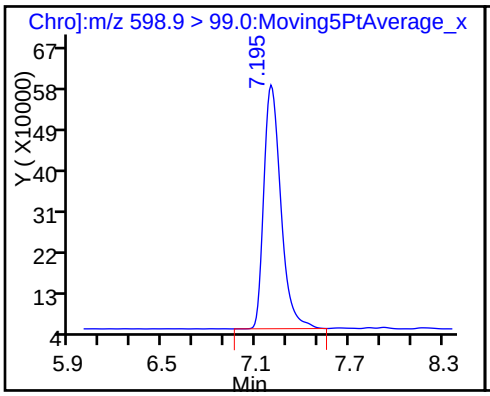
23 Perfluorodecanoic acid



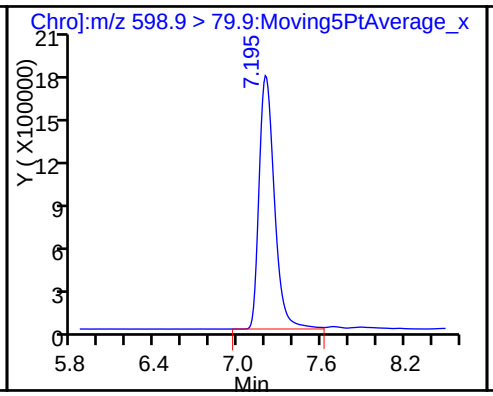
24 Perfluorodecane Sulfonic acid



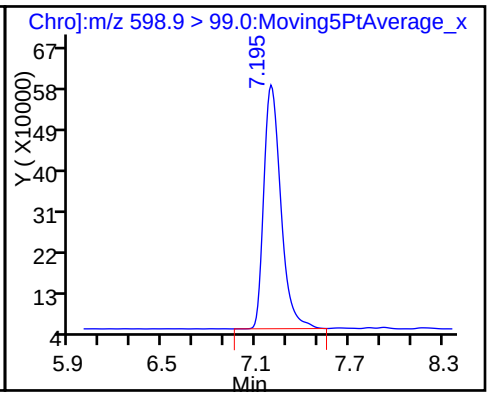
24 Perfluorodecane Sulfonic acid



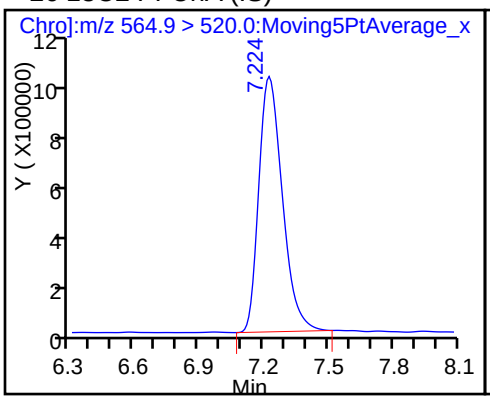
25 Perfluorodecane Sulfonate



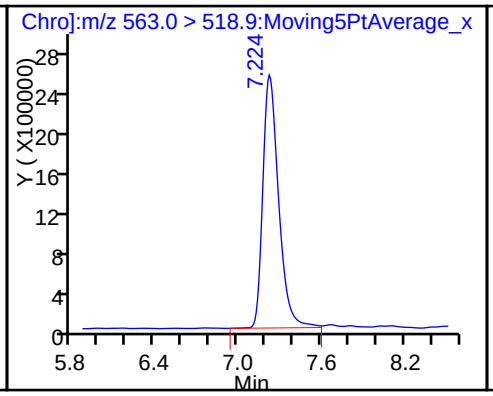
25 Perfluorodecane Sulfonate



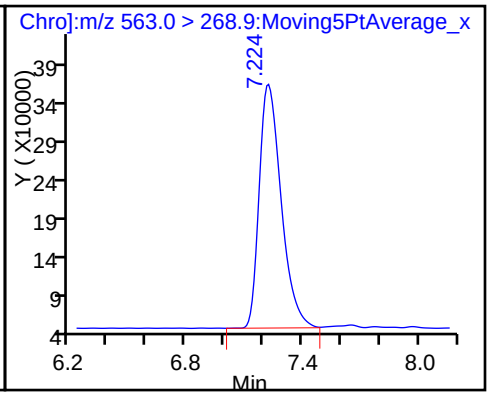
* 26 13C2 PFUnA (IS)



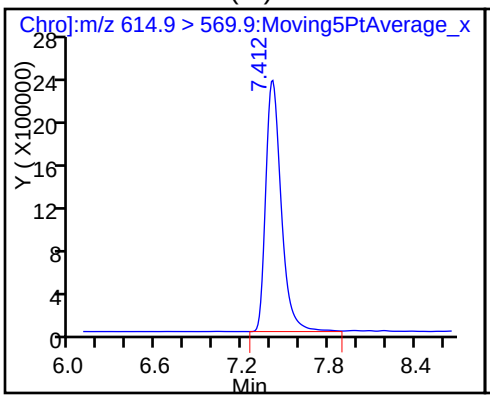
27 Perfluoroundecanoic acid



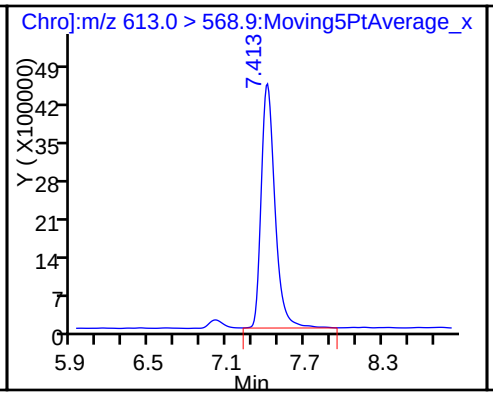
27 Perfluoroundecanoic acid



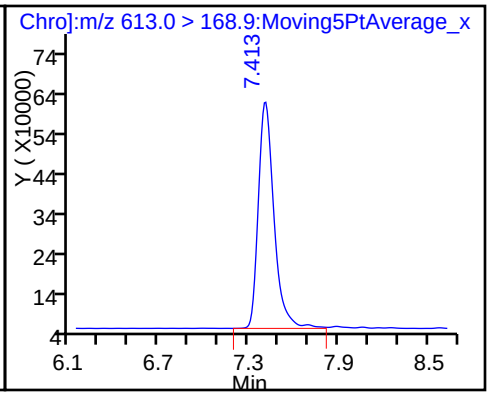
* 28 13C2 PFDoA (IS)



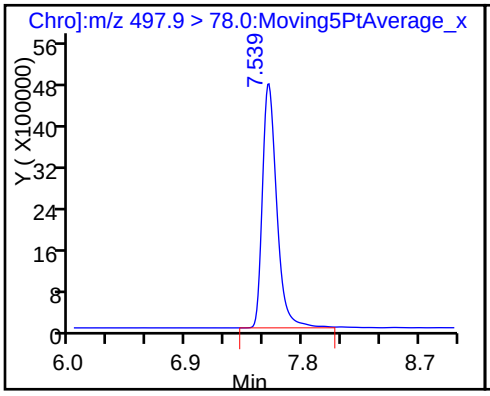
29 Perfluorododecanoic acid



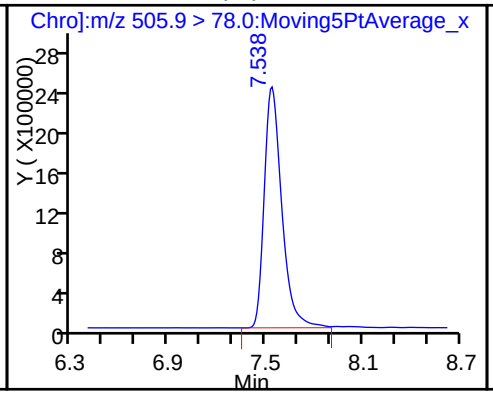
29 Perfluorododecanoic acid



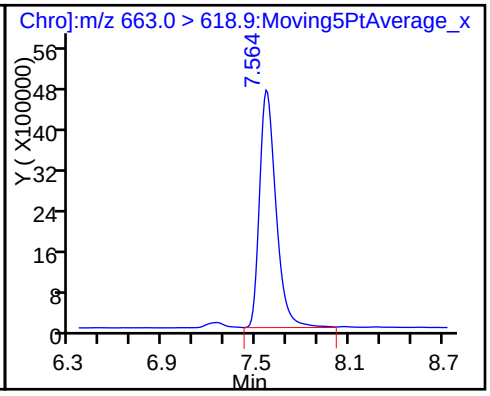
32 Perfluorooctane Sulfonamide



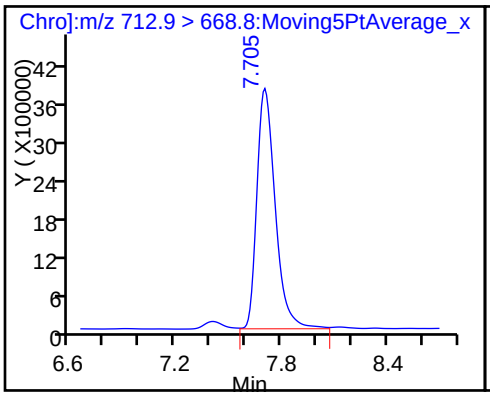
* 31 13C8 FOSA (IS)



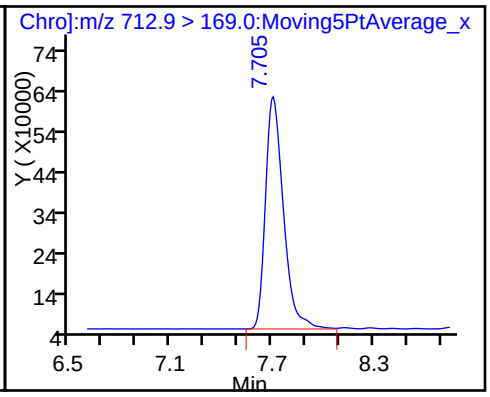
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07013.d
Lims ID: STD0500
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 07-Sep-2016 14:32:30 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0500, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:37 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:12:13

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.010	3.973	0.037		16302339	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.011	3.982	0.029	1.000	78774097	49.9			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.100	5.071	0.029	0.898	59608278	50.4			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.194	0.019	0.852	28732880	46.0			
298.9 > 98.9	5.213	5.194	0.019	0.852	8663943		3.32(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.194	0.019	0.852	28732880	46.0			
298.9 > 98.9	5.213	5.194	0.019	0.852	8663943		3.32(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.658	0.019	1.000	45687001	49.4			
313.0 > 118.6	5.677	5.658	0.019	1.000	1212986		37.66(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.667	0.009		10444978	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.102	0.018		1454506	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.112	6.102	0.010	0.945	65153721	49.1			
363.0 > 168.9	6.112	6.102	0.010	0.945	16583655		3.93(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.111	0.010	1.000	27537109	48.8			R
398.9 > 98.9	6.121	6.111	0.010	1.000	9227447		2.98(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.111	0.010	1.000	27537109	48.8			
398.9 > 98.9	6.121	6.111	0.010	1.000	9227447		2.98(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.460	6.441	0.019	0.958	28895107	48.2			
449.0 > 98.9	6.460	6.441	0.019	0.958	8513222		3.39(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.460	6.441	0.019	0.958	28895107	48.2			
449.0 > 98.9	6.460	6.441	0.019	0.958	8513222		3.39(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.442	0.019	0.999	58538791	44.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.470	6.451	0.019		16567263	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.452	0.009	0.999	76465851	47.0			
413.0 > 169.0	6.461	6.452	0.009	0.999	23966447		3.19(2.86-5.31)		
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.734	6.715	0.019	0.999	27664994	46.0			R
498.9 > 98.9	6.743	6.715	0.028	1.000	10859333		2.55(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.743	6.724	0.019		5576217	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	0.999	14796480	51.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.763	6.734	0.029	1.001	57697637	50.0			
463.0 > 218.9	6.763	6.734	0.029	1.001	8053236		7.16(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.744	0.009		11098425	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	6.988	0.019		12438312	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.998	6.988	0.010	0.999	59167220	49.3			
513.0 > 219.0	7.007	6.988	0.019	1.000	5497152		10.76(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.176	0.010	1.066	32156584	50.8			
598.9 > 99.0	7.186	7.176	0.010	1.066	9722092		3.31(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.176	0.010	1.066	32156584	50.8			
598.9 > 99.0	7.186	7.176	0.010	1.066	9722092		3.31(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.196	0.028		6689963	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.196	0.019	0.999	45626135	52.0			R
563.0 > 268.9	7.215	7.196	0.019	0.999	5869395		7.77(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.375	0.018		15879804	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.384	0.010	1.000	80865486	51.6			
613.0 > 168.9	7.394	7.384	0.010	1.000	10198956		7.93(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.520	7.501	0.019	0.999	86707198	49.8			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.510	0.019		17156410	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.554	7.545	0.009	1.022	80752372	49.3			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.686	7.677	0.009	1.040	62758763	49.7			
712.9 > 169.0	7.696	7.677	0.019	1.041	9679307		6.48(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC-LCS_00084	Amount Added: 100.00	Units: uL
PFC_Surr_00023	Amount Added: 100.00	Units: uL

Report Date: 08-Sep-2016 09:39:38 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07013.d

Injection Date: 07-Sep-2016 14:32:30 Instrument ID: LC_LCMS5

Lims ID: STD0500

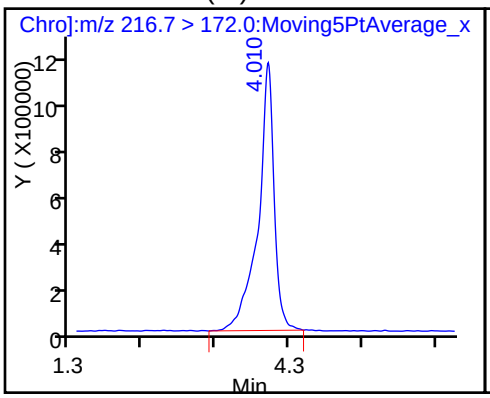
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 10

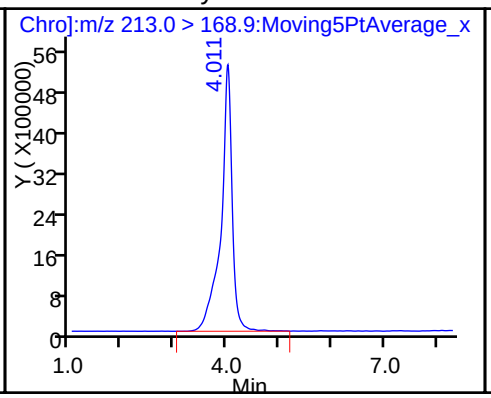
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

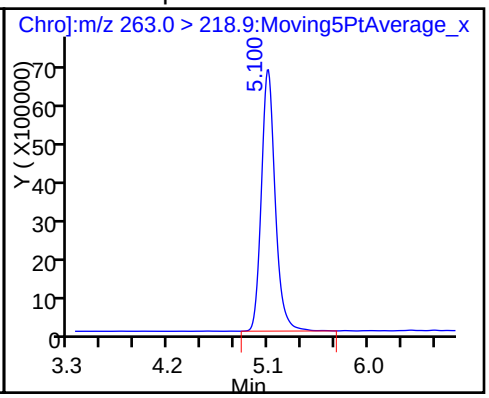
* 1 13C4 PFBA (IS)



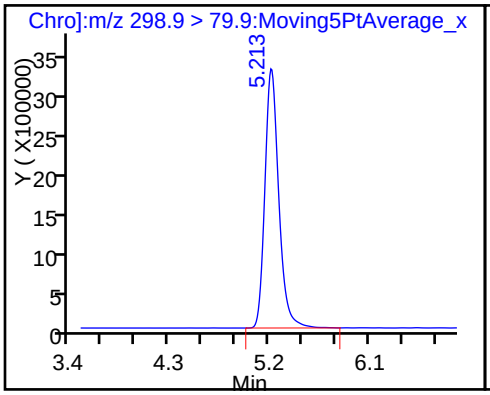
2 Perfluorobutyric acid



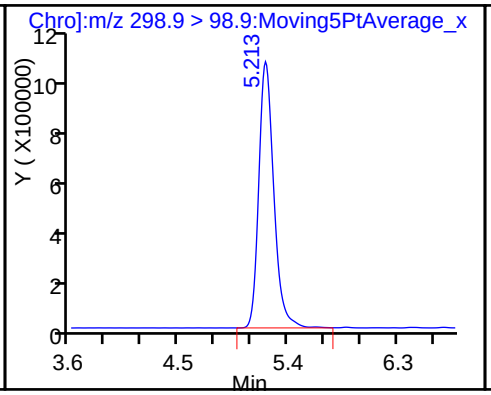
3 Perfluoropentanoic acid



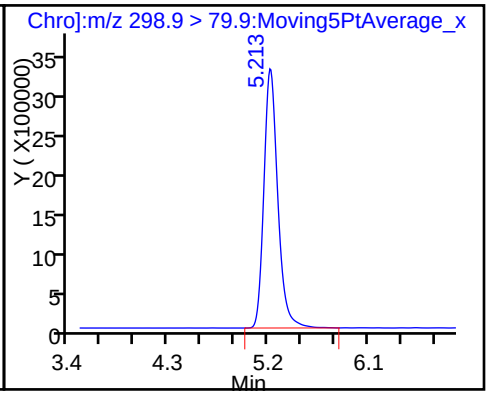
4 Perfluorobutane Sulfonate



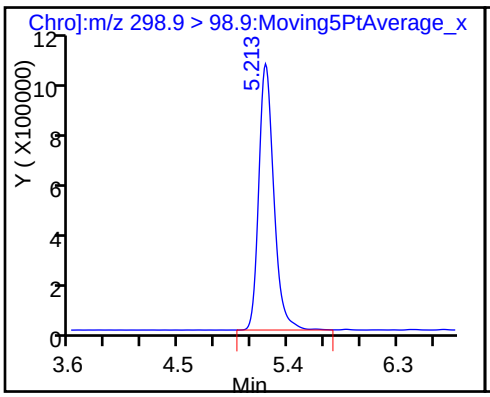
4 Perfluorobutane Sulfonate



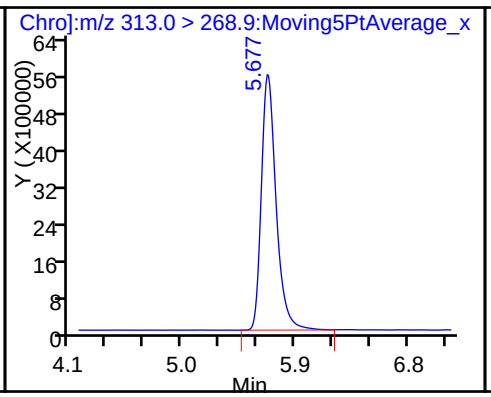
5 Perfluorobutanesulfonic acid



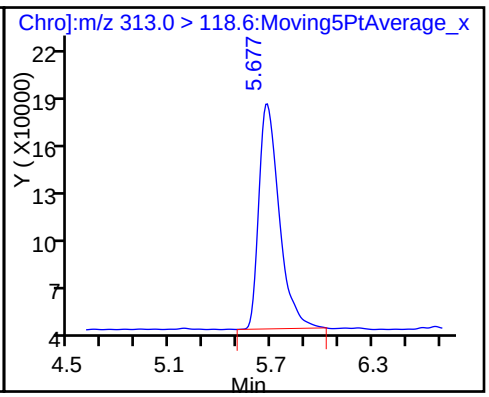
5 Perfluorobutanesulfonic acid



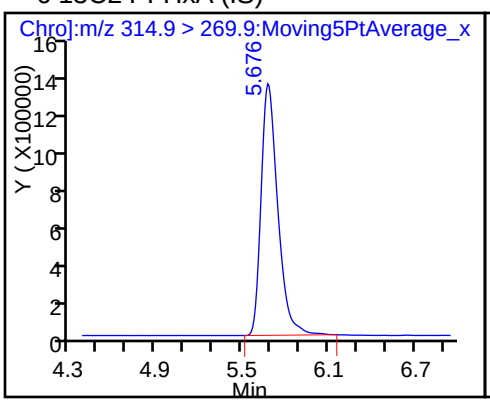
7 Perfluorohexanoic acid



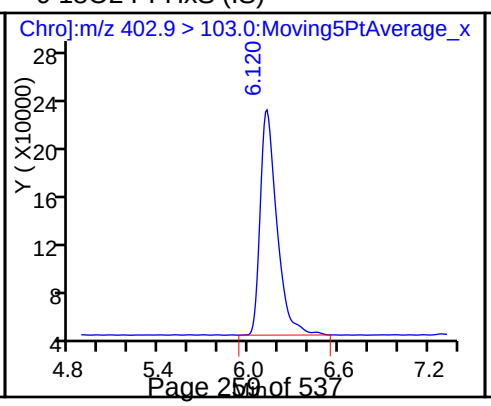
7 Perfluorohexanoic acid



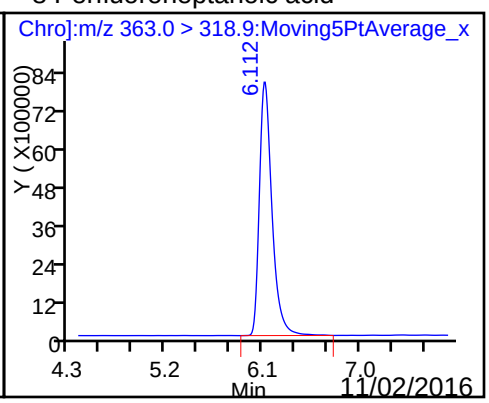
* 6 13C2 PFHxA (IS)



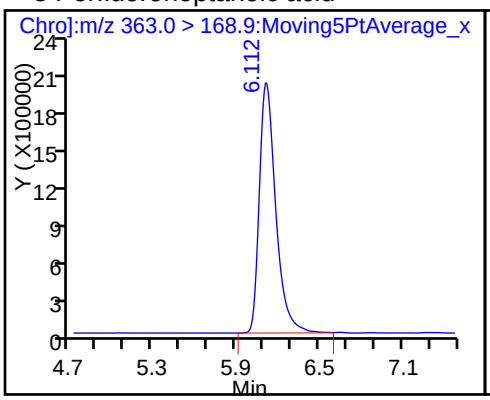
* 9 18O2 PFHxS (IS)



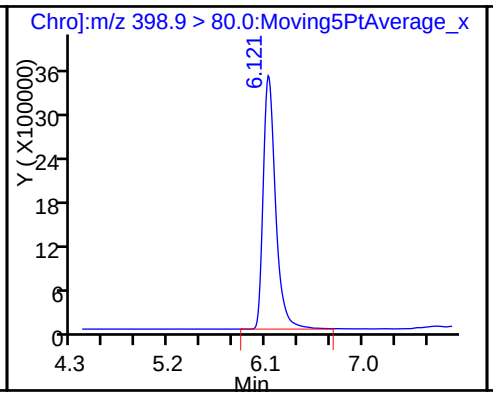
8 Perfluoroheptanoic acid



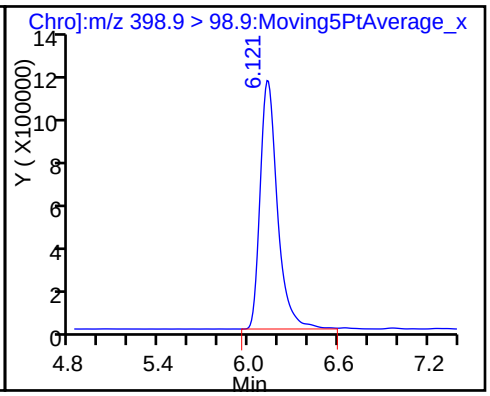
8 Perfluoroheptanoic acid



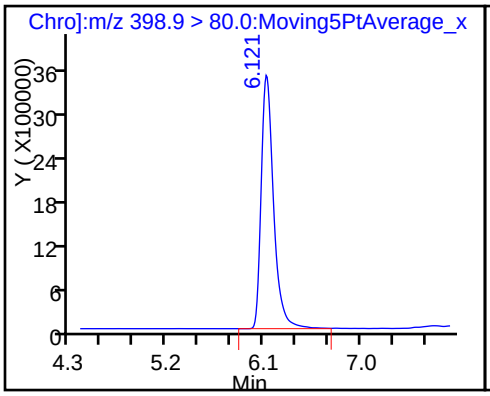
10 Perfluorohexane Sulfonate



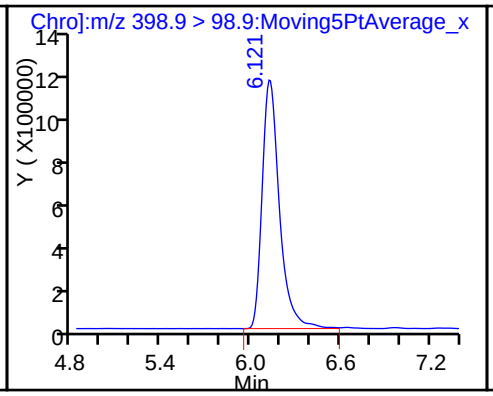
10 Perfluorohexane Sulfonate



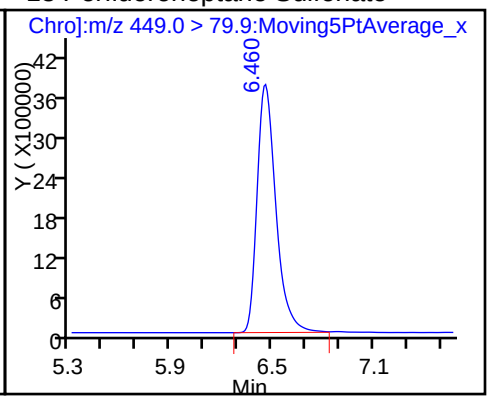
11 Perfluorohexanesulfonic acid



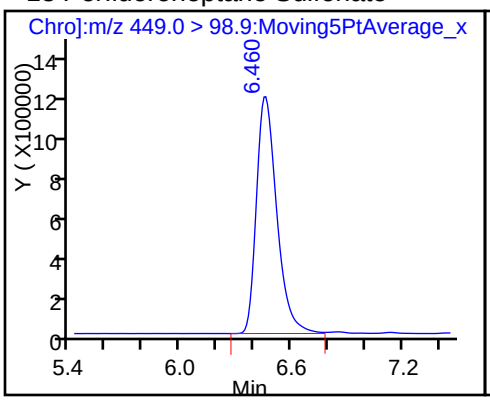
11 Perfluorohexanesulfonic acid



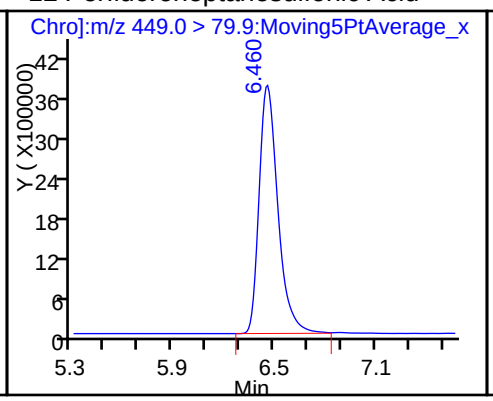
13 Perfluoroheptane Sulfonate



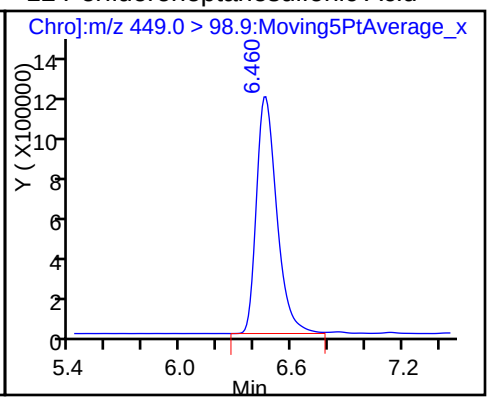
13 Perfluoroheptane Sulfonate



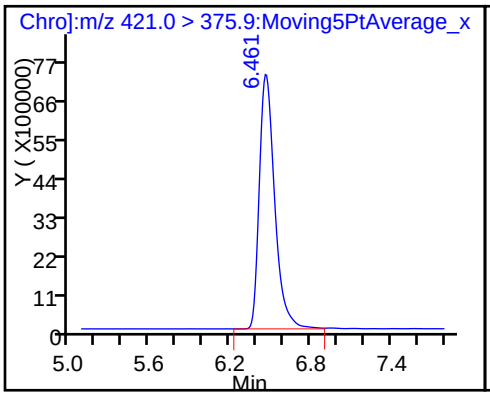
12 Perfluoroheptanesulfonic Acid



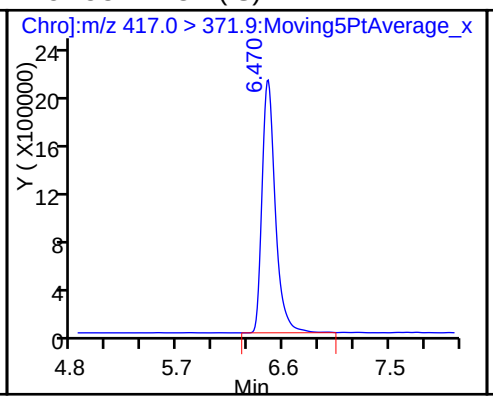
12 Perfluoroheptanesulfonic Acid



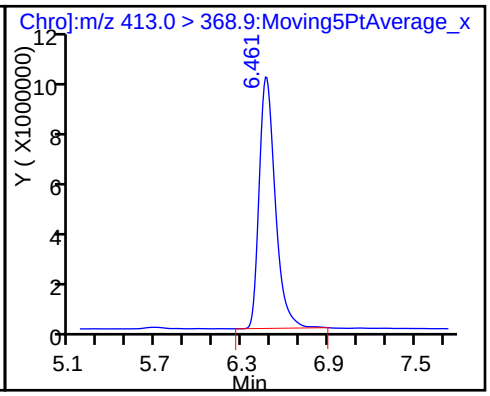
$ 14 13C8 PFOA



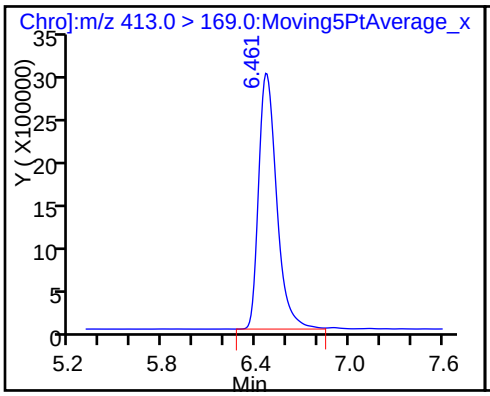
* 15 13C4 PFOA (IS)



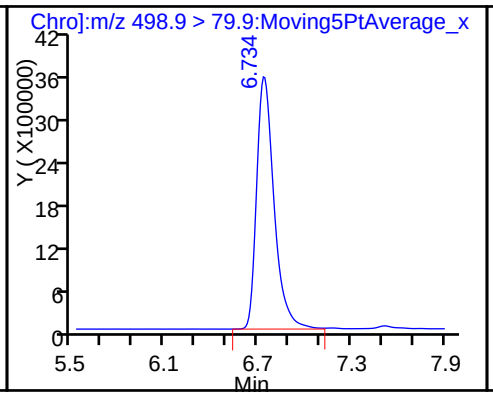
16 Perfluorooctanoic acid



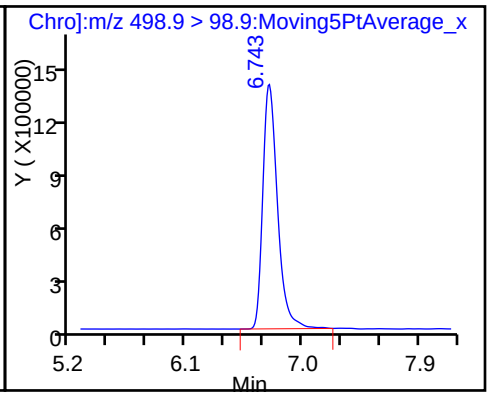
16 Perfluorooctanoic acid



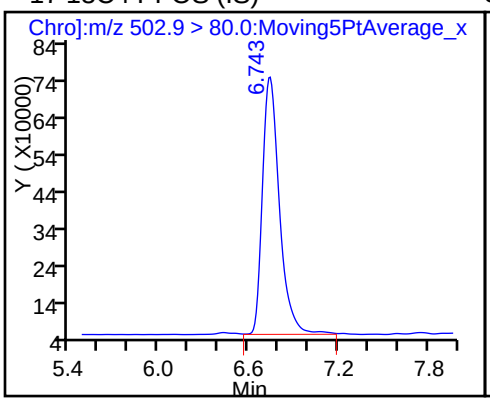
19 Perfluorooctane sulfonic acid



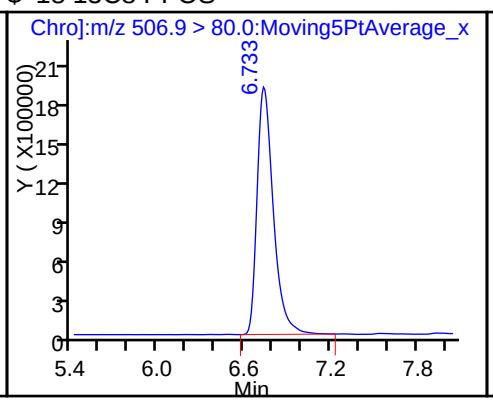
19 Perfluorooctane sulfonic acid



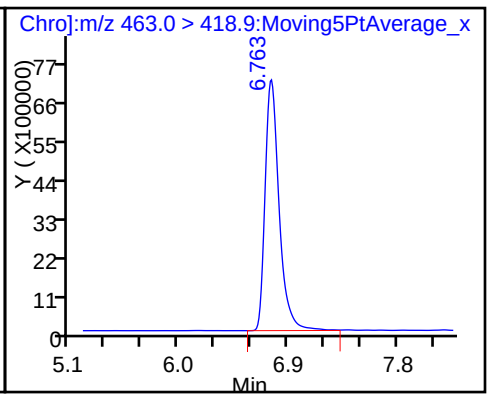
* 17 13C4 PFOS (IS)



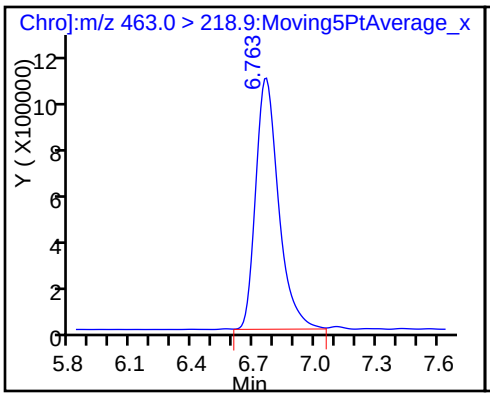
$ 18 13C8 PFOS



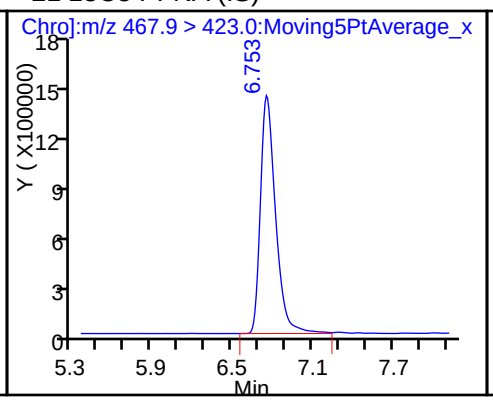
20 Perfluorononanoic acid



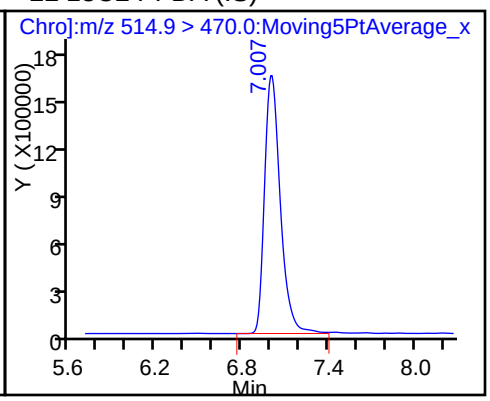
20 Perfluorononanoic acid



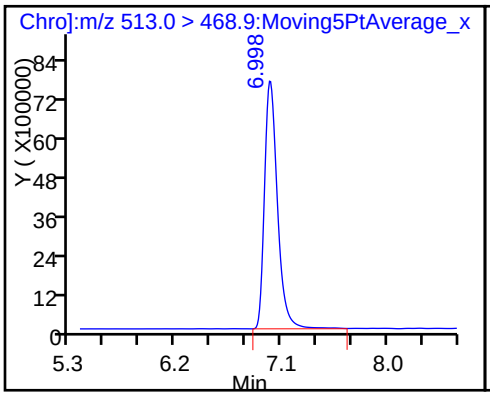
* 21 13C5 PFNA (IS)



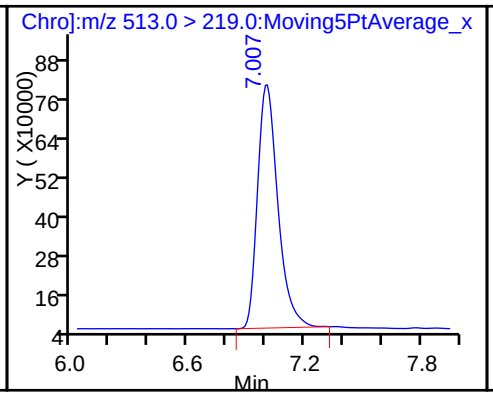
* 22 13C2 PFDA (IS)



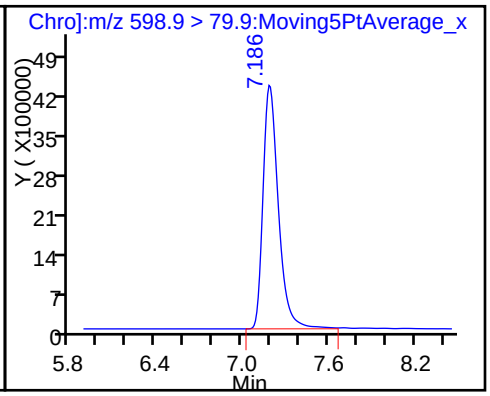
23 Perfluorodecanoic acid



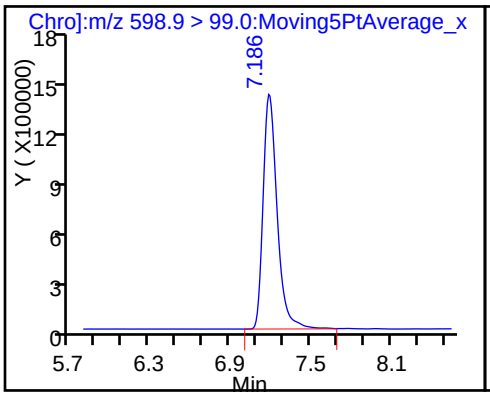
23 Perfluorodecanoic acid



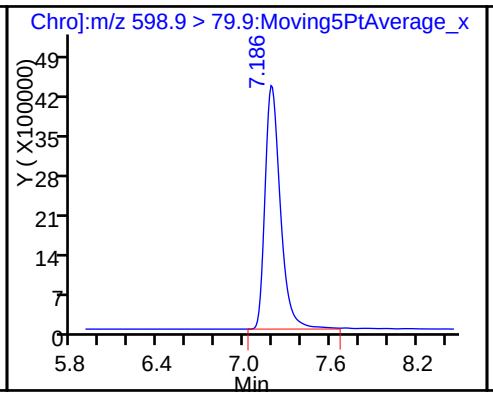
24 Perfluorodecane Sulfonic acid



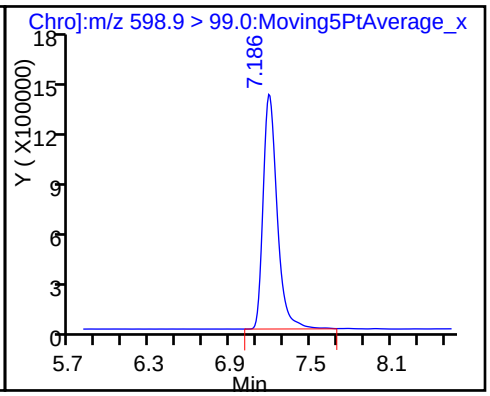
24 Perfluorodecane Sulfonic acid



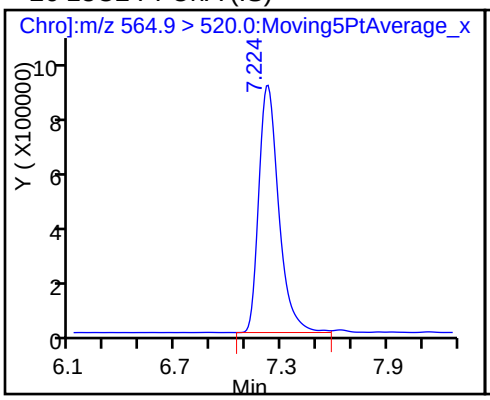
25 Perfluorodecane Sulfonate



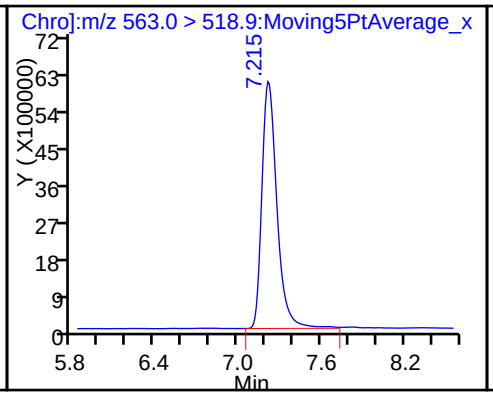
25 Perfluorodecane Sulfonate



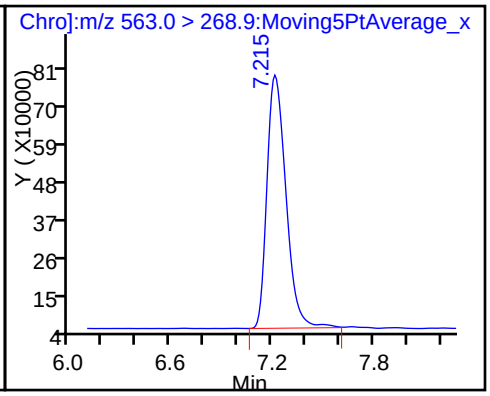
* 26 13C2 PFUnA (IS)



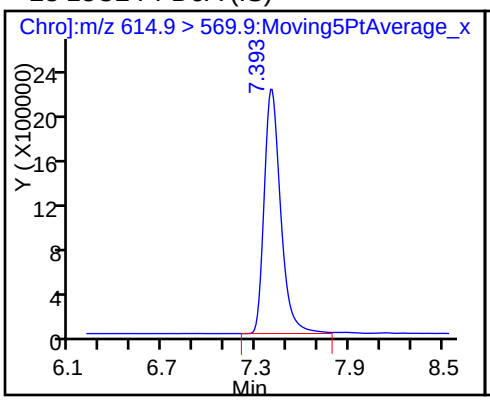
27 Perfluoroundecanoic acid



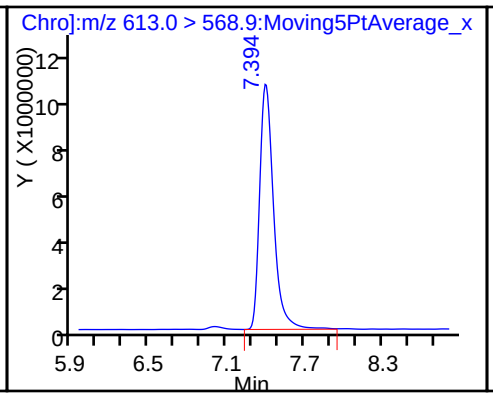
27 Perfluoroundecanoic acid



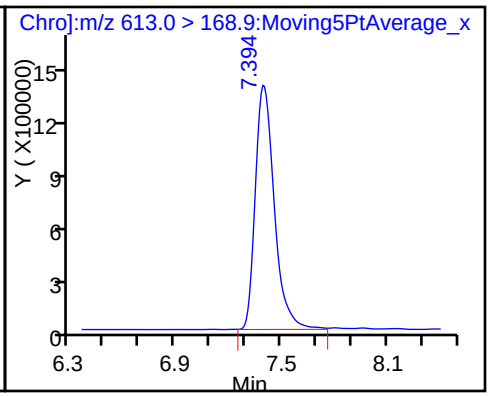
* 28 13C2 PFDoA (IS)



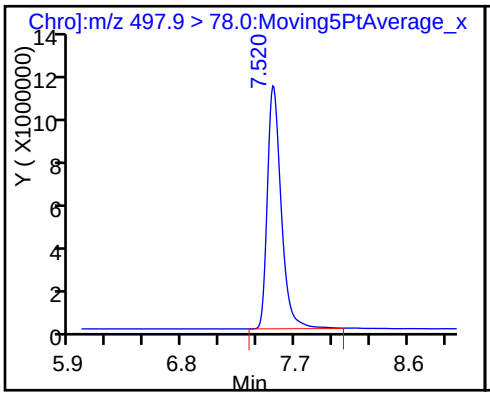
29 Perfluorododecanoic acid



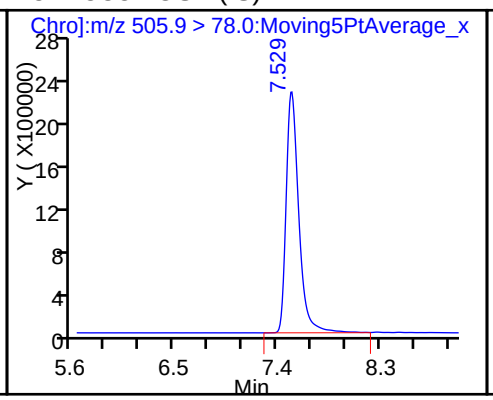
29 Perfluorododecanoic acid



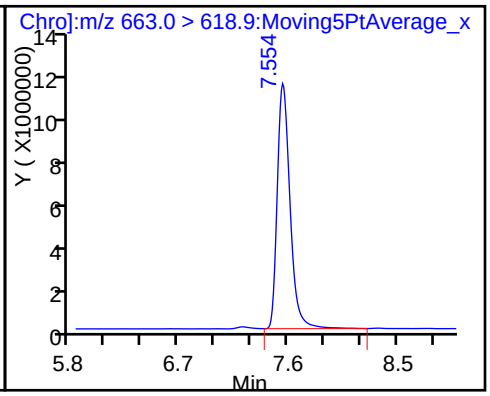
32 Perfluorooctane Sulfonamide



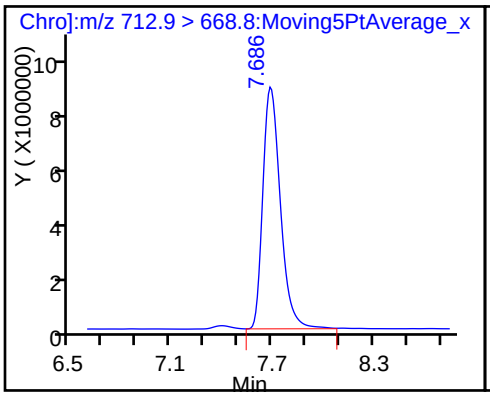
* 31 13C8 FOSA (IS)



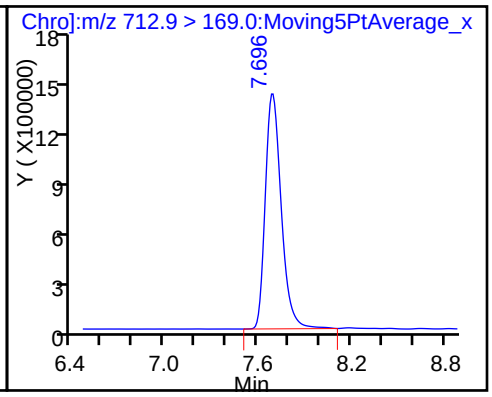
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d
Lims ID: STD1250
Client ID:
Sample Type: IC Calib Level: 9
Inject. Date: 07-Sep-2016 14:44:50 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 1250, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:40 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:12:26

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	3.973	0.028		15939976	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.001	3.982	0.019	1.000	190870861	123.9			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.090	5.071	0.019	0.897	142787415	127.3			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.213	5.194	0.019	0.852	66668224	114.9			R
298.9 > 98.9	5.213	5.194	0.019	0.852	19595518		3.40(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.194	0.019	0.852	66668224	114.9			
298.9 > 98.9	5.213	5.194	0.019	0.852	19595518		3.40(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.658	0.019	1.000	109820330	125.2			
313.0 > 118.6	5.677	5.658	0.019	1.000	3042098		36.10(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.667	0.009		9919410	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.102	0.018		1351030	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.112	6.102	0.010	0.945	146384241	115.5			
363.0 > 168.9	6.112	6.102	0.010	0.945	37520516		3.90(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.111	0.010	1.000	60850526	116.3			R
398.9 > 98.9	6.121	6.111	0.010	1.000	19831132		3.07(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.111	0.010	1.000	60850526	116.3			
398.9 > 98.9	6.121	6.111	0.010	1.000	19831132		3.07(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.441	0.010	0.957	62734208	109.9			
449.0 > 98.9	6.460	6.441	0.019	0.958	19148144		3.28(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.441	0.010	0.957	62734208	109.9			
449.0 > 98.9	6.460	6.441	0.019	0.958	19148144		3.28(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.442	0.019	0.999	124257098	97.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.470	6.451	0.019		15825349	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.471	6.452	0.019	1.000	164933072	106.2			
413.0 > 169.0	6.461	6.452	0.009	0.999	49878103		3.31(2.86-5.31)		
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.734	6.715	0.019	0.999	58624534	102.4			R
498.9 > 98.9	6.743	6.715	0.028	1.000	22288590		2.63(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.743	6.724	0.019		5315471	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.742	6.733	0.009	1.000	30381289	110.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.763	6.734	0.029	1.000	122529912	122.4			
463.0 > 218.9	6.763	6.734	0.029	1.000	17264453		7.10(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.763	6.744	0.019		9635703	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	6.988	0.019		11591018	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.007	6.988	0.019	1.000	137325415	122.9			
513.0 > 219.0	7.007	6.988	0.019	1.000	12694986		10.82(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.195	7.176	0.019	1.067	71199503	118.0			
598.9 > 99.0	7.195	7.176	0.019	1.067	21035459		3.38(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.195	7.176	0.019	1.067	71199503	118.0			
598.9 > 99.0	7.195	7.176	0.019	1.067	21035459		3.38(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.196	0.028		5831053	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.224	7.196	0.028	1.000	99650722	130.5			R
563.0 > 268.9	7.224	7.196	0.028	1.000	12864723		7.75(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.403	7.375	0.028		14473703	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.403	7.384	0.019	1.000	183917657	128.9			
613.0 > 168.9	7.403	7.384	0.019	1.000	24252784		7.58(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.501	0.029	1.000	191982435	124.7			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.510	0.019		15179779	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.564	7.545	0.019	1.022	180508840	121.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.696	7.677	0.019	1.040	134948944	117.2			
712.9 > 169.0	7.696	7.677	0.019	1.040	21158263		6.38(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 250.00	Units: uL
PFC-LCS_00084	Amount Added: 250.00	Units: uL

Report Date: 08-Sep-2016 09:39:41 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Injection Date: 07-Sep-2016 14:44:50 Instrument ID: LC_LCMS5

Lims ID: STD1250

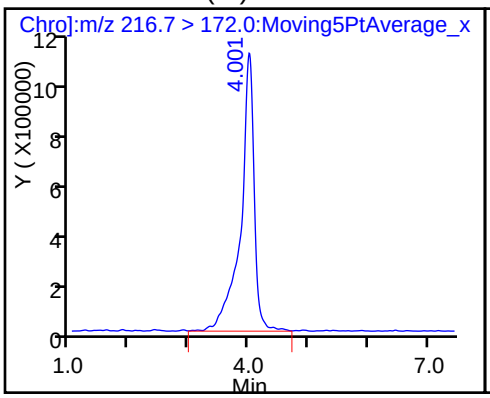
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 11

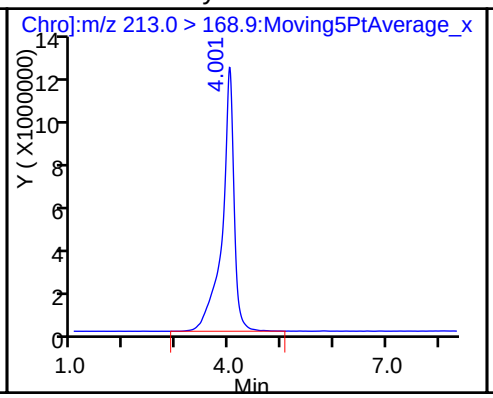
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

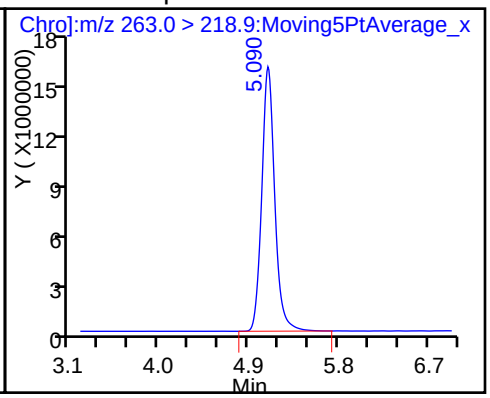
* 1 13C4 PFBA (IS)



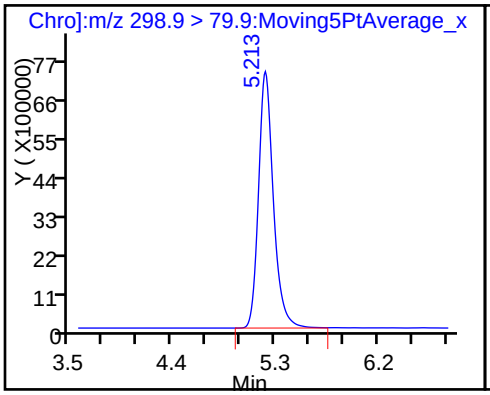
2 Perfluorobutyric acid



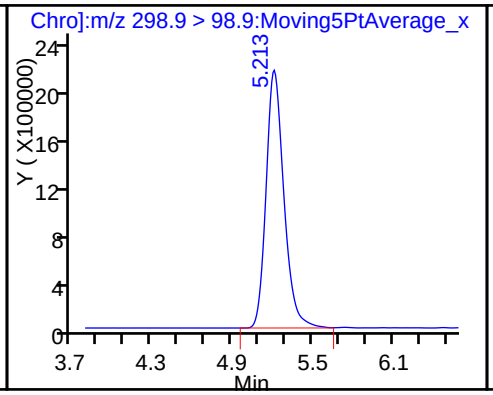
3 Perfluoropentanoic acid



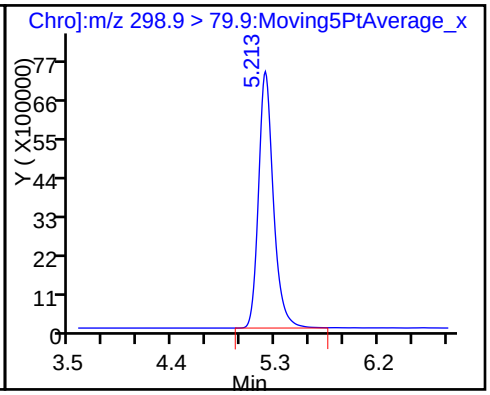
4 Perfluorobutane Sulfonate



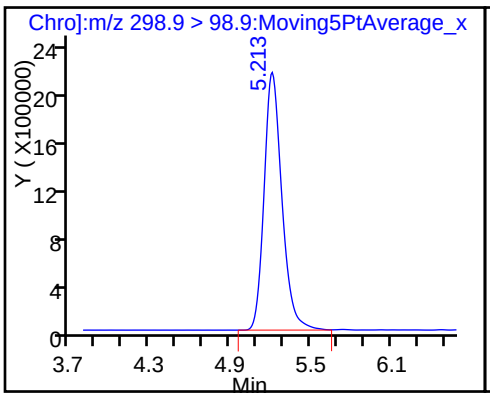
4 Perfluorobutane Sulfonate



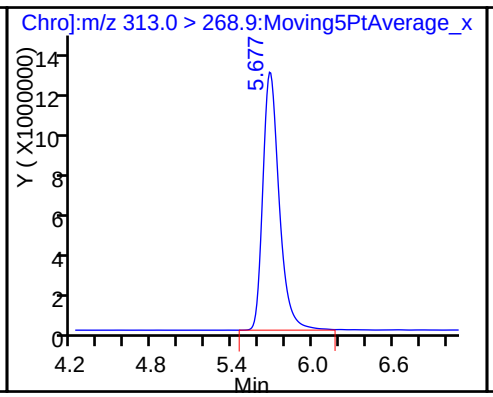
5 Perfluorobutanesulfonic acid



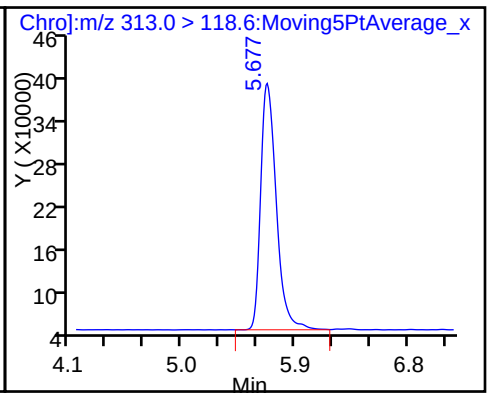
5 Perfluorobutanesulfonic acid



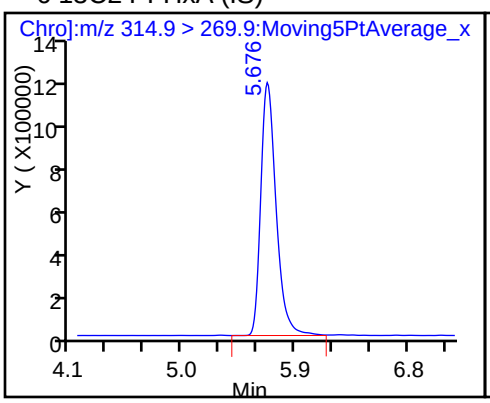
7 Perfluorohexanoic acid



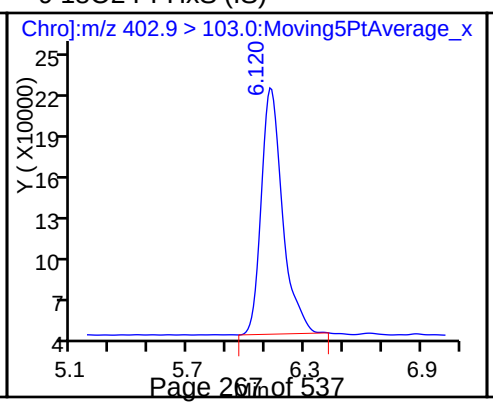
7 Perfluorohexanoic acid



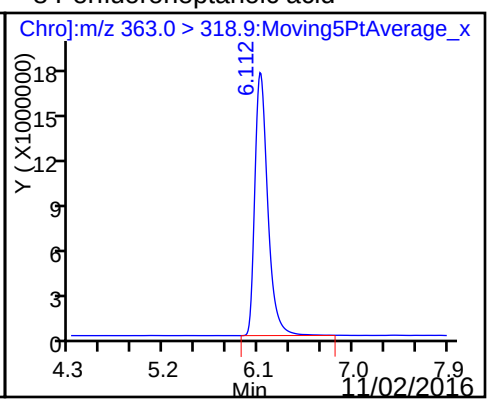
* 6 13C2 PFHxA (IS)



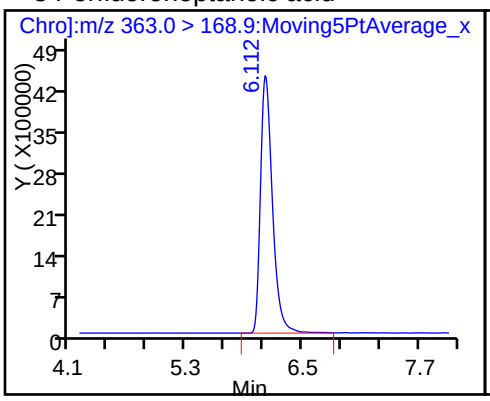
* 9 18O2 PFHxS (IS)



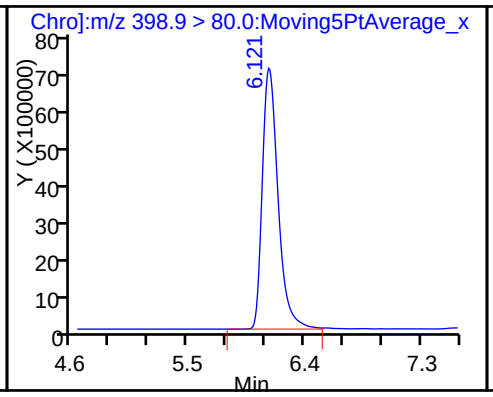
8 Perfluoroheptanoic acid



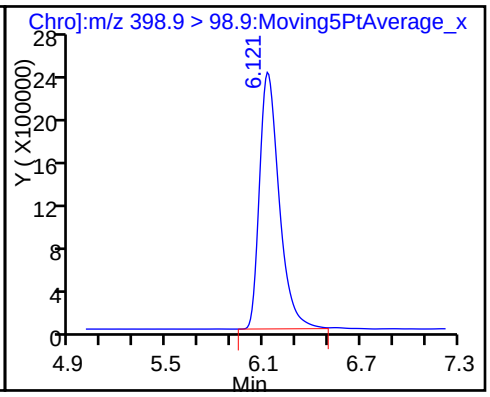
8 Perfluoroheptanoic acid



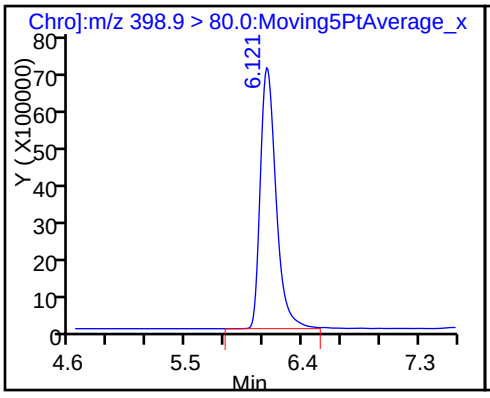
10 Perfluorohexane Sulfonate



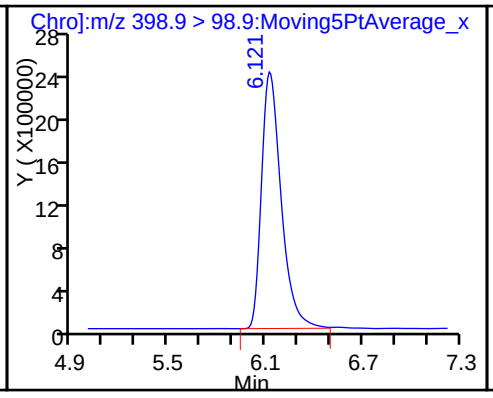
10 Perfluorohexane Sulfonate



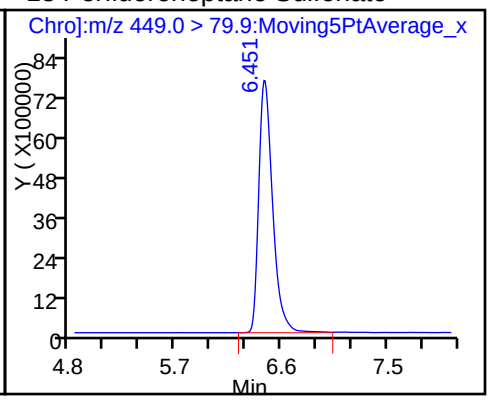
11 Perfluorohexanesulfonic acid



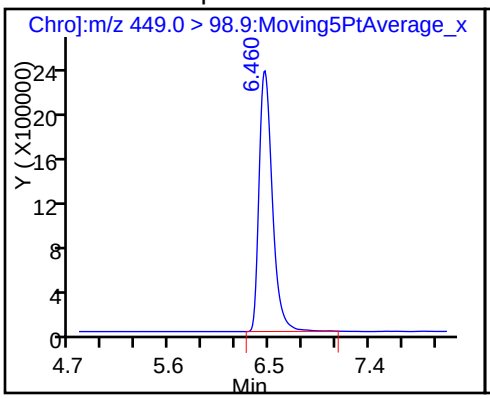
11 Perfluorohexanesulfonic acid



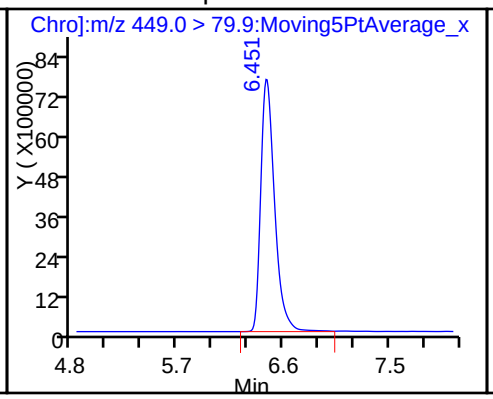
13 Perfluoroheptane Sulfonate



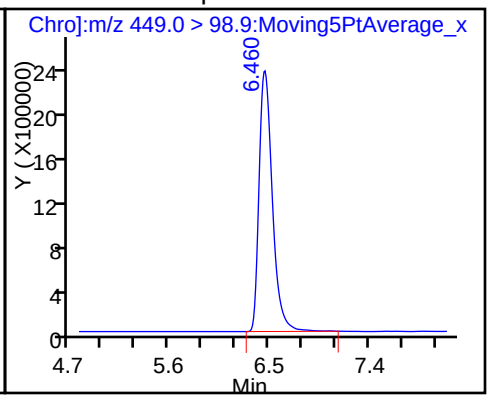
13 Perfluoroheptane Sulfonate



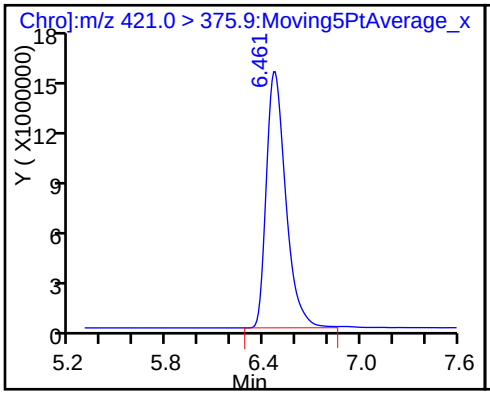
12 Perfluoroheptanesulfonic Acid



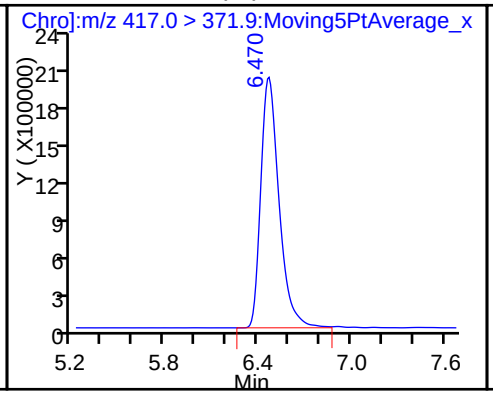
12 Perfluoroheptanesulfonic Acid



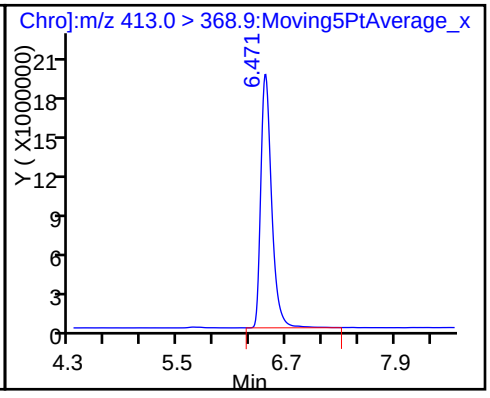
$ 14 13C8 PFOA



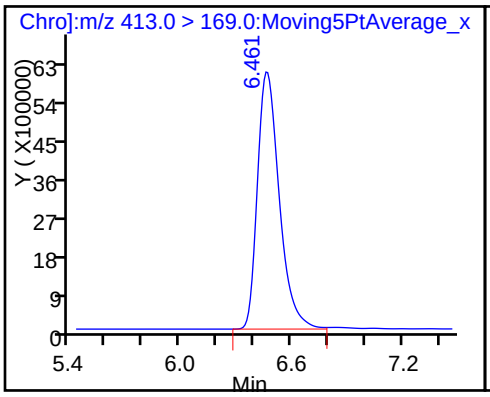
* 15 13C4 PFOA (IS)



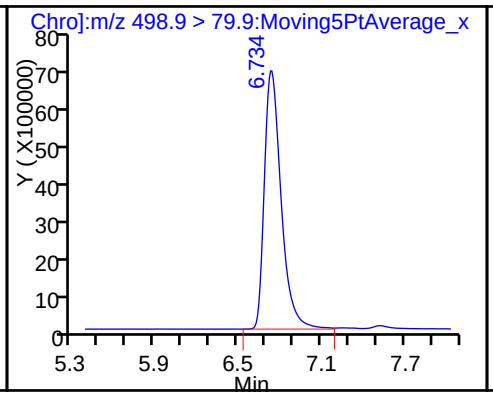
16 Perfluorooctanoic acid



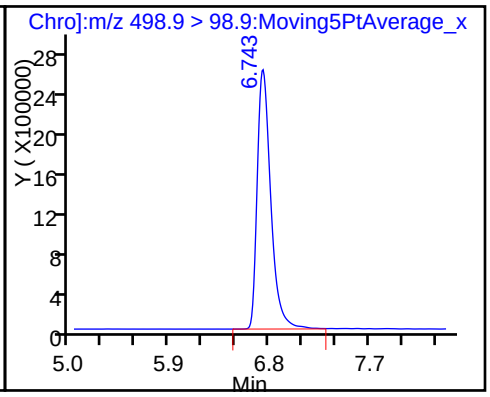
16 Perfluorooctanoic acid



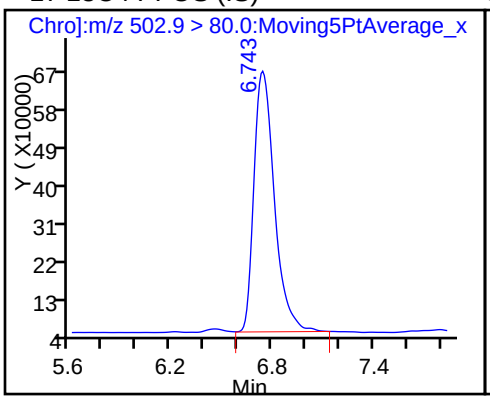
19 Perfluorooctane sulfonic acid



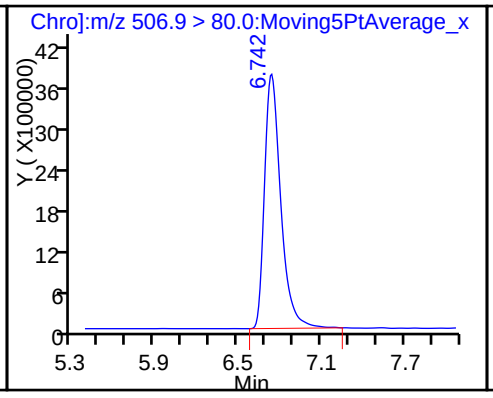
19 Perfluorooctane sulfonic acid



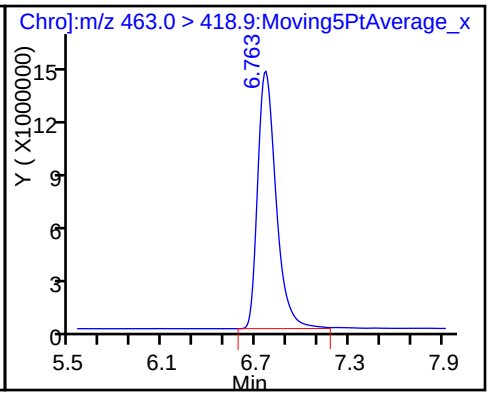
* 17 13C4 PFOS (IS)



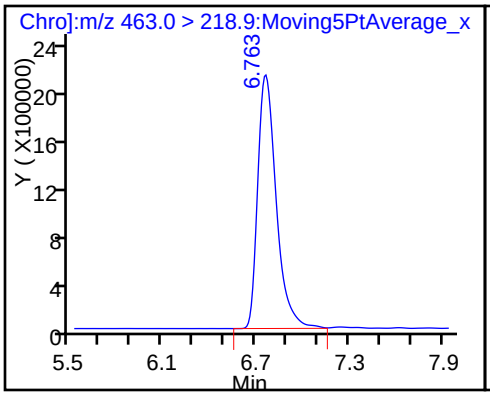
$ 18 13C8 PFOS



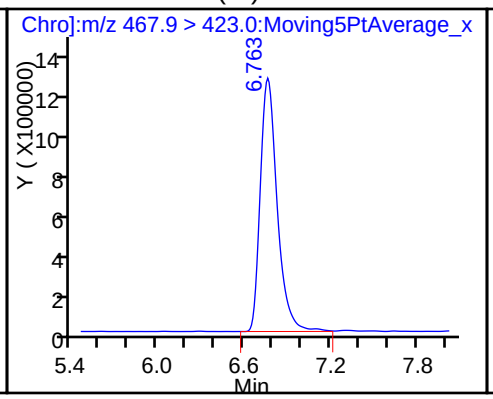
20 Perfluorononanoic acid



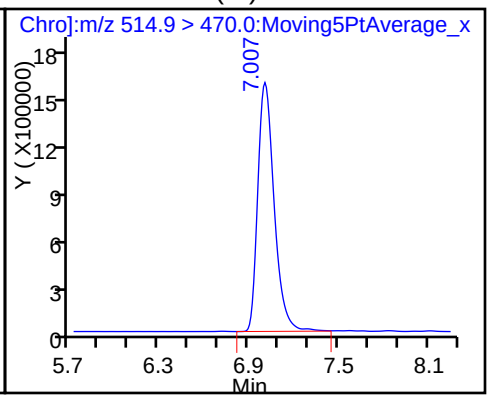
20 Perfluorononanoic acid



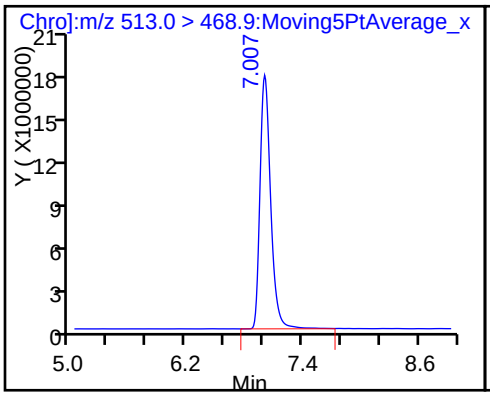
* 21 13C5 PFNA (IS)



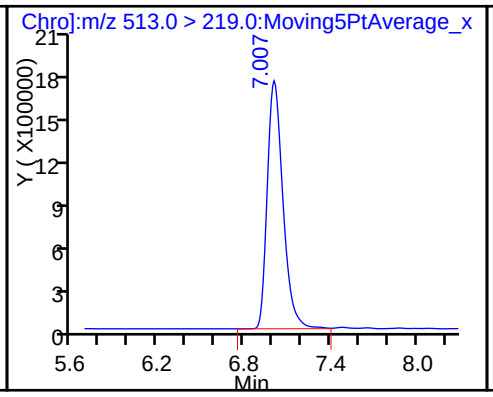
* 22 13C2 PFDA (IS)



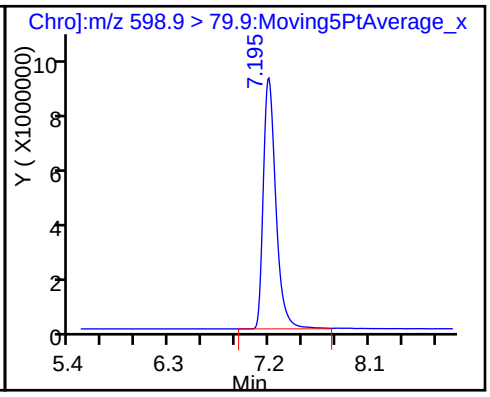
23 Perfluorodecanoic acid



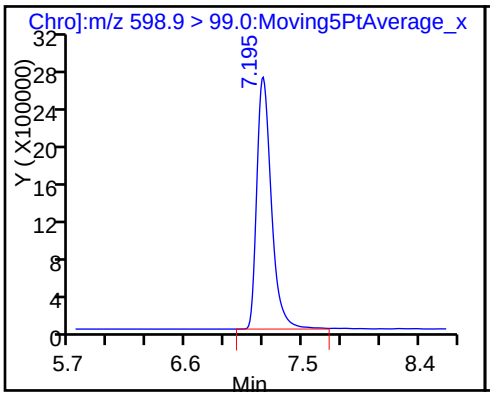
23 Perfluorodecanoic acid



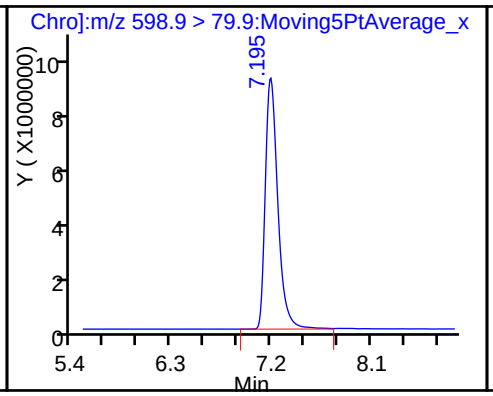
24 Perfluorodecane Sulfonic acid



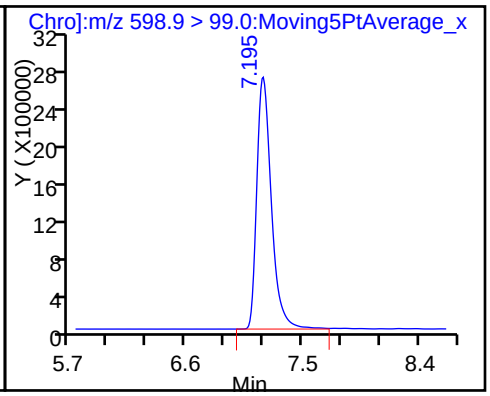
24 Perfluorodecane Sulfonic acid



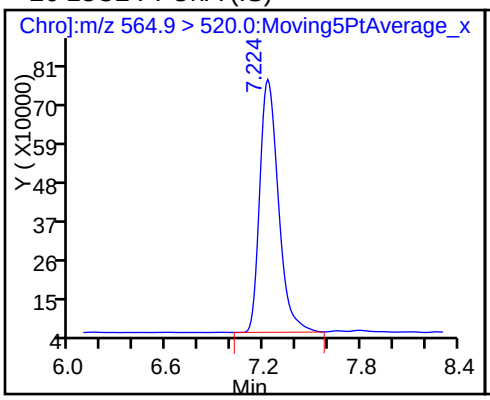
25 Perfluorodecane Sulfonate



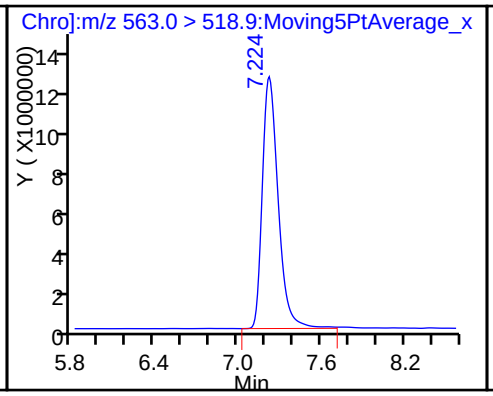
25 Perfluorodecane Sulfonate



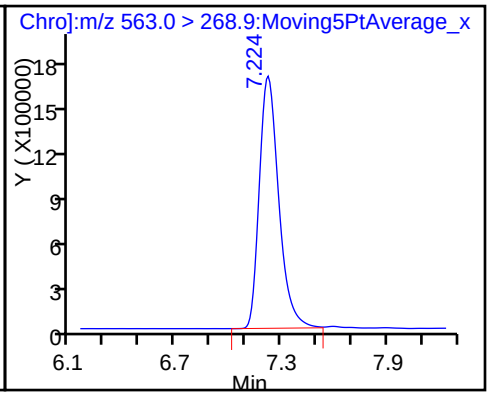
* 26 13C2 PFUnA (IS)



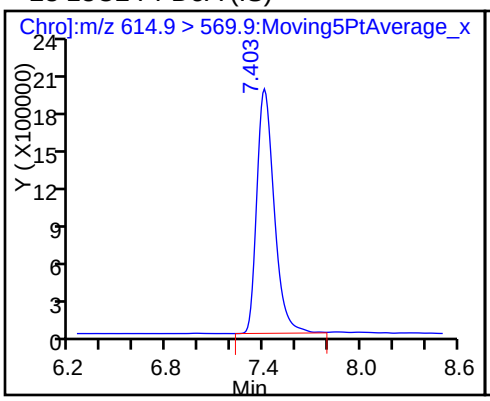
27 Perfluoroundecanoic acid



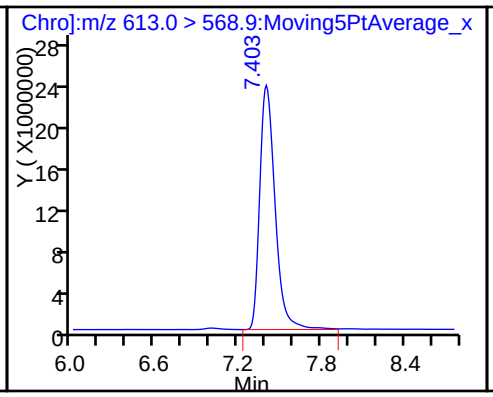
27 Perfluoroundecanoic acid



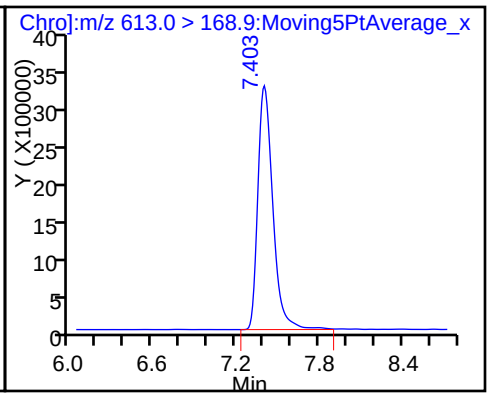
* 28 13C2 PFDoA (IS)



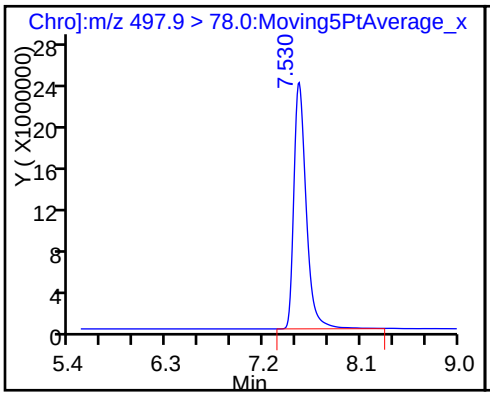
29 Perfluorododecanoic acid



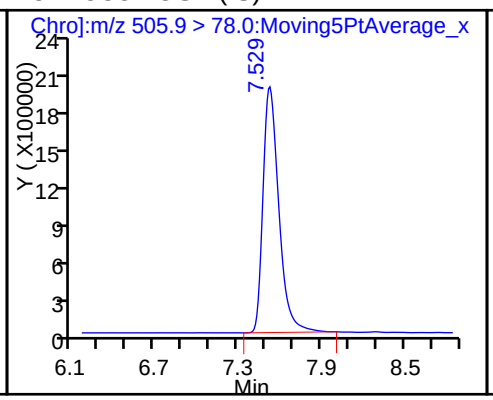
29 Perfluorododecanoic acid



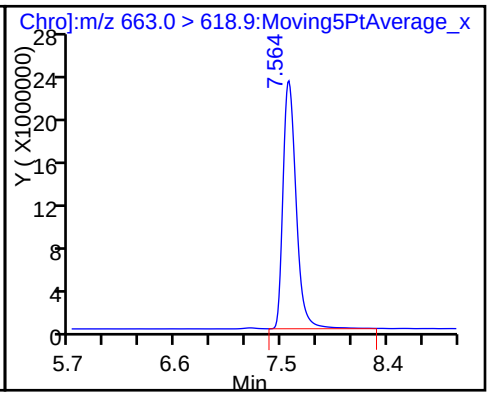
32 Perfluorooctane Sulfonamide



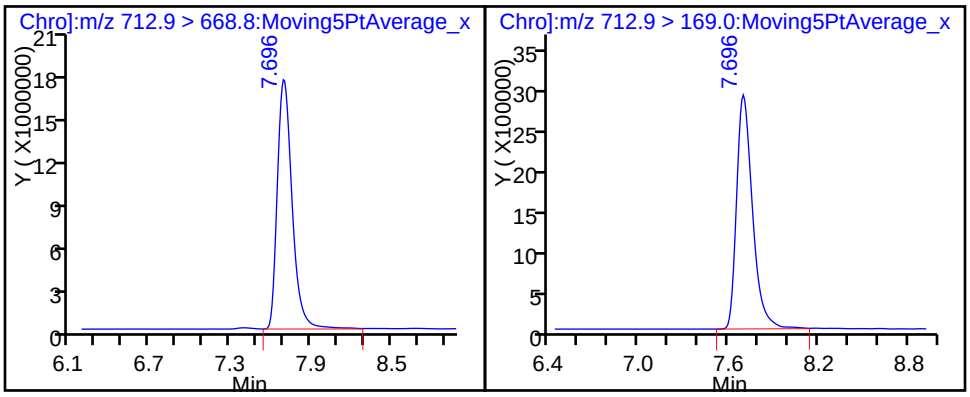
* 31 13C8 FOSA (IS)



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: ICV 280-340408/13 Calibration Date: 09/01/2016 12:58

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I01026.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.006		2.09	2.00	4.4	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.255		2.24	2.00	12.0	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.435		1.78	1.77	0.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9851		2.18	2.00	9.1	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8972		2.13	2.00	6.3	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.759		2.17	1.82	18.8	30.0
Perfluoroheptane Sulfonate	Lin2		1.119		1.98	1.90	3.7	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.119		1.98	1.90	3.7	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.119		2.22	2.00	10.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.209		2.43	2.00	21.4	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.145		2.17	2.00	8.7	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.112		2.32	2.00	16.2	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.083		2.07	1.93	7.3	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.288		1.91	2.00	-4.3	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9948		2.05	2.00	2.4	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.162		2.24	2.00	11.8	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.405		2.18	2.00	9.1	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		1.092		2.21	2.00	10.5	30.0
13C8 PFOA	Lin1		0.8523		12.4	10.0	24.3	30.0
13C8 PFOS	Lin2		0.5465		9.09	9.56	-5.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01026.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 01-Sep-2016 12:58:27 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: ICV, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist:

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:36 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:42:10

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.058	0.0		13429034	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.068	4.068	0.0	1.002	2701582	2.09			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.100	5.100	0.0	0.897	2396887	2.24			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.222	5.222	0.0	0.853	1227390	1.78			R
298.9 > 98.9	5.232	5.222	0.010	0.855	315079		3.90(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.686	5.686	0.0		9552910	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.686	0.0	1.000	1882171	2.18			
313.0 > 118.6	5.677	5.686	-0.009	0.998	55550		33.88(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.112	6.112	0.0	0.946	2744687	2.13			
363.0 > 168.9	6.112	6.112	0.0	0.946	705421		3.89(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.120	0.0		1479176	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.121	0.0	1.000	1355924	2.16			R
398.9 > 98.9	6.130	6.121	0.009	1.002	388770		3.49(1.30-2.41)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.451	0.0	0.958	1042774	1.97			
449.0 > 98.9	6.451	6.451	0.0	0.958	391670		2.66(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.451	0.0	0.958	1042774	1.97			
449.0 > 98.9	6.451	6.451	0.0	0.958	391670		2.66(0.00-0.00)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.461	0.0	1.000	13036059	12.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.461	0.0		15295609	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.461	0.0	1.000	3422276	2.22			
413.0 > 169.0	6.452	6.461	-0.009	0.999	1031533		3.32(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.733	0.0		4679676	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.724	6.724	0.0	0.999	1183760	2.43			R
498.9 > 98.9	6.734	6.724	0.010	1.000	412470		2.87(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	1.000	2557590	9.09			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.753	0.0		11435309	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.753	0.0	1.000	2618186	2.17			
463.0 > 218.9	6.753	6.753	0.0	1.000	373675		7.01(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	6.997	0.0		11281711	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.998	6.998	0.0	1.000	2510111	2.32			R
513.0 > 219.0	7.007	6.998	0.009	1.001	265753		9.45(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.176	7.176	0.0	1.066	1022177	2.07			
598.9 > 99.0	7.186	7.176	0.010	1.067	339993		3.01(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.205	7.205	0.0		6290686	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.205	7.205	0.0	1.000	1620643	1.91			R
563.0 > 268.9	7.215	7.205	0.010	1.001	248702		6.52(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.384	0.0		13421168	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.384	7.384	0.0	1.000	2670150	2.05			
613.0 > 168.9	7.384	7.384	0.0	1.000	356461		7.49(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.530	0.0	1.000	3751375	2.24			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.022	3770577	2.18			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.529	0.0		16142109	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.677	0.0	1.040	2931237	2.21			
712.9 > 169.0	7.668	7.677	-0.009	1.038	457325		6.41(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_ICV_00010	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFHpS-LCS_00002	Amount Added:	4.00	Units: uL

Report Date: 02-Sep-2016 11:52:37 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01026.d

Injection Date: 01-Sep-2016 12:58:27 Instrument ID: LC_LCMS5

Lims ID: ICV

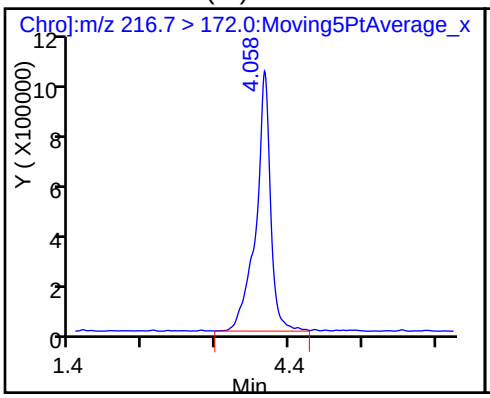
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 13

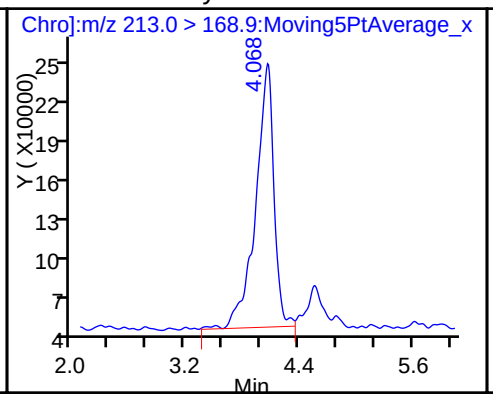
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

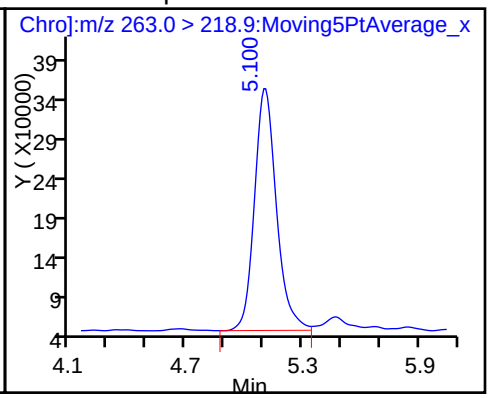
* 1 13C4 PFBA (IS)



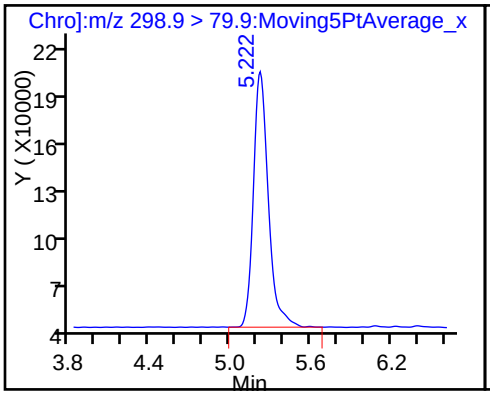
2 Perfluorobutyric acid



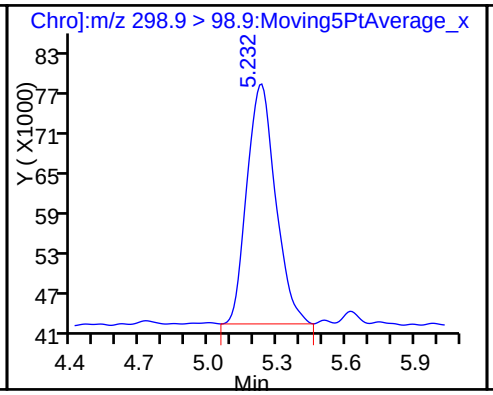
3 Perfluoropentanoic acid



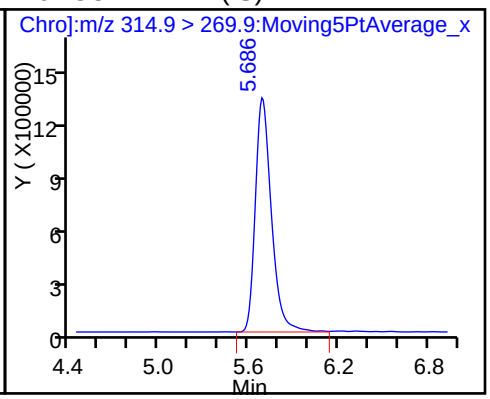
4 Perfluorobutane Sulfonate



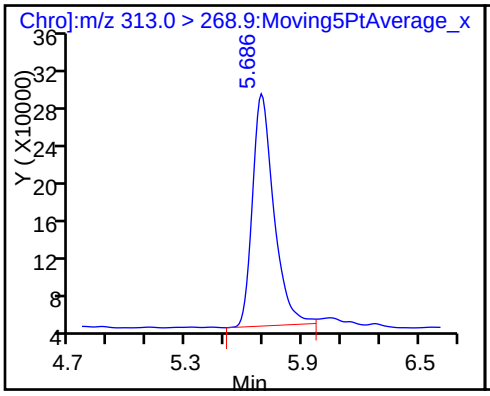
4 Perfluorobutane Sulfonate



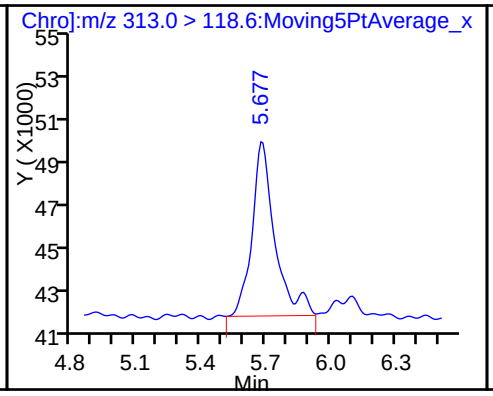
* 6 13C2 PFHxA (IS)



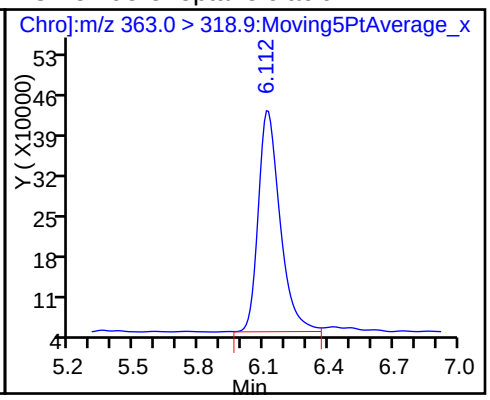
7 Perfluorohexanoic acid



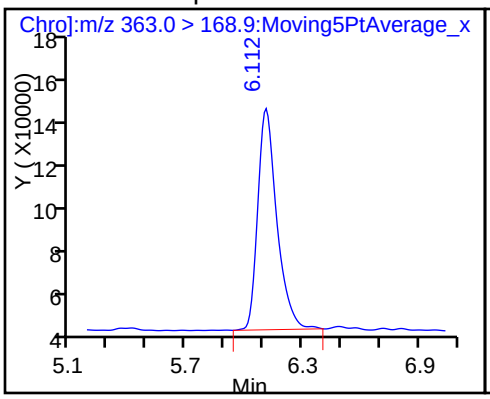
7 Perfluorohexanoic acid



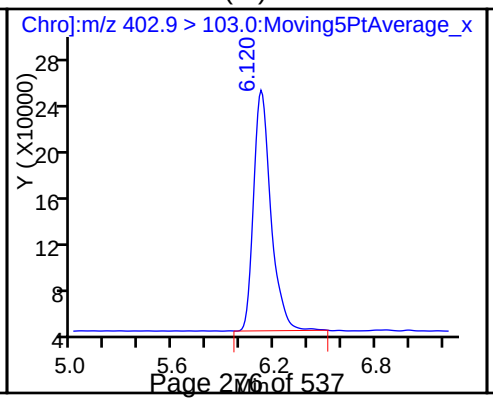
8 Perfluoroheptanoic acid



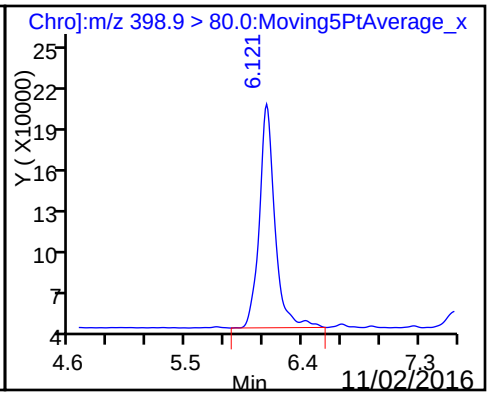
8 Perfluoroheptanoic acid



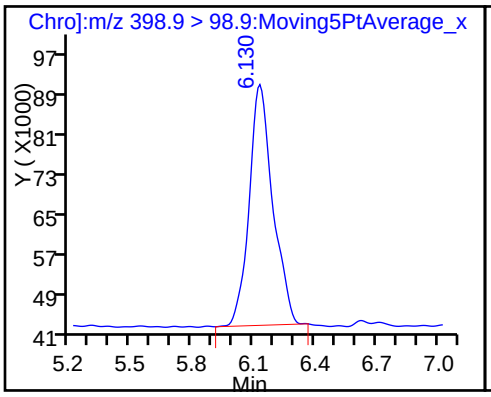
* 9 18O2 PFHxS (IS)



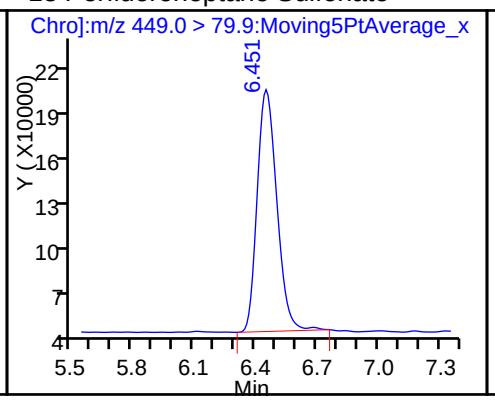
10 Perfluorohexane Sulfonate



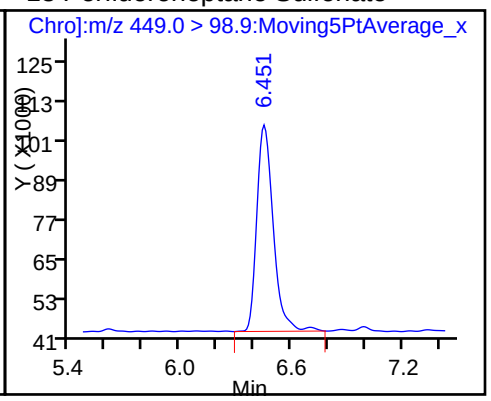
10 Perfluorohexane Sulfonate



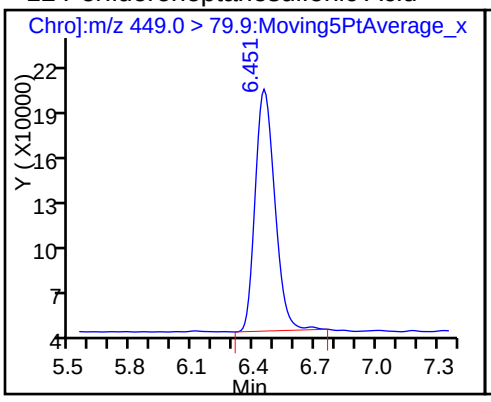
13 Perfluoroheptane Sulfonate



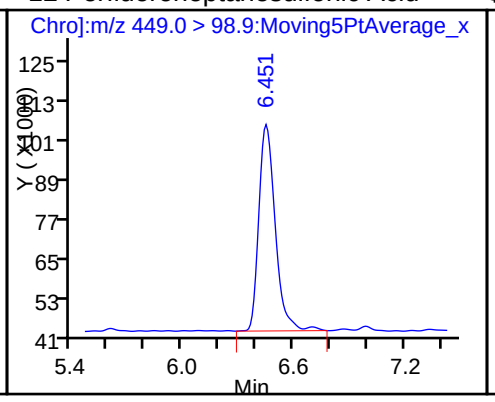
13 Perfluoroheptane Sulfonate



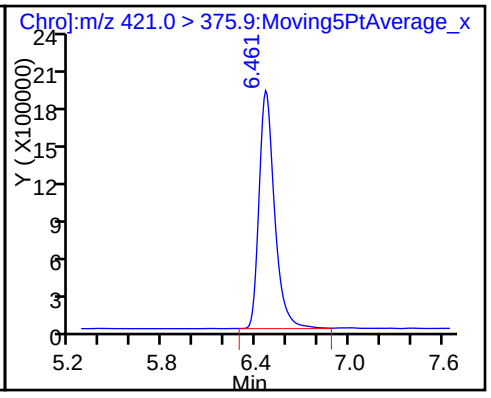
12 Perfluoroheptanesulfonic Acid



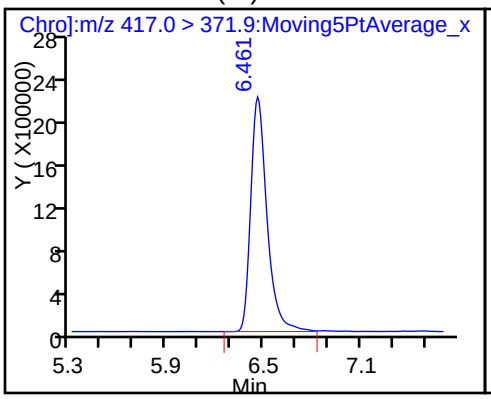
12 Perfluoroheptanesulfonic Acid



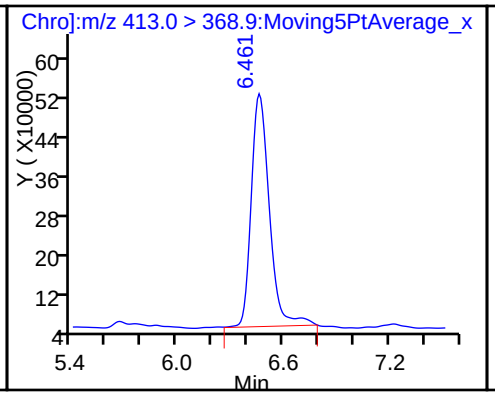
$ 14 13C8 PFOA



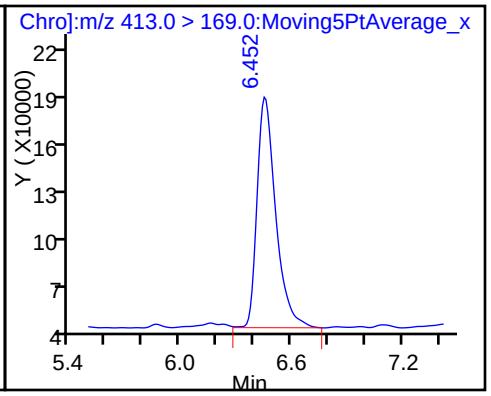
* 15 13C4 PFOA (IS)



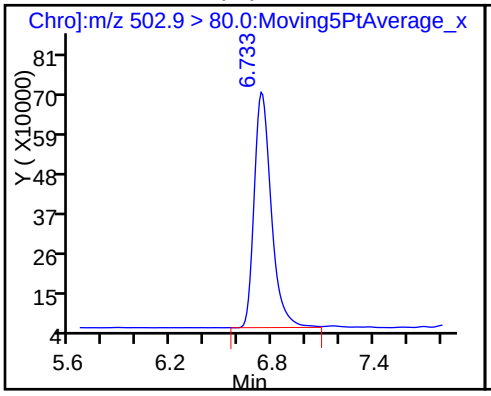
16 Perfluorooctanoic acid



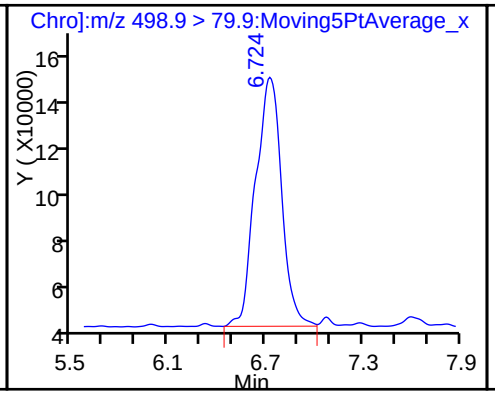
16 Perfluorooctanoic acid



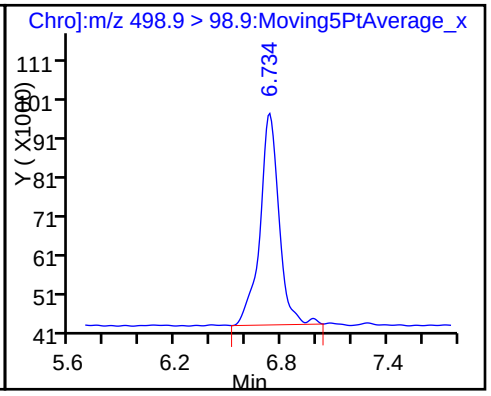
* 17 13C4 PFOS (IS)



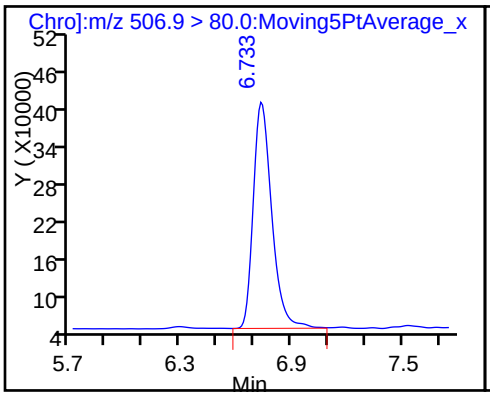
19 Perfluorooctane sulfonic acid



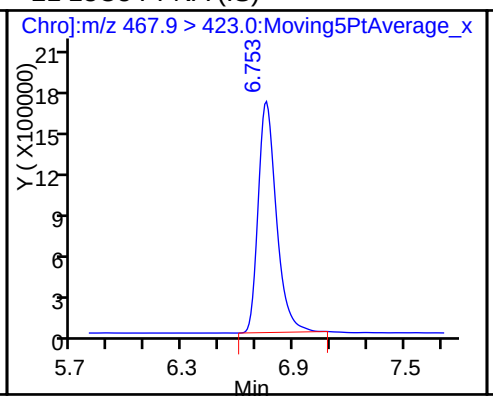
19 Perfluorooctane sulfonic acid



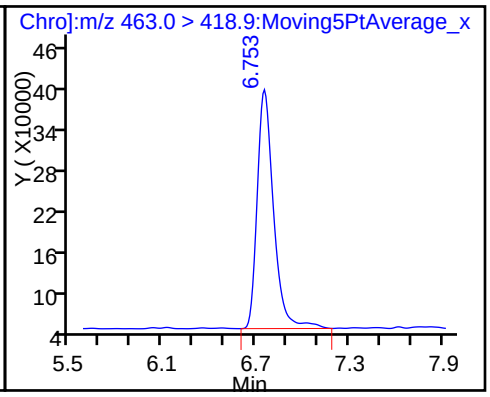
$ 18 13C8 PFOS



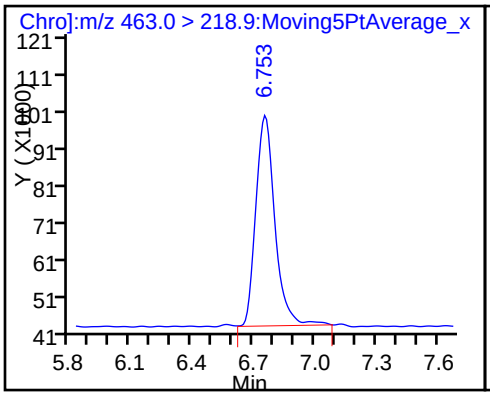
* 21 13C5 PFNA (IS)



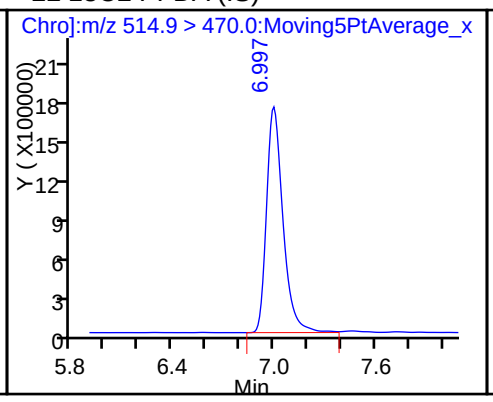
20 Perfluorononanoic acid



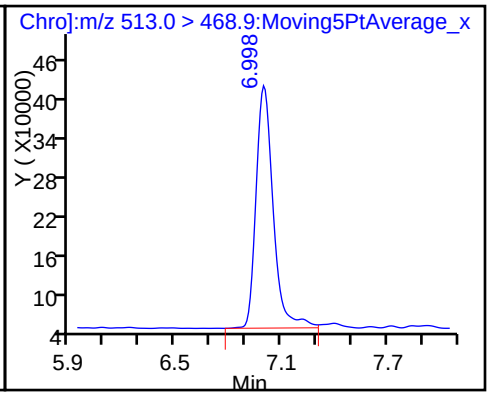
20 Perfluorononanoic acid



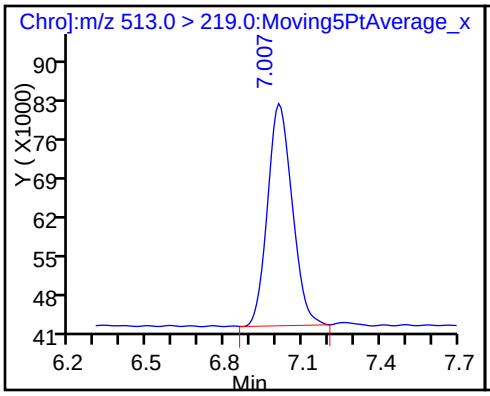
* 22 13C2 PFDA (IS)



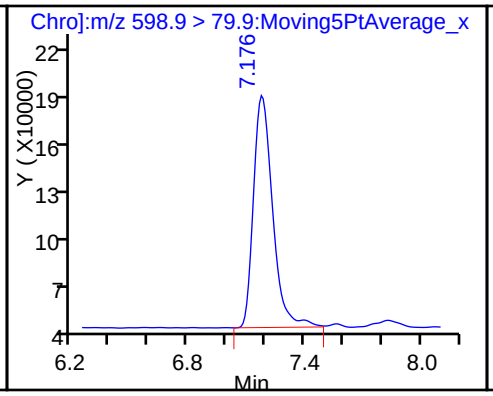
23 Perfluorodecanoic acid



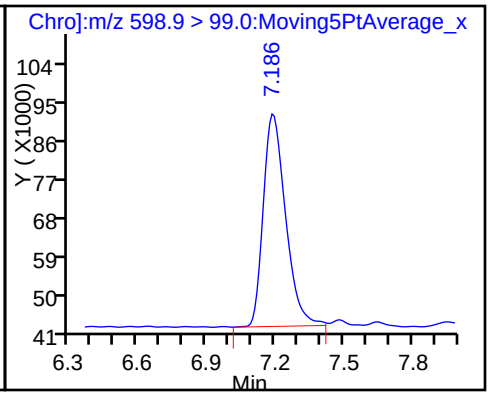
23 Perfluorodecanoic acid



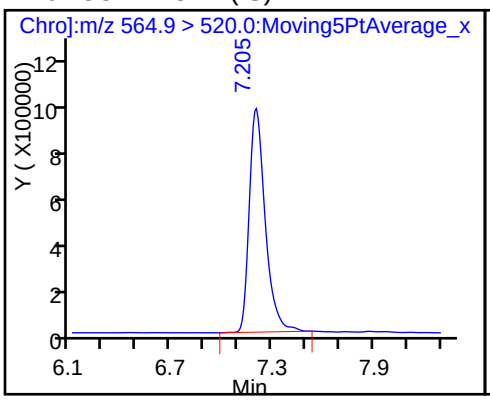
25 Perfluorodecane Sulfonate



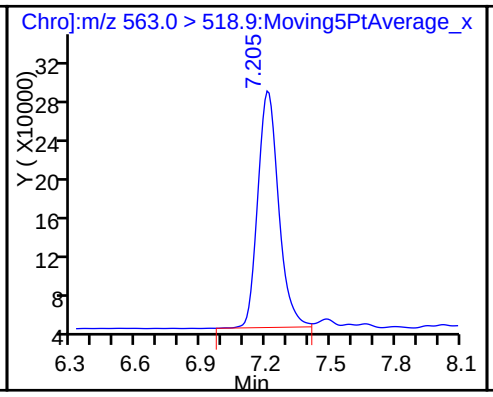
25 Perfluorodecane Sulfonate



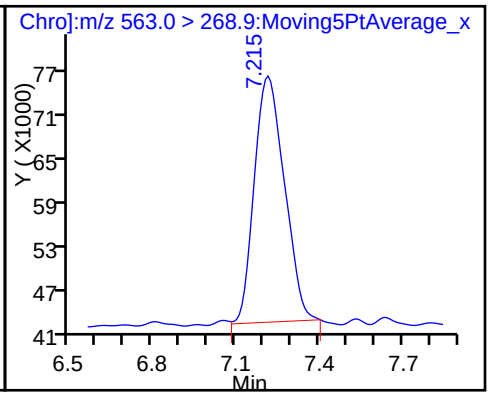
* 26 13C2 PFUnA (IS)



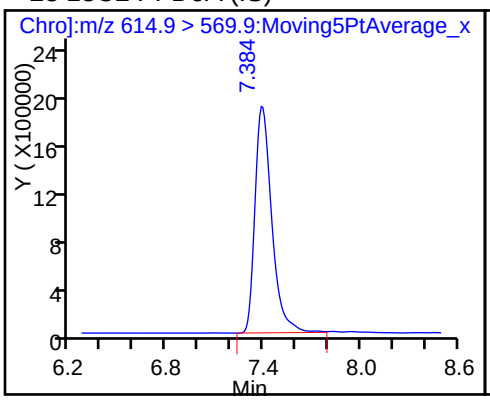
27 Perfluoroundecanoic acid



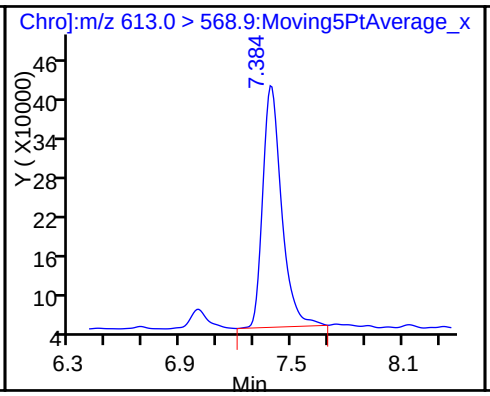
27 Perfluoroundecanoic acid



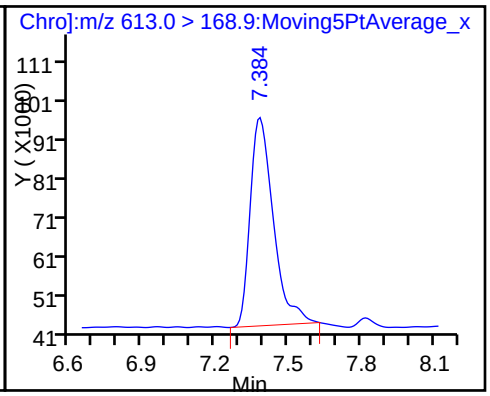
* 28 13C2 PFDoA (IS)



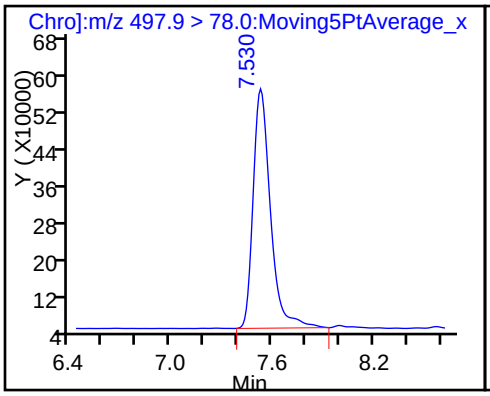
29 Perfluorododecanoic acid



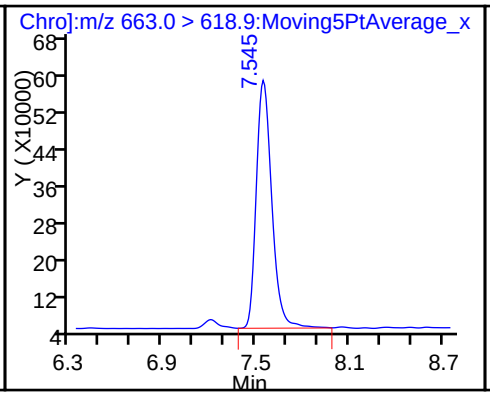
29 Perfluorododecanoic acid



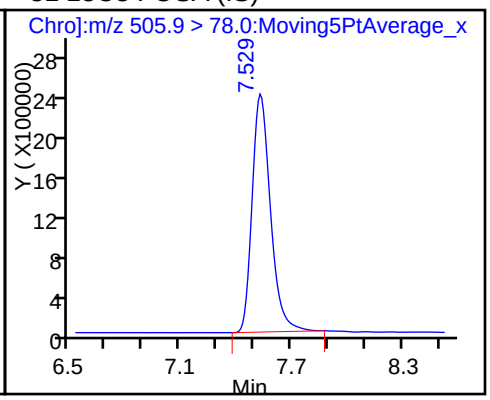
32 Perfluorooctane Sulfonamide



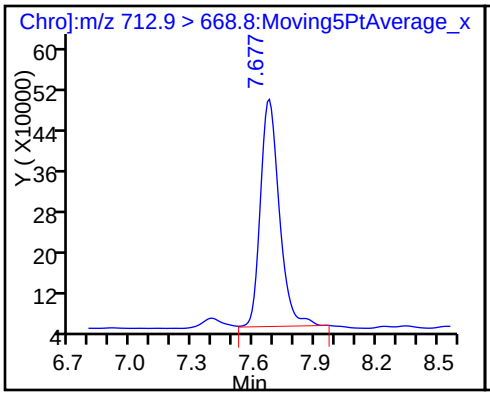
30 Perfluorotridecanoic acid



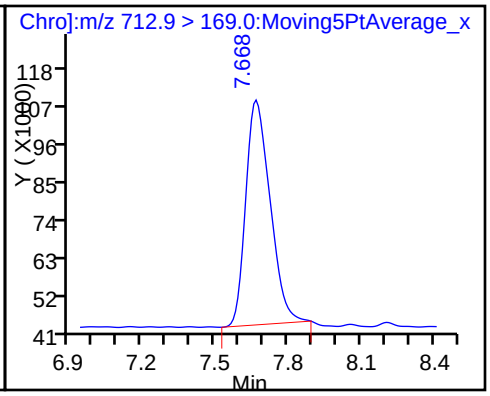
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-340829/3 Calibration Date: 09/02/2016 13:09

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I02015.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.017		10.6	10.0	5.5	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.182		10.9	10.0	8.5	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.174		8.38	8.85	-5.3	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.174		8.38	8.85	-5.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9325		10.5	10.0	5.0	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.963		9.37	9.45	-0.9	30.0
Perfluorohexanesulfonic acid	Lin2		3.963		9.37	9.45	-0.9	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8544		10.2	10.0	1.8	30.0
Perfluoroheptane Sulfonate	Lin2		1.062		9.22	9.52	-3.1	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.062		9.22	9.52	-3.1	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.041		10.6	10.0	6.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.124		10.5	9.55	10.2	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.039		9.82	10.0	-1.8	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9441		9.95	10.0	-0.5	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.084		10.5	9.65	9.3	30.0
Perfluorodecane Sulfonic acid	Lin2		1.084		10.5	9.65	9.3	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.446		11.1	10.0	11.4	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.035		10.7	10.0	6.5	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.190		9.40	10.0	-6.0	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.026		9.93	10.0	-0.7	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.8473		8.71	10.0	-12.9	30.0
13C8 PFOA	Lin1		0.8101		11.8	10.0	18.0	30.0
13C8 PFOS	Lin2		0.5464		9.08	9.56	-5.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02015.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 13:09:45 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:24 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:21:01

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.314	4.314	0.0		13920328	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.314	4.314	0.0	1.000	14158557	10.5			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.346	5.346	0.0	0.903	10446133	10.9			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.459	5.459	0.0	0.860	4708331	8.38			R
298.9 > 98.9	5.450	5.459	-0.009	0.859	1376078		3.42(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.459	5.459	0.0	0.860	4708331	8.38			
298.9 > 98.9	5.450	5.459	-0.009	0.859	1376078		3.42(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.923	5.923	0.0		8834920	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.923	5.923	0.0	1.000	8238685	10.5			
313.0 > 118.6	5.932	5.923	0.009	1.002	200843		41.02(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.348	6.348	0.0		1205707	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.348	6.348	0.0	1.000	4773028	9.36			
398.9 > 98.9	6.348	6.348	0.0	1.000	1415238		3.37(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.348	6.348	0.0	1.000	4773028	9.36			R
398.9 > 98.9	6.348	6.348	0.0	1.000	1415238		3.37(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.349	6.349	0.0	0.949	11669772	10.2			
363.0 > 168.9	6.349	6.349	0.0	0.949	3248461		3.59(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.678	6.678	0.0	0.959	4589124	9.22			
449.0 > 98.9	6.678	6.678	0.0	0.959	1324263		3.47(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.678	6.678	0.0	0.959	4589124	9.22			
449.0 > 98.9	6.678	6.678	0.0	0.959	1324263		3.47(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.688	6.688	0.0	1.000	11064666	11.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.688	6.688	0.0		13658780	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.688	6.688	0.0	1.000	14219990	10.6			
413.0 > 169.0	6.679	6.688	-0.009	0.999	4670471		3.04(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.960	6.960	0.0	1.000	2371160	9.08			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.961	6.961	0.0		4339570	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.951	6.951	0.0	0.999	4871247	10.5			R
498.9 > 98.9	6.961	6.951	0.010	1.000	1804787		2.70(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.971	6.971	0.0		10246704	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.971	6.971	0.0	1.000	10645318	9.82			
463.0 > 218.9	6.971	6.971	0.0	1.000	1383657		7.69(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.206	7.206	0.0		9705720	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.206	7.206	0.0	1.000	9162930	9.95			R
513.0 > 219.0	7.206	7.206	0.0	1.000	963396		9.51(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.385	7.385	0.0	1.061	4747924	10.5			
598.9 > 99.0	7.375	7.385	-0.010	1.060	1571257		3.02(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.385	7.385	0.0	1.061	4747924	10.5			
598.9 > 99.0	7.375	7.385	-0.010	1.060	1571257		3.02(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.404	7.404	0.0		5455225	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.404	7.404	0.0	1.000	7890440	11.1			R
563.0 > 268.9	7.404	7.404	0.0	1.000	1033505		7.63(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.573	7.573	0.0		12604409	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.574	7.574	0.0	1.000	13046626	10.6			
613.0 > 168.9	7.574	7.574	0.0	1.000	1619207		8.06(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.718	7.718	0.0		14898802	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.719	7.719	0.0	1.000	15290171	9.93			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.715	7.715	0.0	1.019	14999214	9.40			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.847	7.847	0.0	1.036	10679264	8.71			
712.9 > 169.0	7.847	7.847	0.0	1.036	1834614		5.82(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00084	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

Report Date: 06-Sep-2016 08:22:26 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02015.d

Injection Date: 02-Sep-2016 13:09:45 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

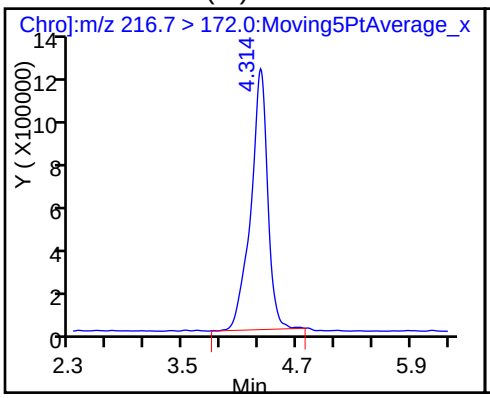
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

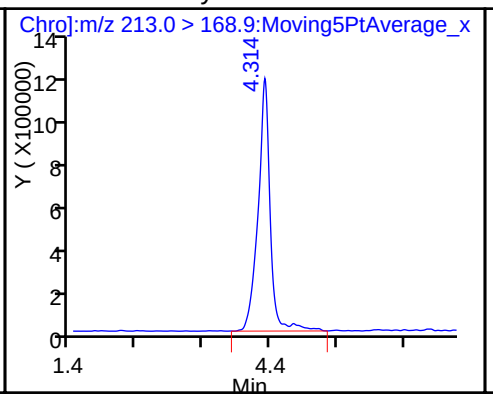
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

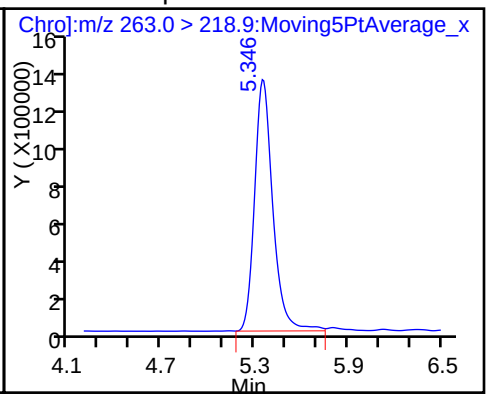
* 1 13C4 PFBA (IS)



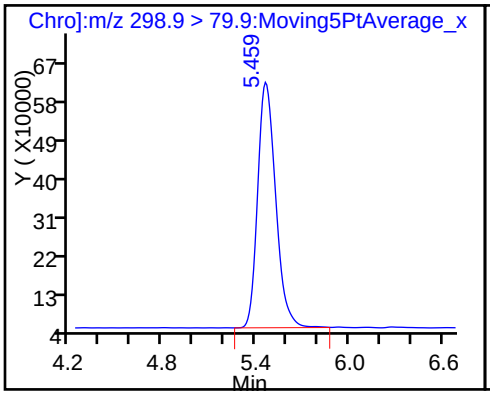
2 Perfluorobutyric acid



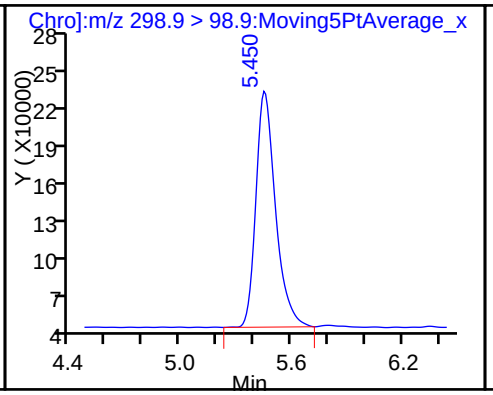
3 Perfluoropentanoic acid



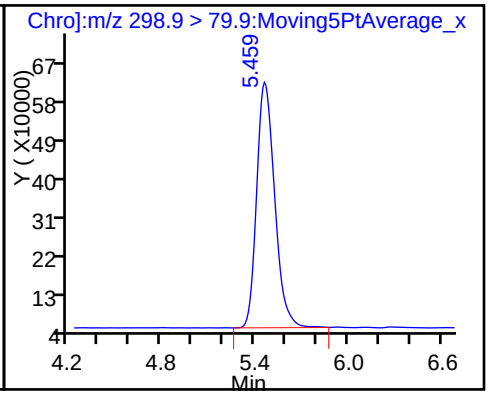
4 Perfluorobutane Sulfonate



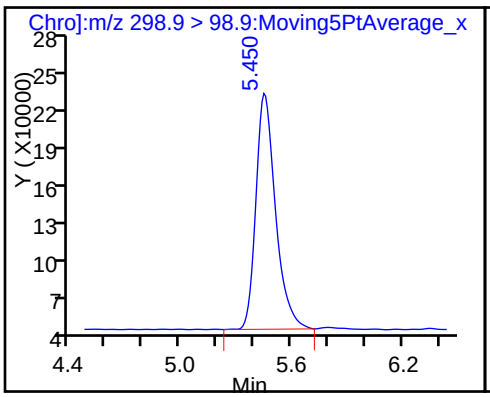
4 Perfluorobutane Sulfonate



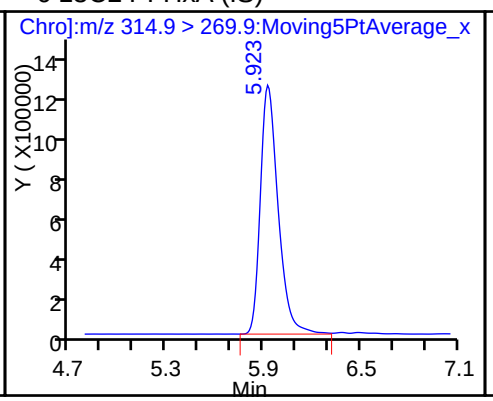
5 Perfluorobutanesulfonic acid



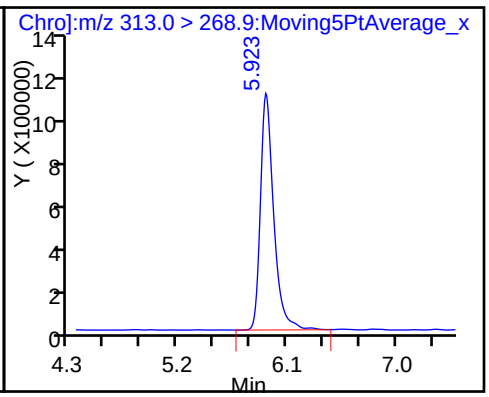
5 Perfluorobutanesulfonic acid



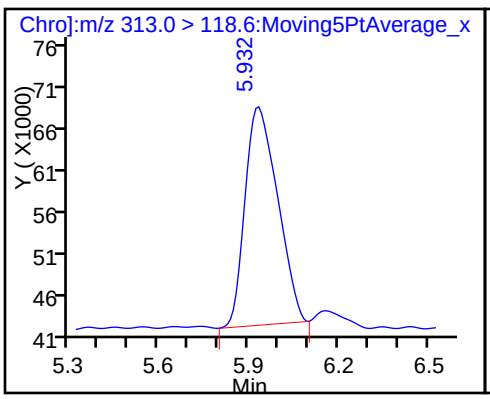
* 6 13C2 PFHxA (IS)



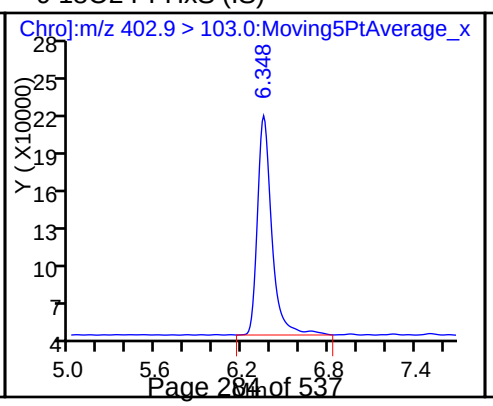
7 Perfluorohexanoic acid



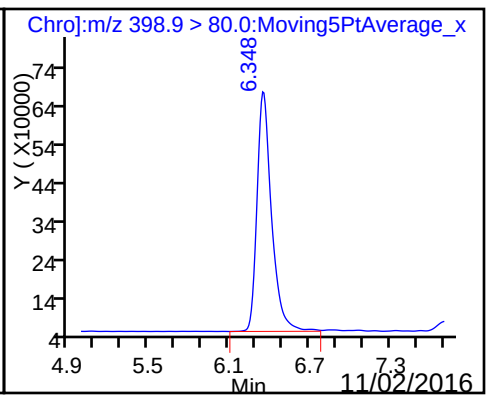
7 Perfluorohexanoic acid



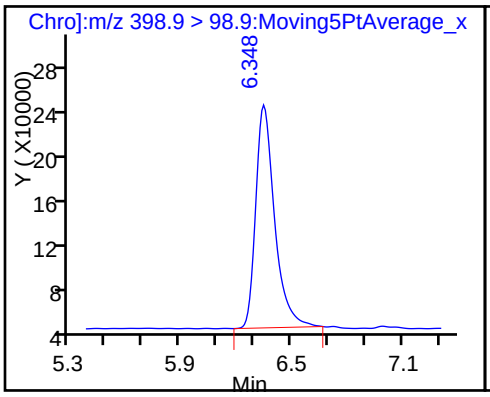
* 9 18O2 PFHxS (IS)



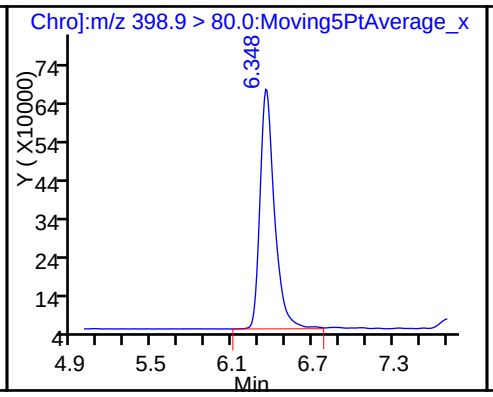
11 Perfluorohexanesulfonic acid



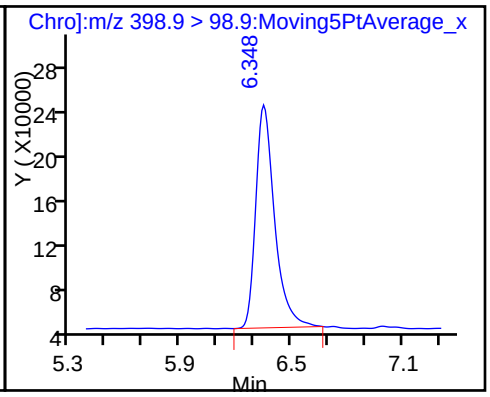
11 Perfluorohexanesulfonic acid



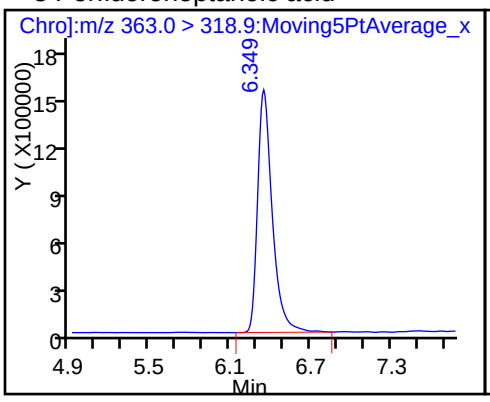
10 Perfluorohexane Sulfonate



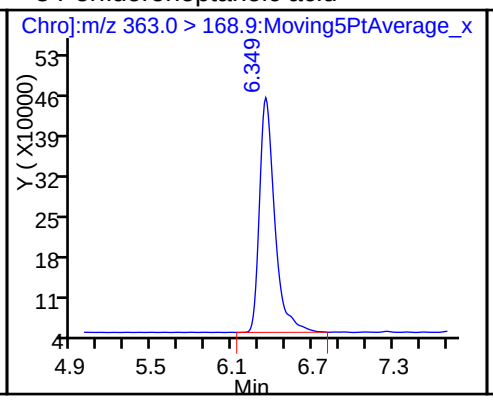
10 Perfluorohexane Sulfonate



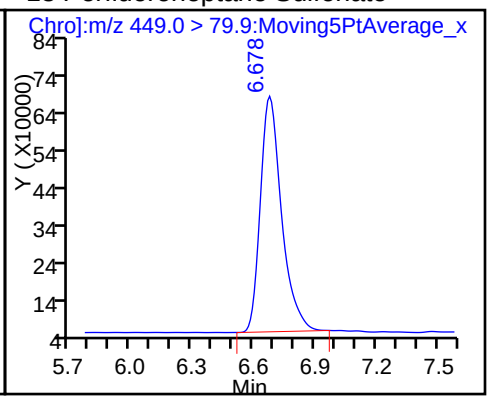
8 Perfluoroheptanoic acid



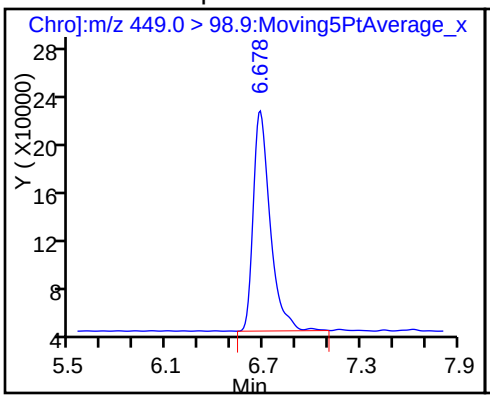
8 Perfluoroheptanoic acid



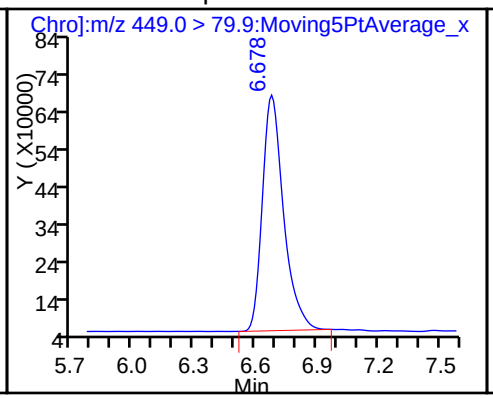
13 Perfluoroheptane Sulfonate



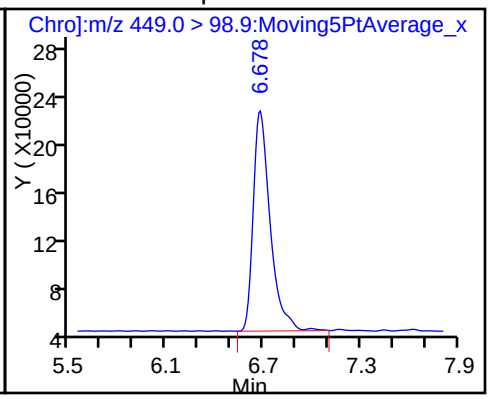
13 Perfluoroheptane Sulfonate



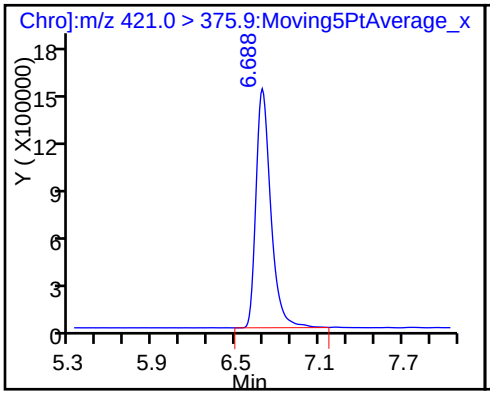
12 Perfluoroheptanesulfonic Acid



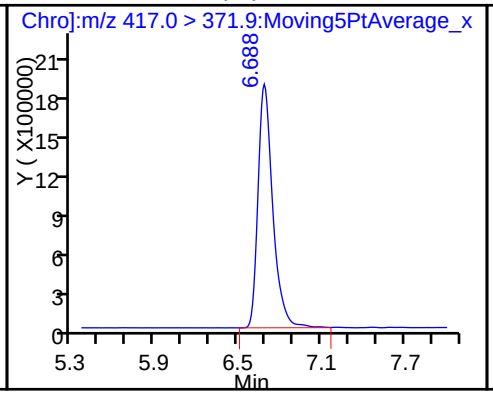
12 Perfluoroheptanesulfonic Acid



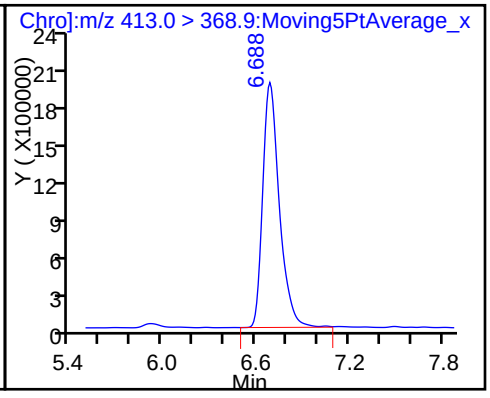
$ 14 13C8 PFOA



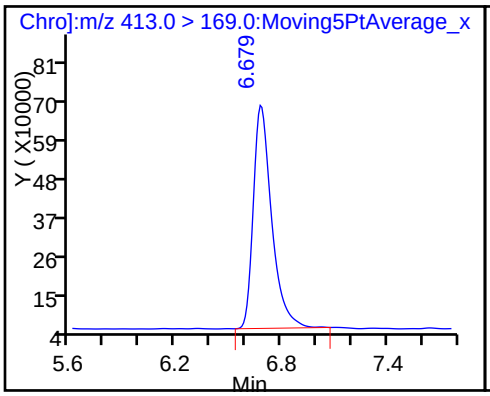
* 15 13C4 PFOA (IS)



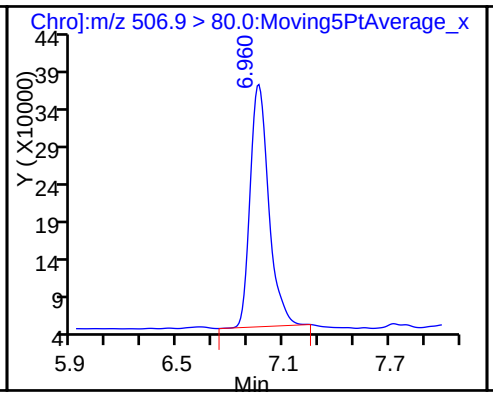
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid



$ 18 13C8 PFOS



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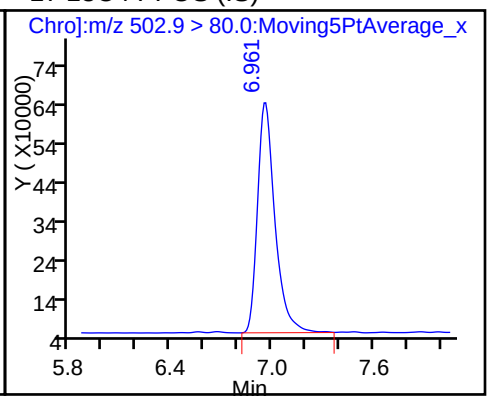
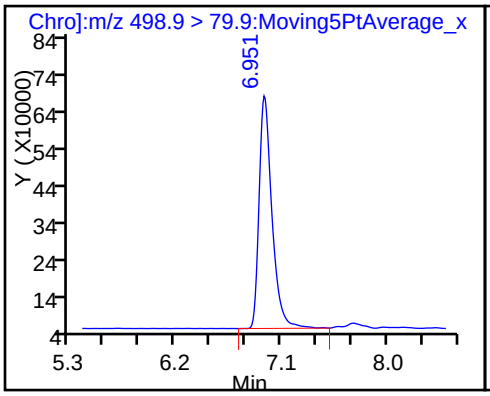
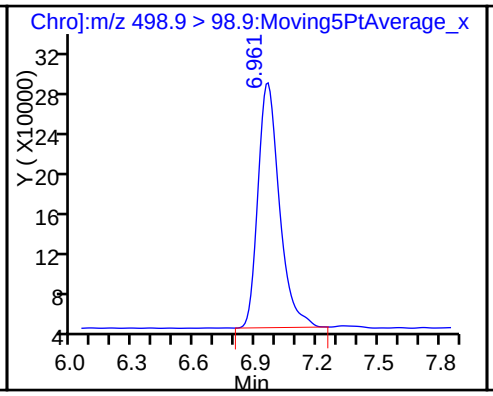


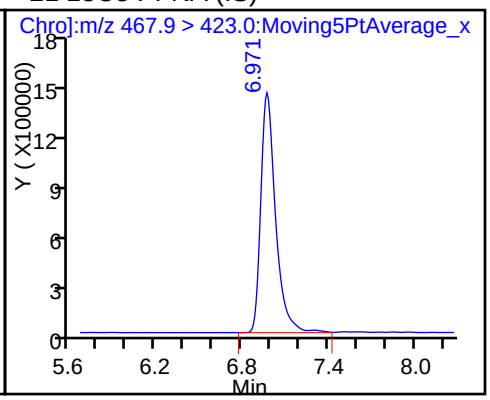
19 Perfluorooctane sulfonic acid



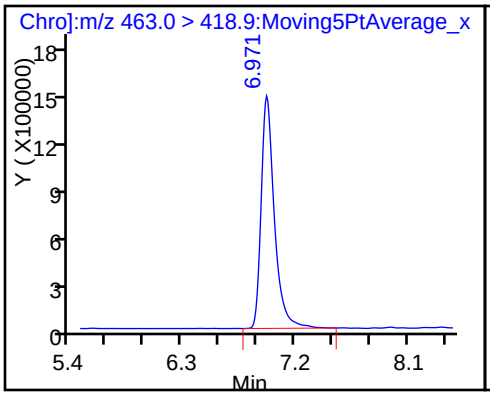
19 Perfluorooctane sulfonic acid



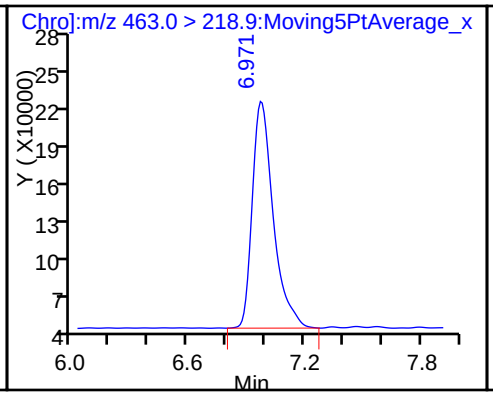
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid



20 Perfluorononanoic acid



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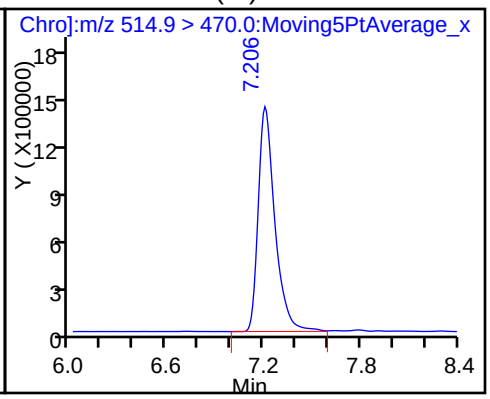
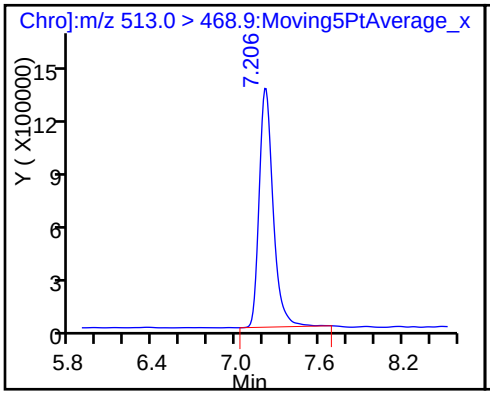
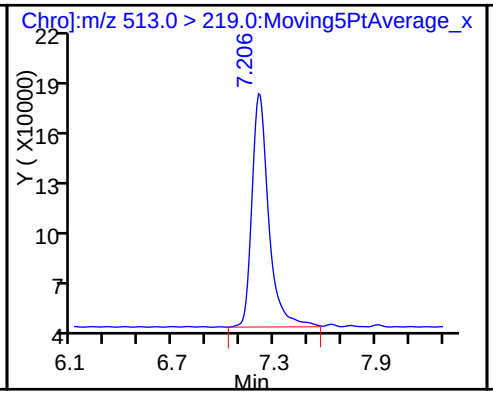


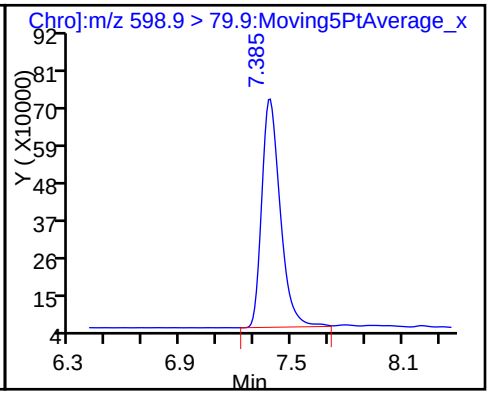
23 Perfluorodecanoic acid



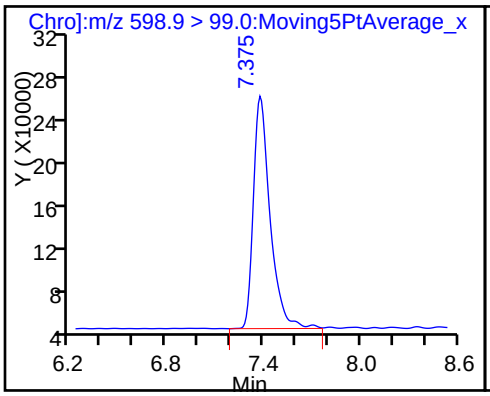
23 Perfluorodecanoic acid



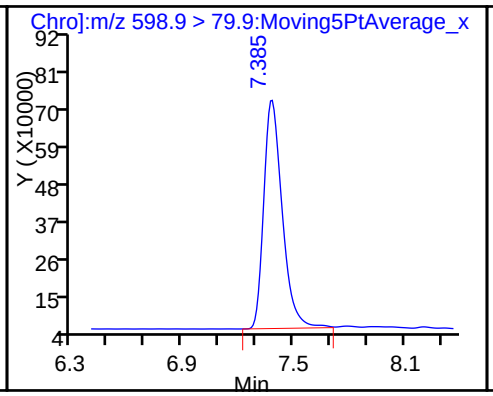
24 Perfluorodecane Sulfonic acid



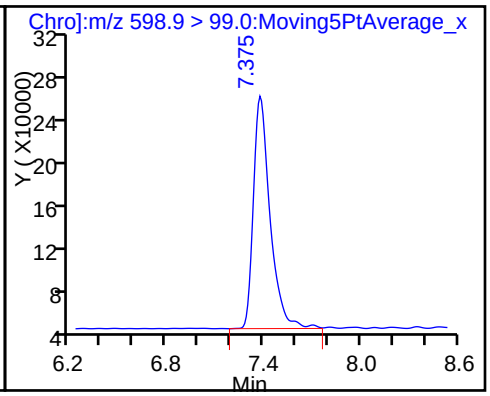
24 Perfluorodecane Sulfonic acid



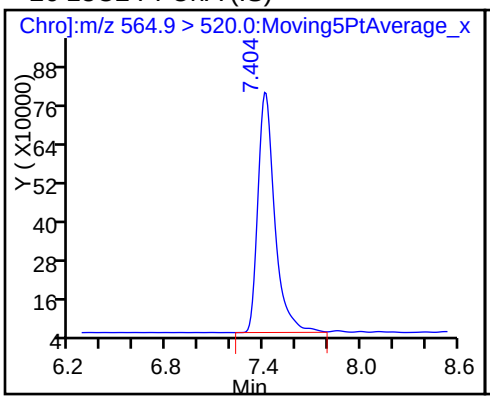
25 Perfluorodecane Sulfonate



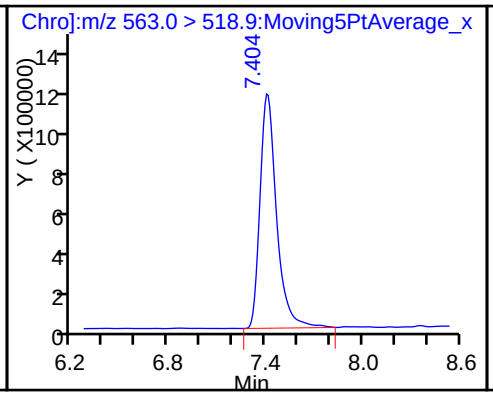
25 Perfluorodecane Sulfonate



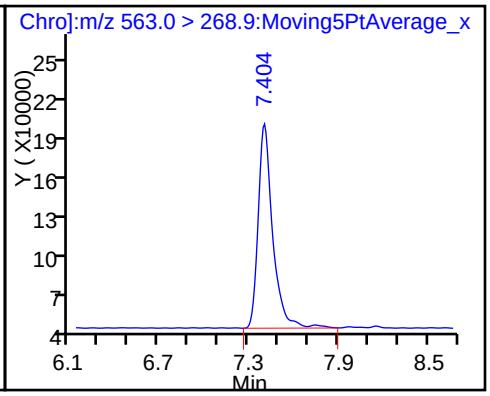
* 26 13C2 PFUnA (IS)



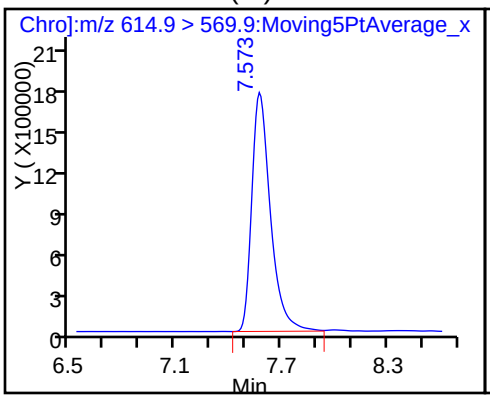
27 Perfluoroundecanoic acid



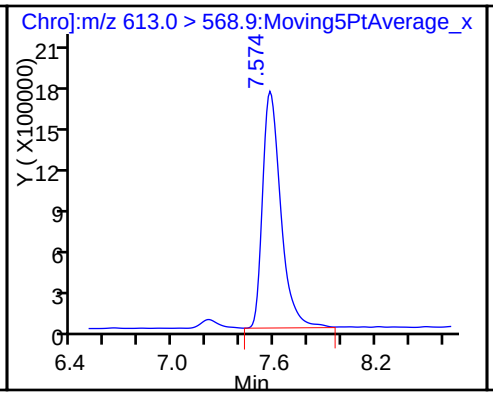
27 Perfluoroundecanoic acid



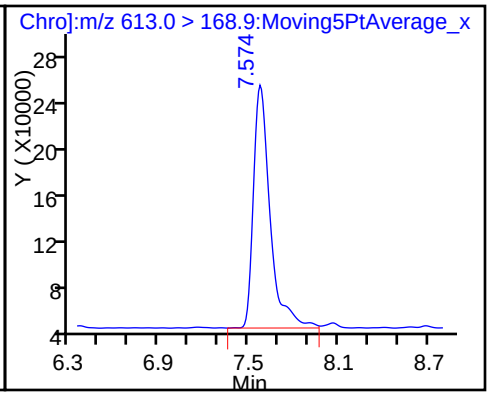
* 28 13C2 PFDoA (IS)



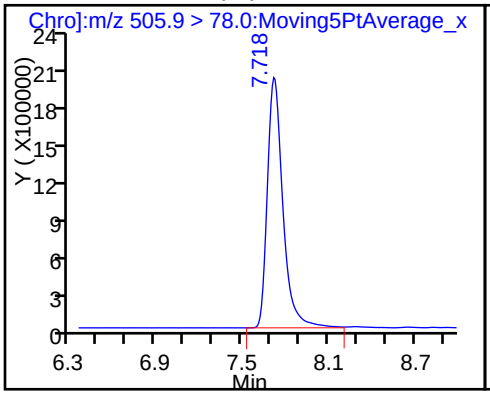
29 Perfluorododecanoic acid



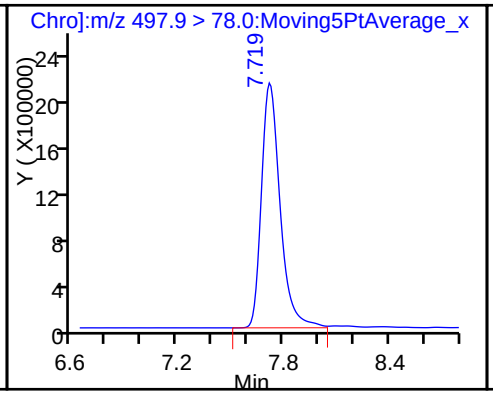
29 Perfluorododecanoic acid



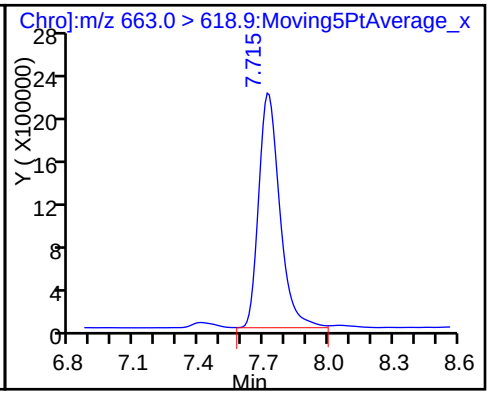
* 31 13C8 FOSA (IS)



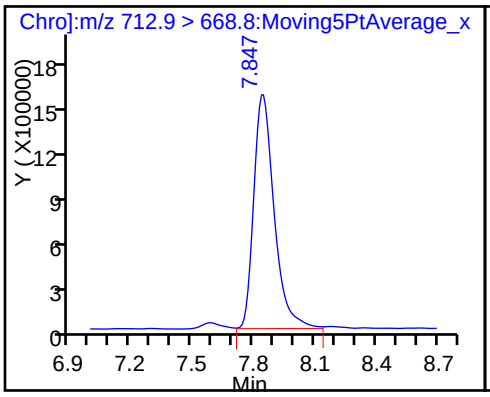
32 Perfluorooctane Sulfonamide



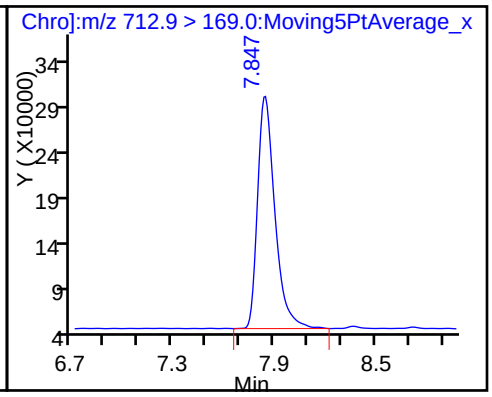
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-340829/10 Calibration Date: 09/02/2016 14:36

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I02022.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.8701		4.51	5.00	-9.7	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.153		5.25	5.00	5.0	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.232		4.25	4.43	-4.0	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.232		4.25	4.43	-4.0	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8718		4.88	5.00	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.7716		4.59	5.00	-8.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.122		4.87	4.73	3.0	30.0
Perfluorohexanesulfonic acid	Lin2		4.122		4.87	4.73	3.0	30.0
Perfluoroheptane Sulfonate	Lin2		1.096		4.78	4.76	0.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.096		4.78	4.76	0.4	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.013		5.13	5.00	2.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.095		5.16	4.78	8.1	30.0
Perfluorononanoic acid (PFNA)	Lin2		0.9368		4.44	5.00	-11.3	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.8943		4.70	5.00	-6.0	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.057		5.12	4.83	6.1	30.0
Perfluorodecane Sulfonic acid	Lin2		1.057		5.12	4.83	6.1	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.316		5.02	5.00	0.4	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9684		4.98	5.00	-0.4	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.152		4.52	5.00	-9.5	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		0.999		4.83	5.00	-3.5	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.8032		4.10	5.00	-17.9	30.0
13C8 PFOA	Lin1		0.8640		6.19	5.00	23.7	30.0
13C8 PFOS	Lin2		0.5869		4.83	4.78	1.1	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02022.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 14:36:05 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:46 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:32:15

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.029	4.029	0.0		15995542	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.030	4.030	0.0	1.000	6959164	4.51			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.128	5.128	0.0	0.897	5880064	5.25			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.260	5.260	0.0	0.854	2552608	4.25			
298.9 > 98.9	5.251	5.260	-0.009	0.853	784401		3.25(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.260	5.260	0.0	0.854	2552608	4.25			
298.9 > 98.9	5.251	5.260	-0.009	0.853	784401		3.25(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.714	0.0		10200810	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.724	5.724	0.0	1.002	4446314	4.88			
313.0 > 118.6	5.724	5.724	0.0	1.002	117742		37.76(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.158	0.0		1289472	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.159	6.159	0.0	1.000	2654905	4.87			
398.9 > 98.9	6.149	6.159	-0.010	0.998	827882		3.21(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.159	6.159	0.0	1.000	2654905	4.87			R
398.9 > 98.9	6.149	6.159	-0.010	0.998	827882		3.21(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.150	0.0	0.945	6281180	4.59			
363.0 > 168.9	6.150	6.150	0.0	0.945	1874469		3.35(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.498	6.498	0.0	0.958	2625565	4.78			
449.0 > 98.9	6.498	6.498	0.0	0.958	939679		2.79(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.498	6.498	0.0	0.958	2625565	4.78			
449.0 > 98.9	6.498	6.498	0.0	0.958	939679		2.79(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.508	0.0	1.000	7032671	6.18			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.508	0.0		16279989	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	1.000	8245468	5.13			
413.0 > 169.0	6.508	6.508	0.0	1.000	2609708		3.16(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.780	0.0	1.000	1411267	4.83			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.781	0.0		4809420	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.781	6.781	0.0	1.000	2629285	5.16			R
498.9 > 98.9	6.781	6.781	0.0	1.000	1009747		2.60(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.791	0.0		12267200	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.801	6.801	0.0	1.001	5746094	4.44			
463.0 > 218.9	6.791	6.801	-0.010	1.000	872709		6.58(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.045	7.045	0.0		11207137	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.036	7.036	0.0	0.999	5011435	4.70			R
513.0 > 219.0	7.036	7.036	0.0	0.999	492578		10.17(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.224	7.224	0.0	1.065	2565854	5.12			
598.9 > 99.0	7.224	7.224	0.0	1.065	797999		3.22(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.224	7.224	0.0	1.065	2565854	5.12			
598.9 > 99.0	7.224	7.224	0.0	1.065	797999		3.22(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.253	7.253	0.0		6554617	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.243	7.243	0.0	0.999	4312613	5.02			R
563.0 > 268.9	7.253	7.243	0.010	1.000	515295		8.37(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.431	7.431	0.0		14657036	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.432	7.432	0.0	1.000	7097043	4.98			
613.0 > 168.9	7.422	7.432	-0.010	0.999	767623		9.25(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.595	7.595	0.0		16308479	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.587	7.587	0.0	0.999	8147612	4.83			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.573	7.573	0.0	1.019	8438853	4.52			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.705	7.705	0.0	1.037	5886354	4.10			
712.9 > 169.0	7.715	7.705	0.010	1.038	906215		6.50(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00084	Amount Added:	10.00	Units: uL

Report Date: 06-Sep-2016 08:22:46 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02022.d

Injection Date: 02-Sep-2016 14:36:05 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

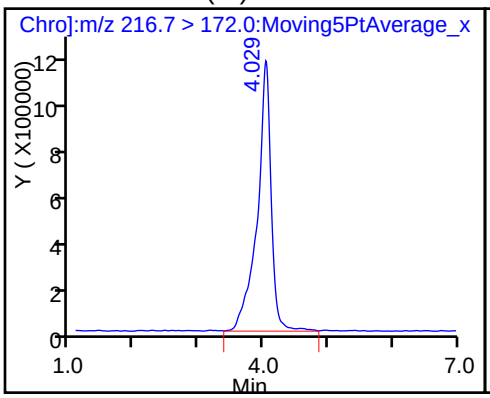
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 10

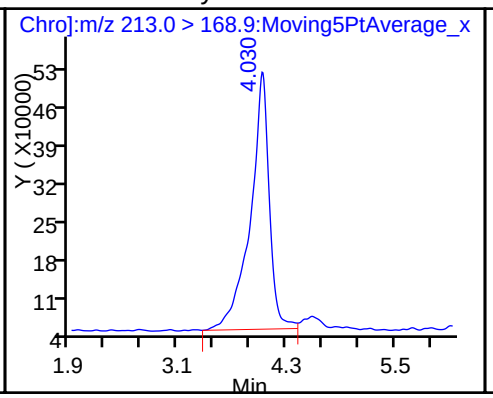
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

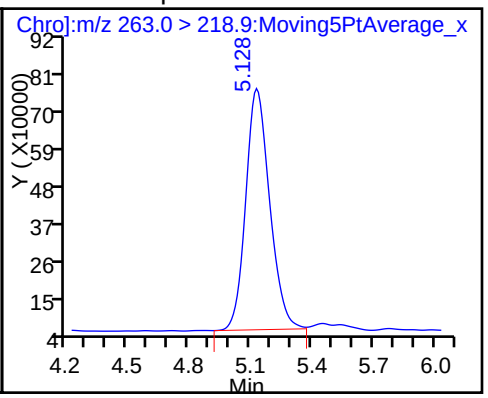
* 1 13C4 PFBA (IS)



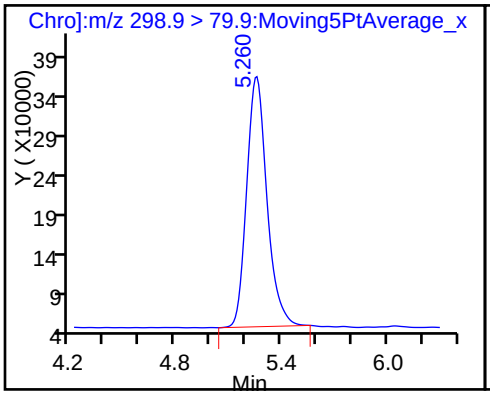
2 Perfluorobutyric acid



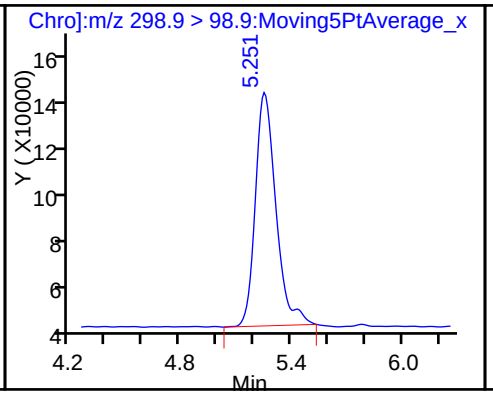
3 Perfluoropentanoic acid



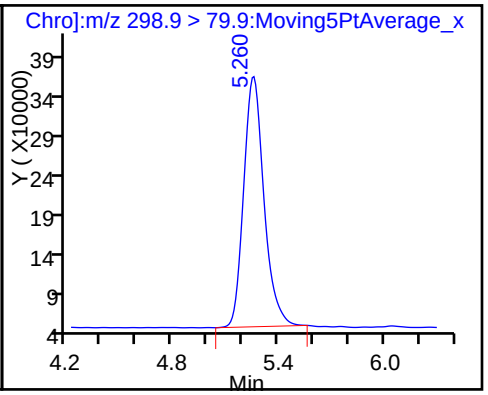
4 Perfluorobutane Sulfonate



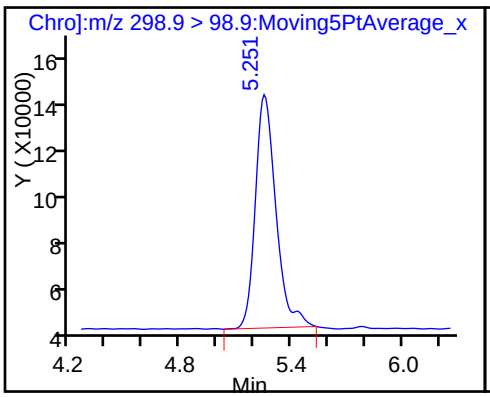
4 Perfluorobutane Sulfonate



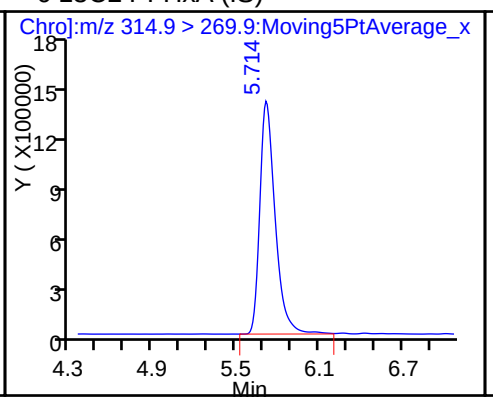
5 Perfluorobutanesulfonic acid



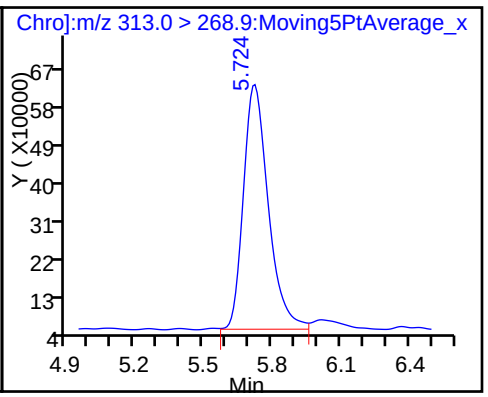
5 Perfluorobutanesulfonic acid



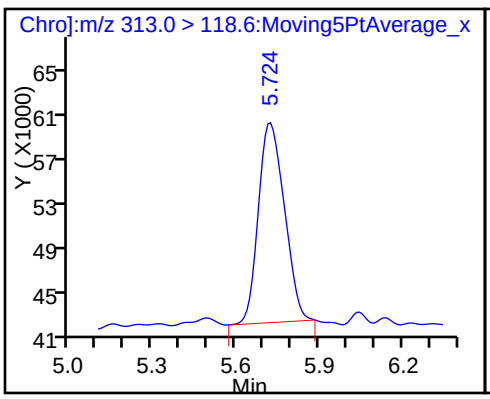
* 6 13C2 PFHxA (IS)



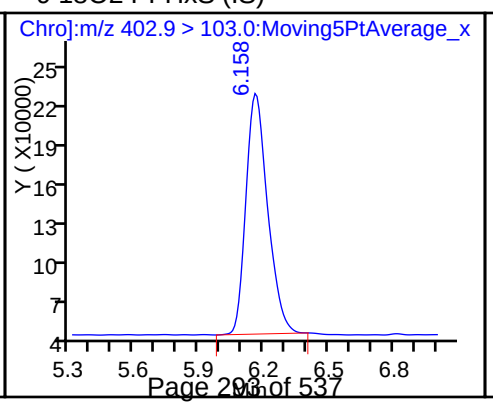
7 Perfluorohexanoic acid



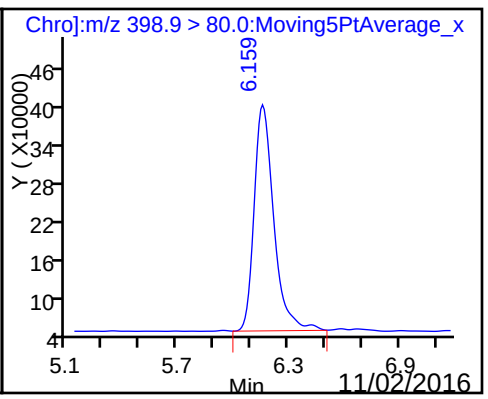
7 Perfluorohexanoic acid



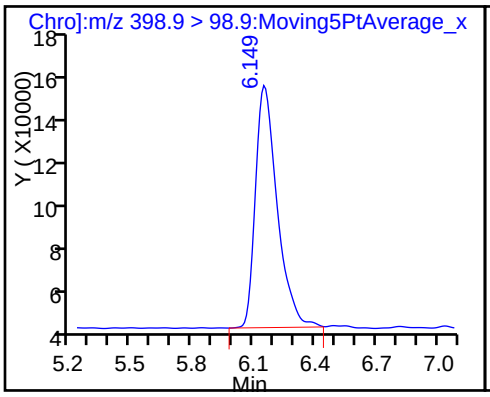
* 9 18O2 PFHxS (IS)



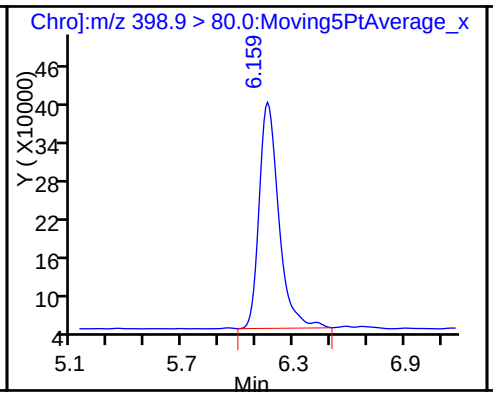
11 Perfluorohexanesulfonic acid



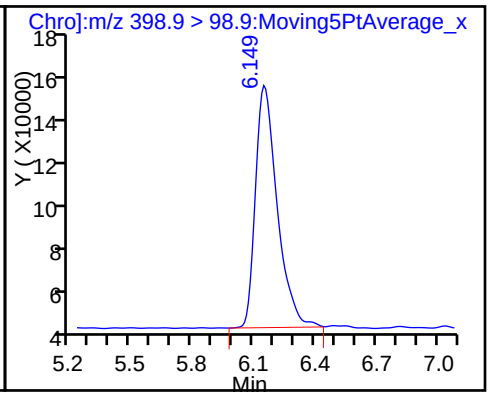
11 Perfluorohexanesulfonic acid



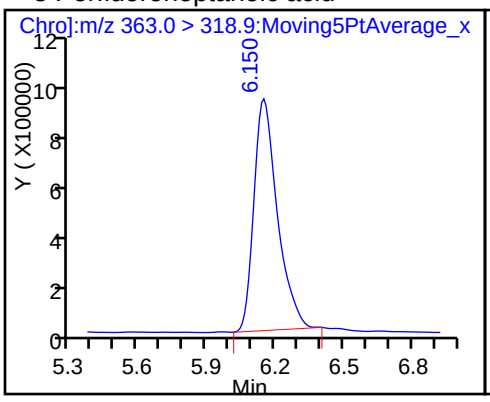
10 Perfluorohexane Sulfonate



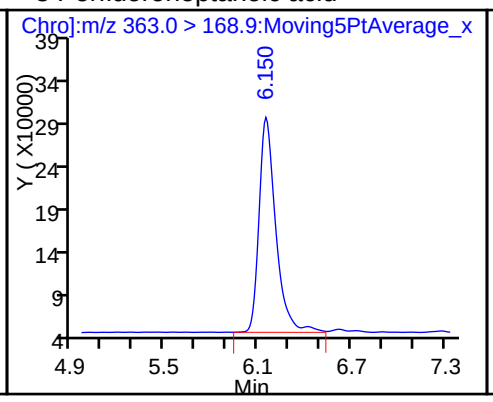
10 Perfluorohexane Sulfonate



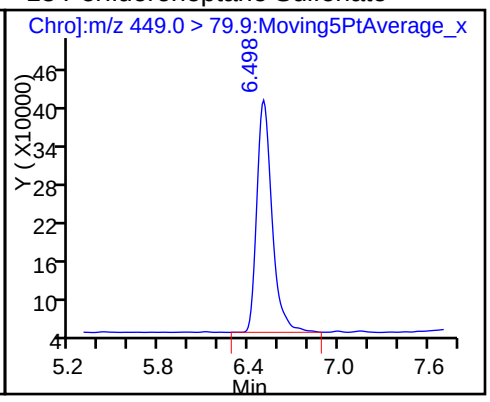
8 Perfluoroheptanoic acid



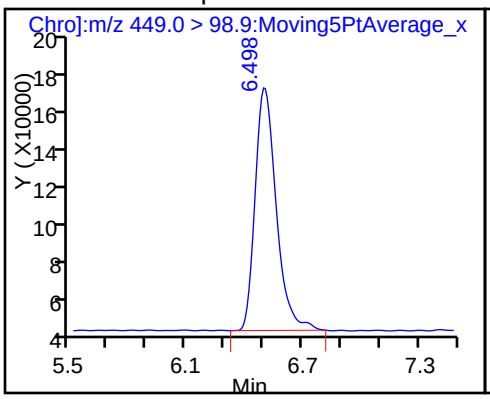
8 Perfluoroheptanoic acid



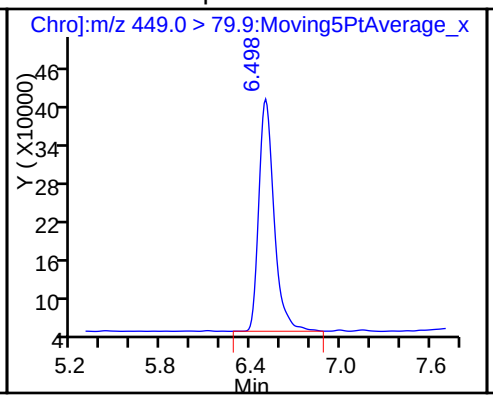
13 Perfluoroheptane Sulfonate



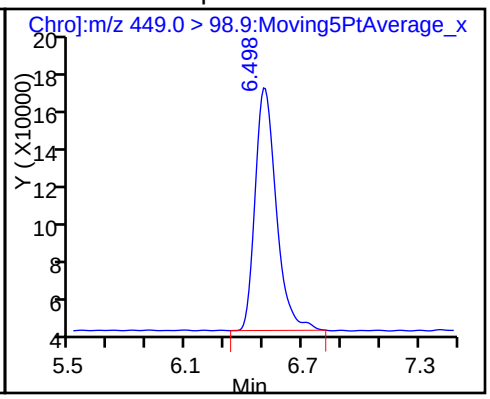
13 Perfluoroheptane Sulfonate



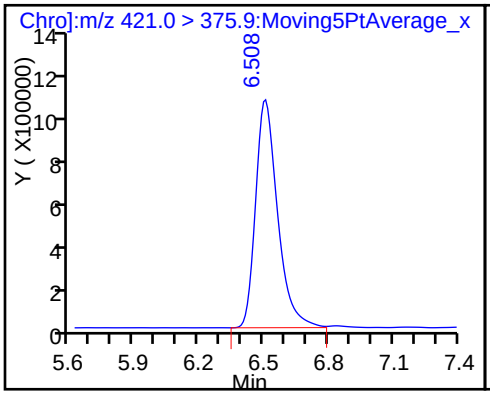
12 Perfluoroheptanesulfonic Acid



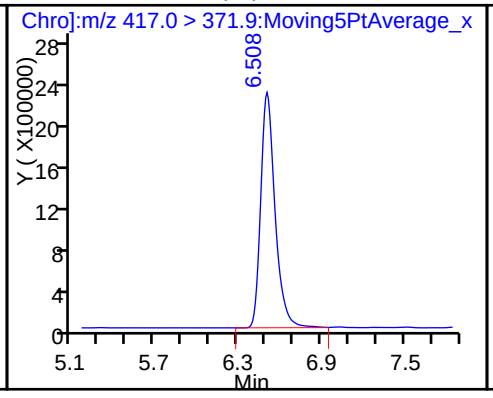
12 Perfluoroheptanesulfonic Acid



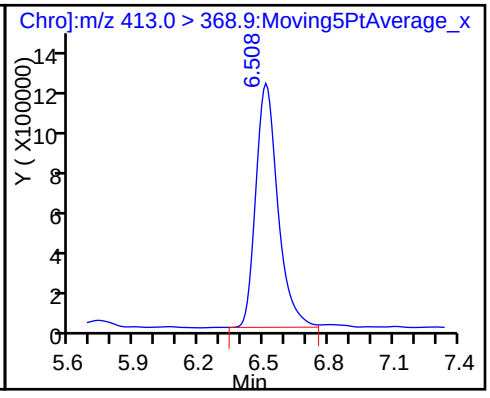
$ 14 13C8 PFOA



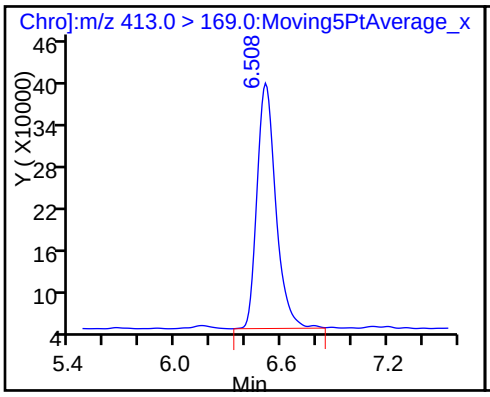
* 15 13C4 PFOA (IS)



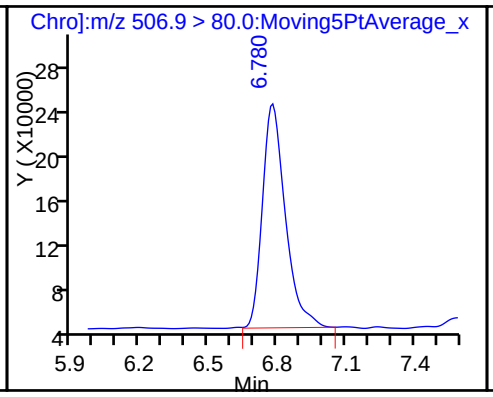
16 Perfluorooctanoic acid



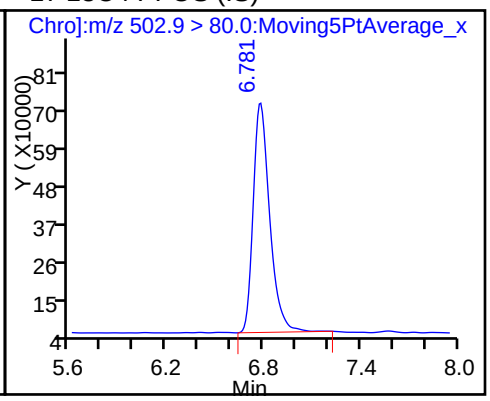
16 Perfluorooctanoic acid



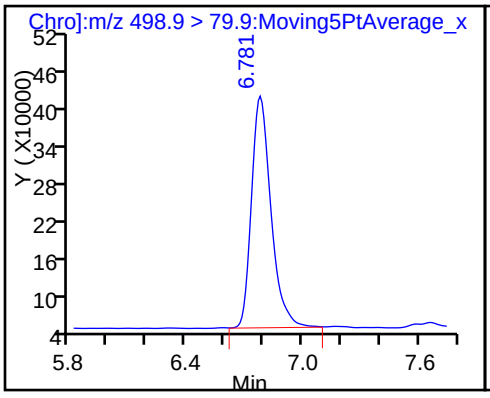
$ 18 13C8 PFOS



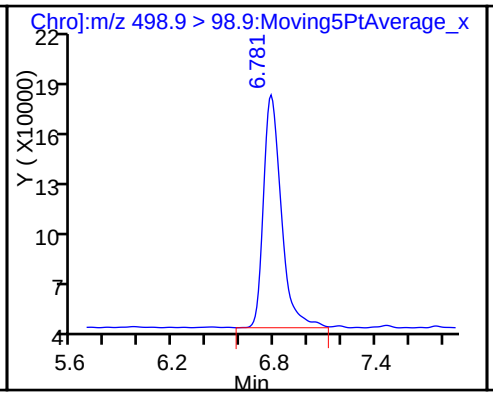
* 17 13C4 PFOS (IS)



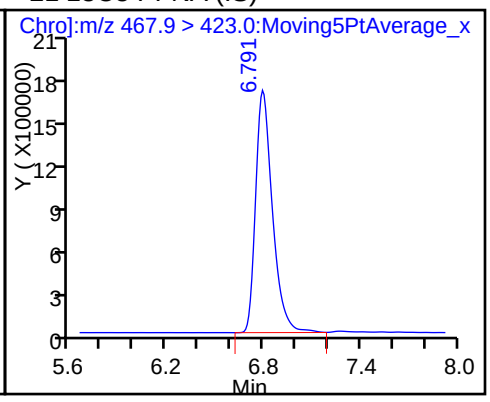
19 Perfluorooctane sulfonic acid



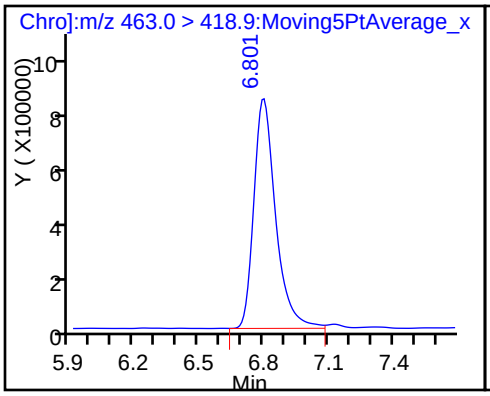
19 Perfluorooctane sulfonic acid



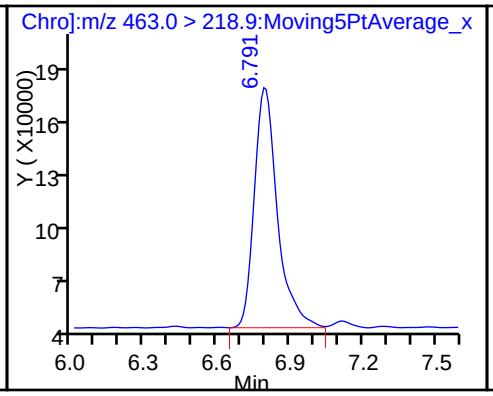
* 21 13C5 PFNA (IS)



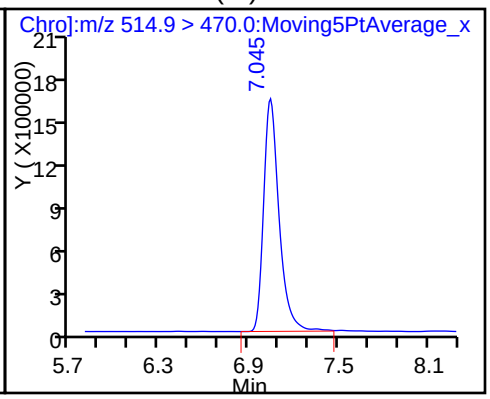
20 Perfluorononanoic acid



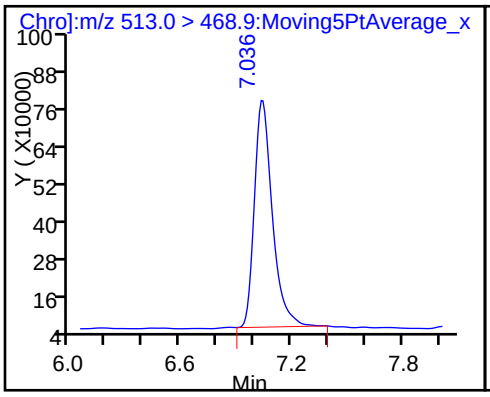
20 Perfluorononanoic acid



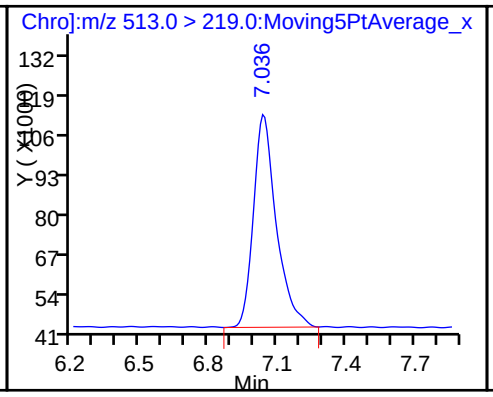
* 22 13C2 PFDA (IS)



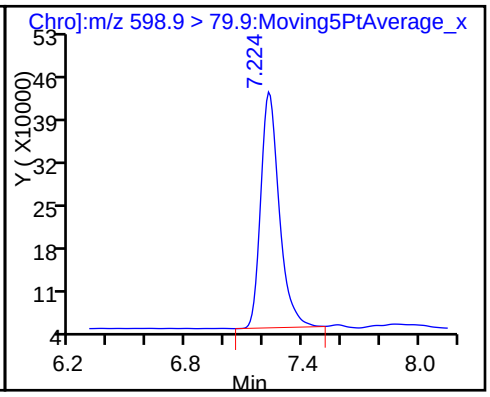
23 Perfluorodecanoic acid



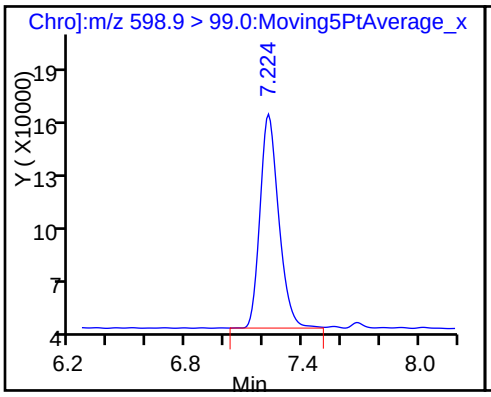
23 Perfluorodecanoic acid



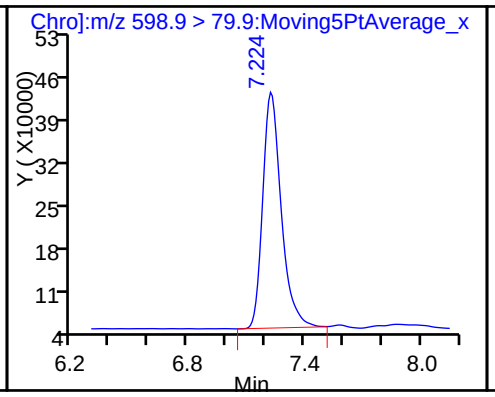
24 Perfluorodecane Sulfonic acid



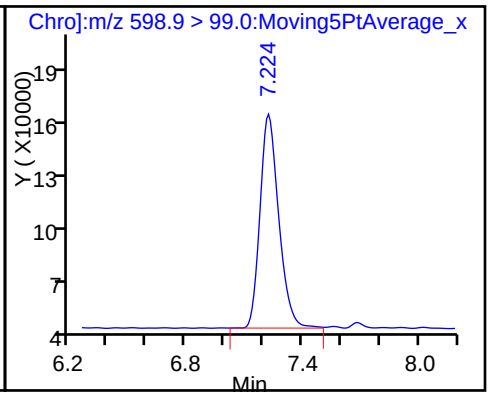
24 Perfluorodecane Sulfonic acid



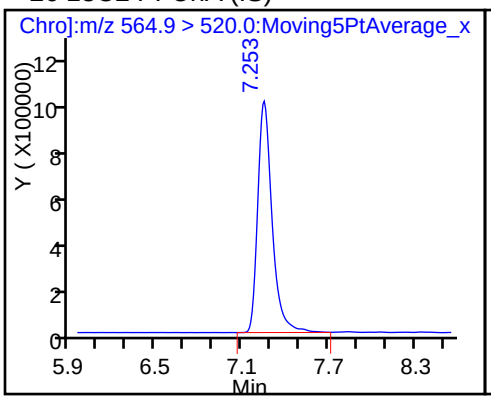
25 Perfluorodecane Sulfonate



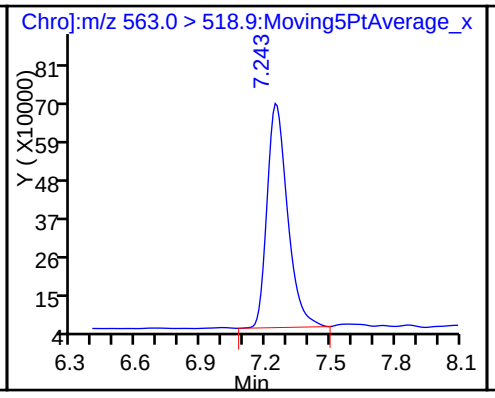
25 Perfluorodecane Sulfonate



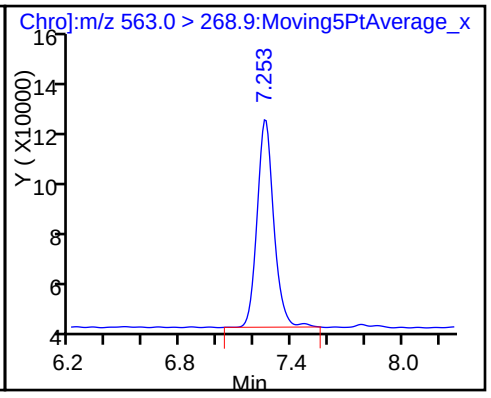
* 26 13C2 PFUnA (IS)



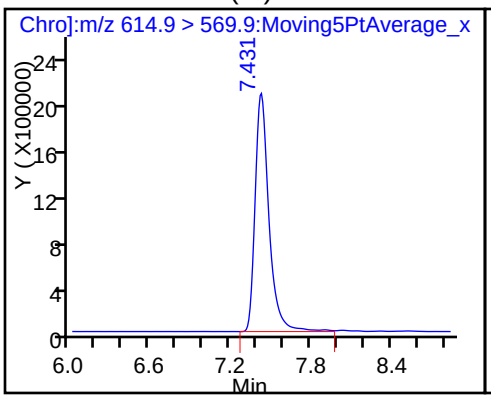
27 Perfluoroundecanoic acid



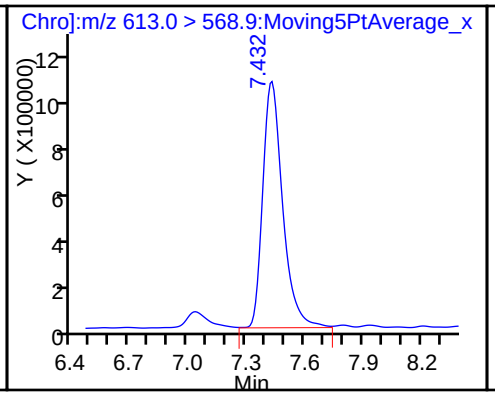
27 Perfluoroundecanoic acid



* 28 13C2 PFDoA (IS)



29 Perfluorododecanoic acid



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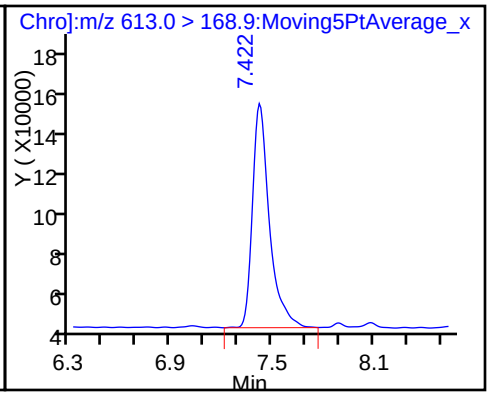
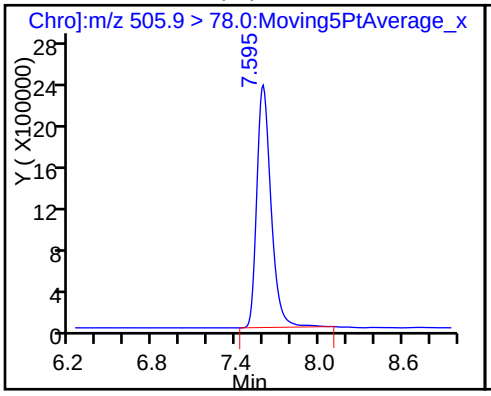
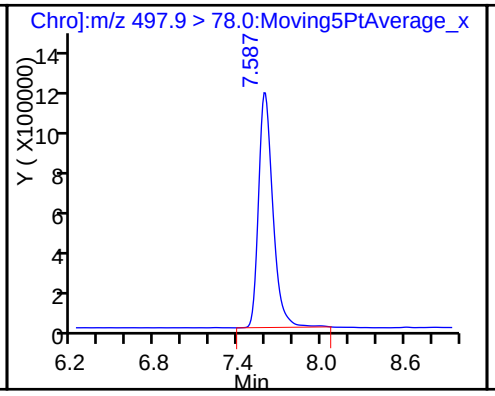


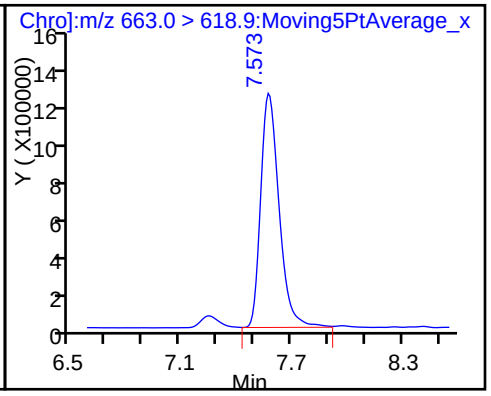
* 31 13C8 FOSA (IS)



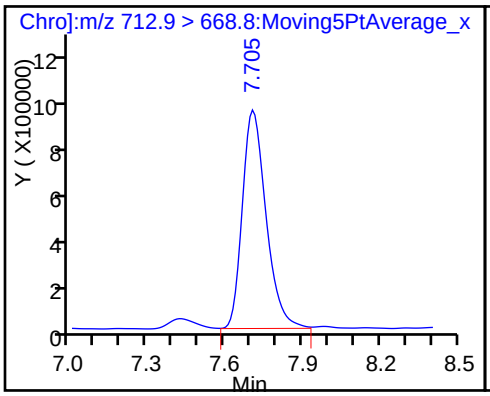
32 Perfluorooctane Sulfonamide



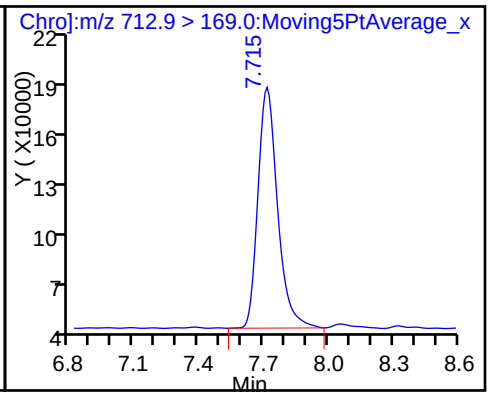
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-340829/17 Calibration Date: 09/02/2016 16:02

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I02029.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.045		10.8	10.0	8.4	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.152		10.6	10.0	5.8	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.004		8.04	8.85	-9.1	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.004		8.04	8.85	-9.1	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8762		9.87	10.0	-1.3	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8159		9.72	10.0	-2.8	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.677		8.69	9.45	-8.1	30.0
Perfluorohexanesulfonic acid	Lin2		3.677		8.69	9.45	-8.1	30.0
Perfluoroheptane Sulfonate	Lin2		1.115		9.68	9.52	1.7	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.115		9.68	9.52	1.7	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.031		10.5	10.0	5.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.127		10.6	9.55	10.5	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.079		10.2	10.0	2.0	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9809		10.3	10.0	3.4	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.217		11.8	9.65	22.7	30.0
Perfluorodecane Sulfonic acid	Lin2		1.217		11.8	9.65	22.7	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.549		11.9	10.0	19.3	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.001		10.3	10.0	3.0	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.242		9.82	10.0	-1.8	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.028		9.95	10.0	-0.5	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.9233		9.50	10.0	-5.0	30.0
13C8 PFOA	Lin1		0.7777		11.3	10.0	13.2	30.0
13C8 PFOS	Lin2		0.6188		10.3	9.56	7.7	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02029.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 16:02:24 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:23:05 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:35:55

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.105	4.105	0.0		13853830	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.105	4.105	0.0	1.000	14481962	10.8			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.204	5.204	0.0	0.899	11293184	10.6			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.327	5.327	0.0	0.856	4862797	8.04			R
298.9 > 98.9	5.327	5.327	0.0	0.856	1447245		3.36(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.327	5.327	0.0	0.856	4862797	8.04			
298.9 > 98.9	5.327	5.327	0.0	0.856	1447245		3.36(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.790	5.790	0.0		9799975	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.790	5.790	0.0	1.000	8586754	9.87			
313.0 > 118.6	5.790	5.790	0.0	1.000	266826		32.18(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.225	6.225	0.0		1298185	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.225	6.225	0.0	1.000	4767972	8.69			
398.9 > 98.9	6.225	6.225	0.0	1.000	1547392		3.08(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.225	6.225	0.0	1.000	4767972	8.69			R
398.9 > 98.9	6.225	6.225	0.0	1.000	1547392		3.08(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.216	6.216	0.0	0.947	11906078	9.72			
363.0 > 168.9	6.216	6.216	0.0	0.947	3350227		3.55(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.564	6.564	0.0	0.960	4872498	9.68			
449.0 > 98.9	6.564	6.564	0.0	0.960	1403692		3.47(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.564	6.564	0.0	0.960	4872498	9.68			
449.0 > 98.9	6.564	6.564	0.0	0.960	1403692		3.47(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.565	6.565	0.0	1.000	11348844	11.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.565	6.565	0.0		14593543	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.575	6.575	0.0	1.001	15052632	10.5			
413.0 > 169.0	6.575	6.575	0.0	1.001	4710022		3.20(2.86-5.31)		
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.838	6.838	0.0	1.000	4940339	10.6			R
498.9 > 98.9	6.838	6.838	0.0	1.000	1753875		2.82(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.837	6.837	0.0	1.000	2715561	10.3			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.837	6.837	0.0		4388483	9.56			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.857	6.857	0.0		10481250	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.858	6.858	0.0	1.000	11312360	10.2			
463.0 > 218.9	6.848	6.858	-0.010	0.999	1643860		6.88(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.102	7.102	0.0		10335908	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.102	7.102	0.0	1.000	10138194	10.3			
513.0 > 219.0	7.092	7.102	-0.010	0.999	960659		10.55(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.280	7.280	0.0	1.065	5389155	11.8			
598.9 > 99.0	7.280	7.280	0.0	1.065	1429804		3.77(2.84-2.84)		
25 Perfluorodecane Sulfonate									R
598.9 > 79.9	7.280	7.280	0.0	1.065	5389155	11.8			R
598.9 > 99.0	7.280	7.280	0.0	1.065	1429804		3.77(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.300	7.300	0.0		5545895	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.300	7.300	0.0	1.000	8589941	11.9			R
563.0 > 268.9	7.300	7.300	0.0	1.000	1128639		7.61(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.469	7.469	0.0		13412616	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.469	7.469	0.0	1.000	13429935	10.3			
613.0 > 168.9	7.469	7.469	0.0	1.000	1646091		8.16(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.611	7.611	0.0	1.019	16662662	9.82			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.661	7.661	0.0		15109468	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.653	7.653	0.0	0.999	15536877	9.95			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.743	7.743	0.0	1.037	12383533	9.50			
712.9 > 169.0	7.743	7.743	0.0	1.037	1805206		6.86(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00084	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

Report Date: 06-Sep-2016 08:23:06 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02029.d

Injection Date: 02-Sep-2016 16:02:24 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

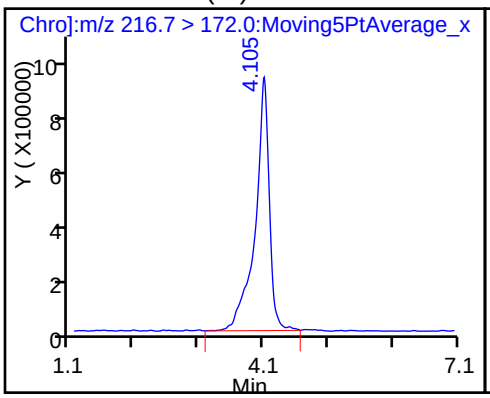
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 17

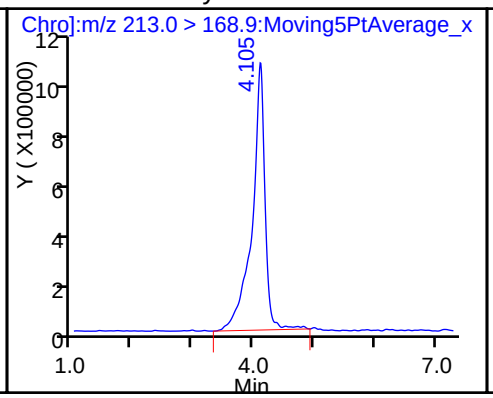
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

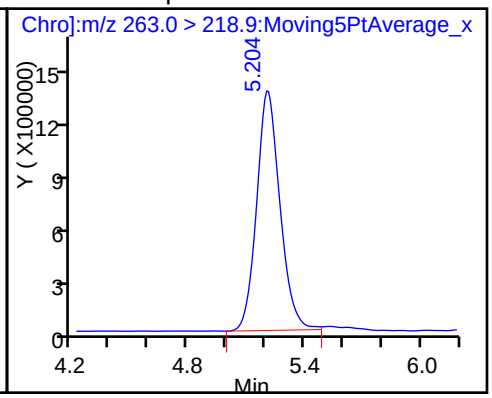
* 1 13C4 PFBA (IS)



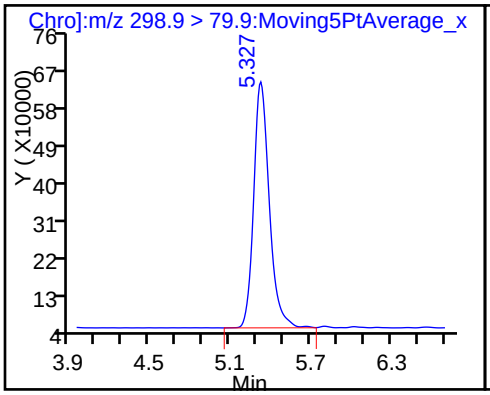
2 Perfluorobutyric acid



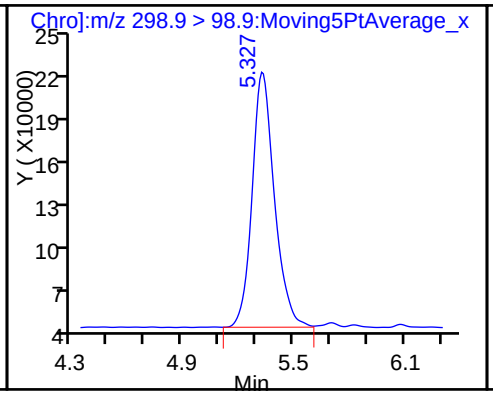
3 Perfluoropentanoic acid



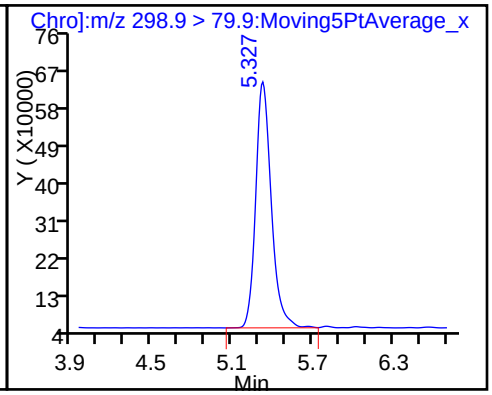
4 Perfluorobutane Sulfonate



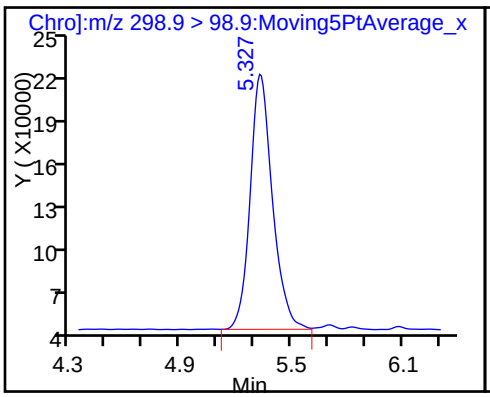
4 Perfluorobutane Sulfonate



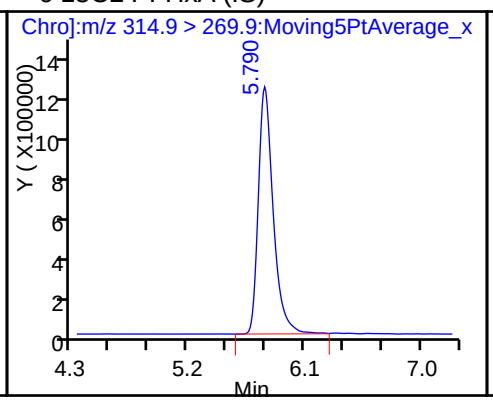
5 Perfluorobutanesulfonic acid



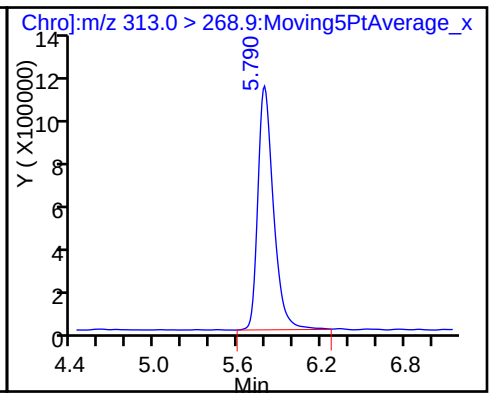
5 Perfluorobutanesulfonic acid



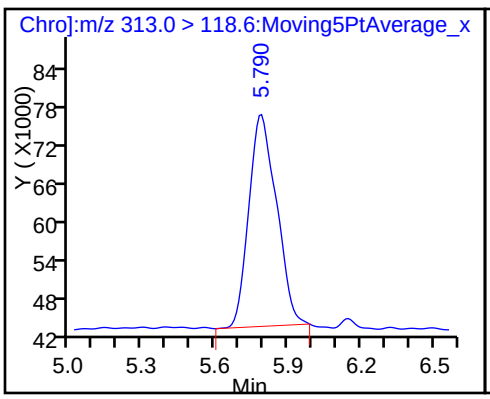
* 6 13C2 PFHxA (IS)



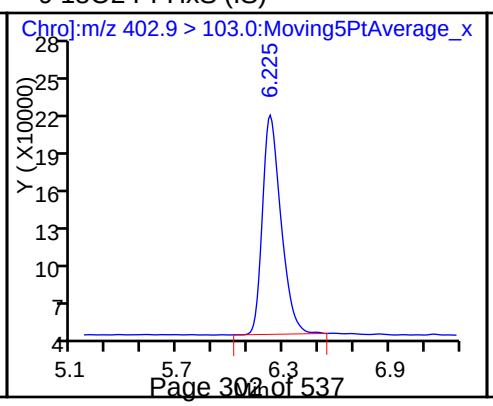
7 Perfluorohexanoic acid



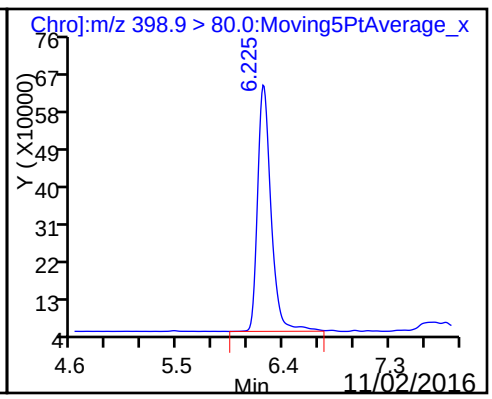
7 Perfluorohexanoic acid



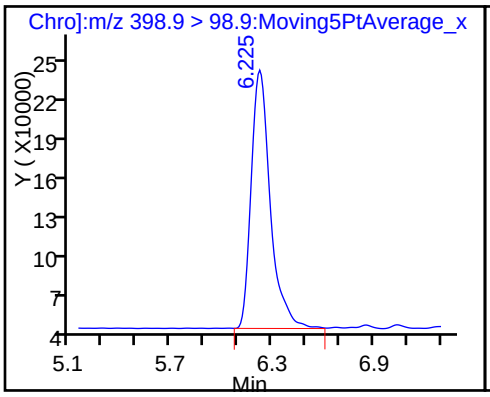
* 9 18O2 PFHxS (IS)



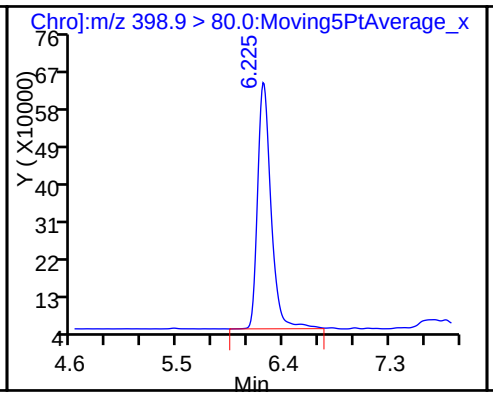
11 Perfluorohexanesulfonic acid



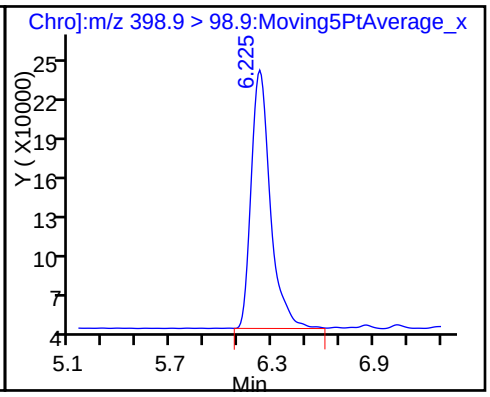
11 Perfluorohexanesulfonic acid



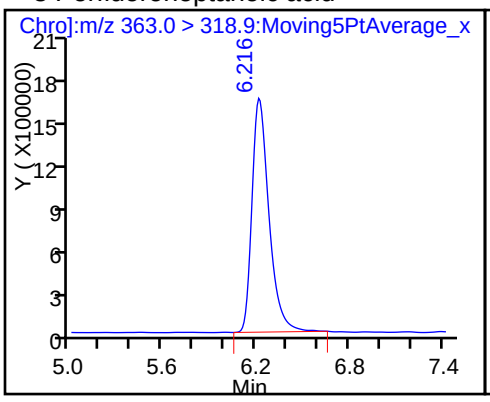
10 Perfluorohexane Sulfonate



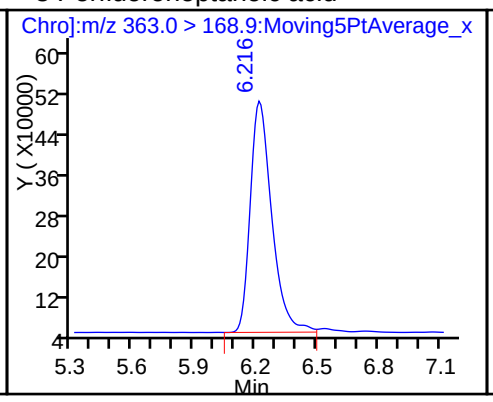
10 Perfluorohexane Sulfonate



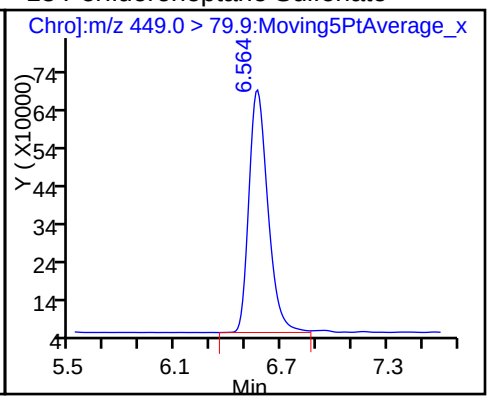
8 Perfluoroheptanoic acid



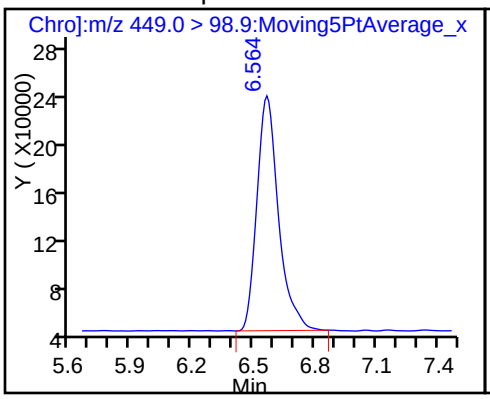
8 Perfluoroheptanoic acid



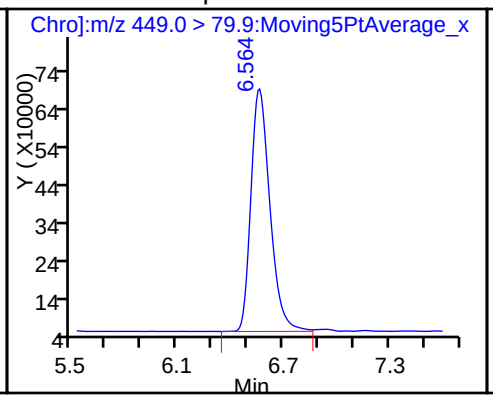
13 Perfluoroheptane Sulfonate



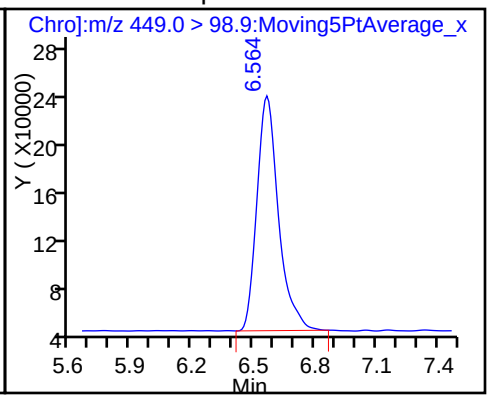
13 Perfluoroheptane Sulfonate



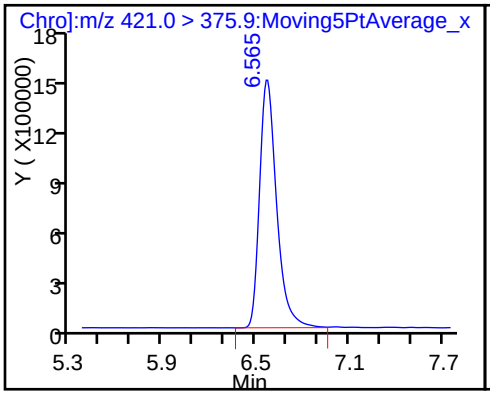
12 Perfluoroheptanesulfonic Acid



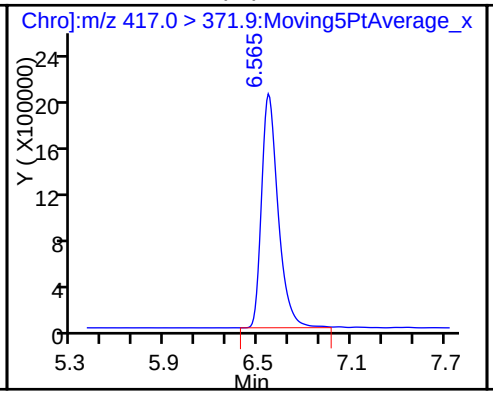
12 Perfluoroheptanesulfonic Acid



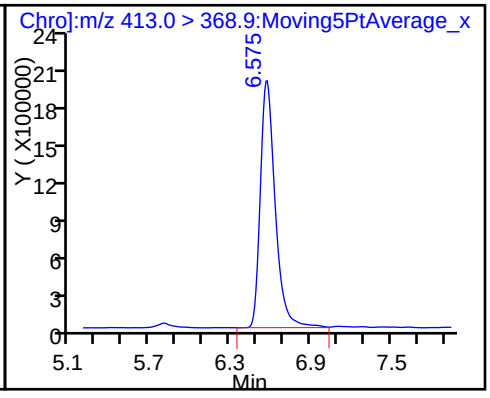
$ 14 13C8 PFOA



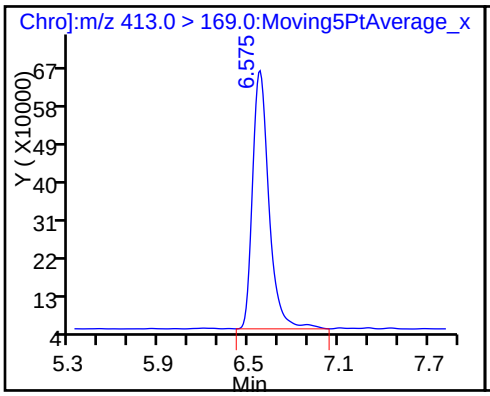
* 15 13C4 PFOA (IS)



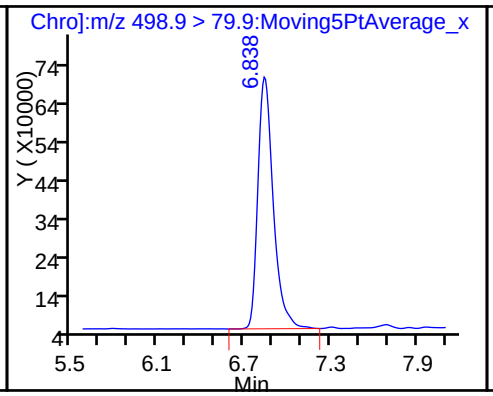
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid



19 Perfluorooctane sulfonic acid



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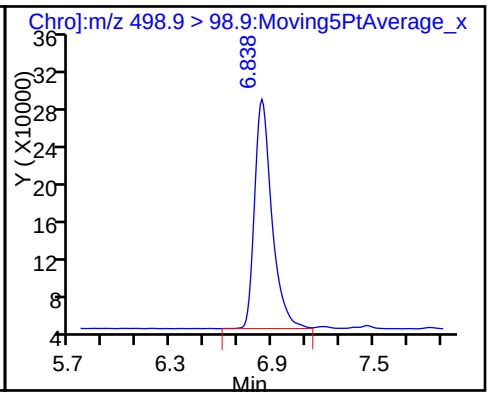
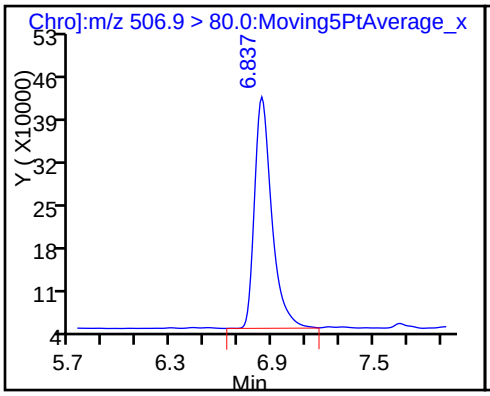
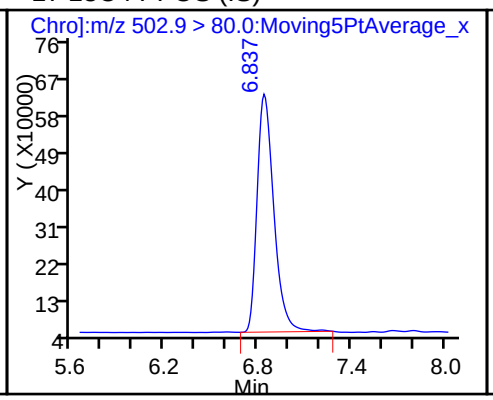


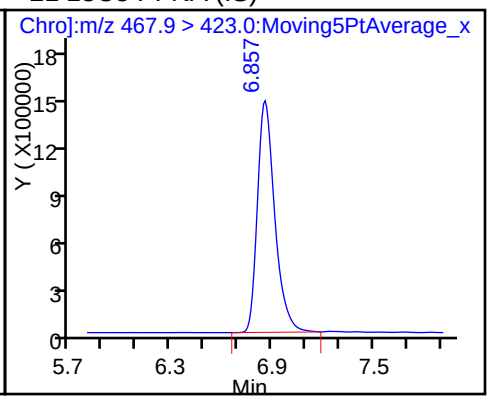
$ 18 13C8 PFOS



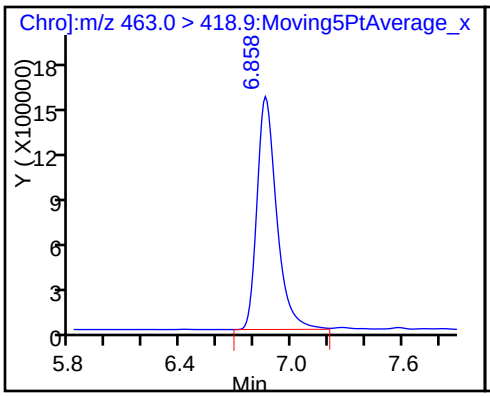
* 17 13C4 PFOS (IS)



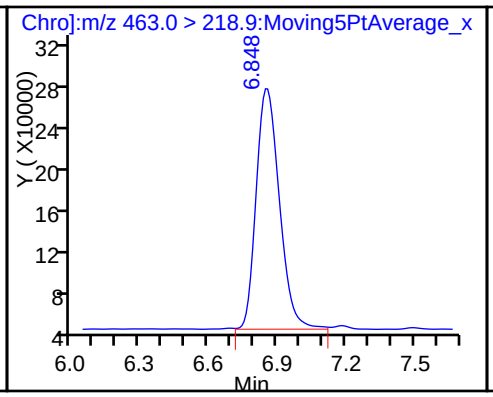
* 21 13C5 PFNA (IS)



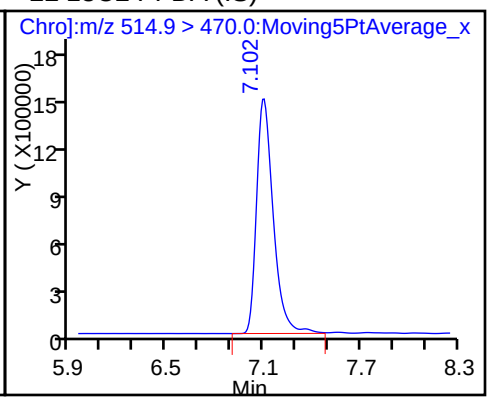
20 Perfluorononanoic acid



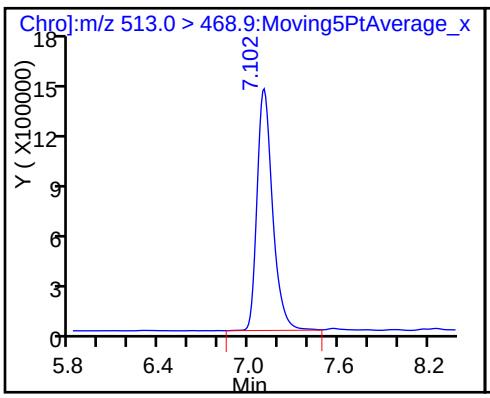
20 Perfluorononanoic acid



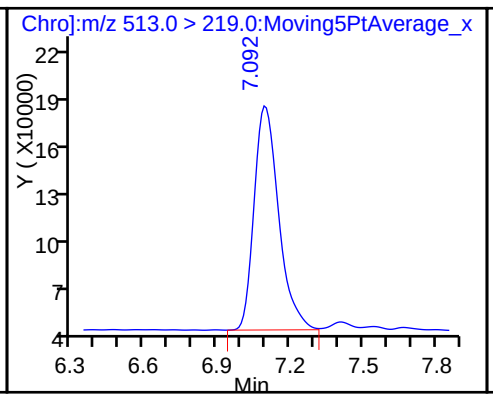
* 22 13C2 PFDA (IS)



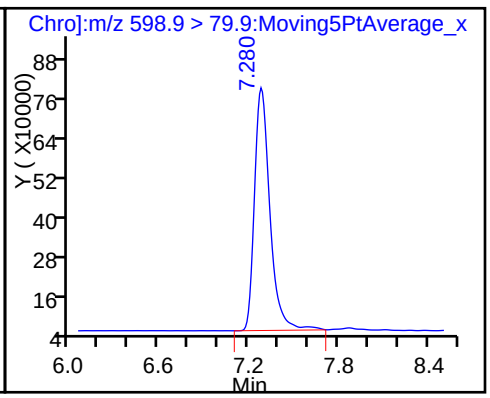
23 Perfluorodecanoic acid



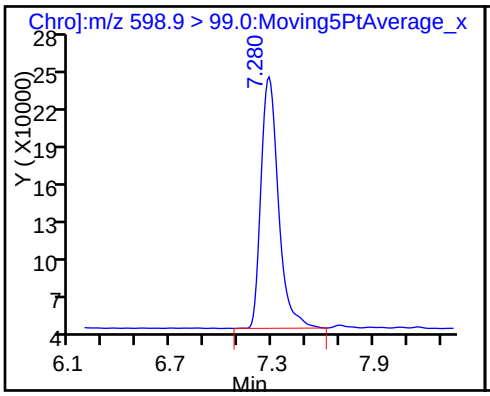
23 Perfluorodecanoic acid



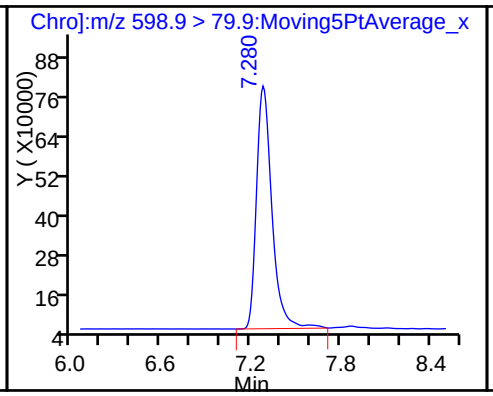
24 Perfluorodecane Sulfonic acid



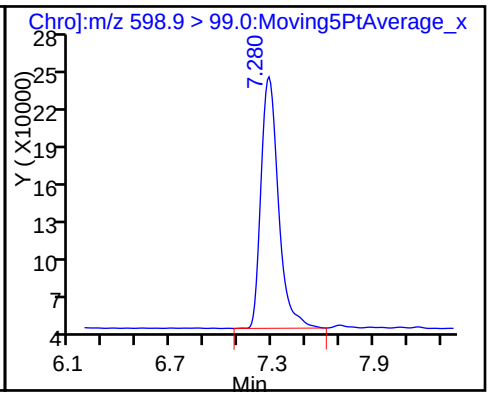
24 Perfluorodecane Sulfonic acid



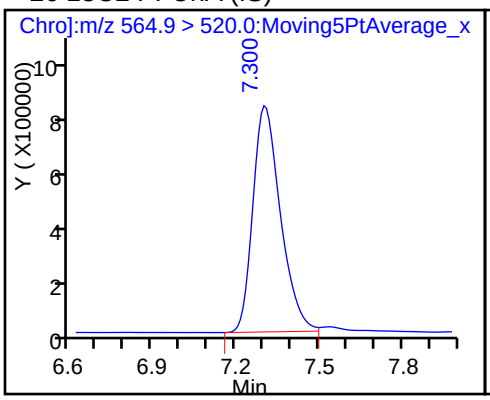
25 Perfluorodecane Sulfonate



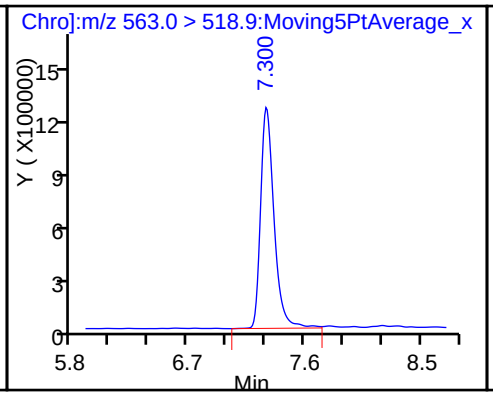
25 Perfluorodecane Sulfonate



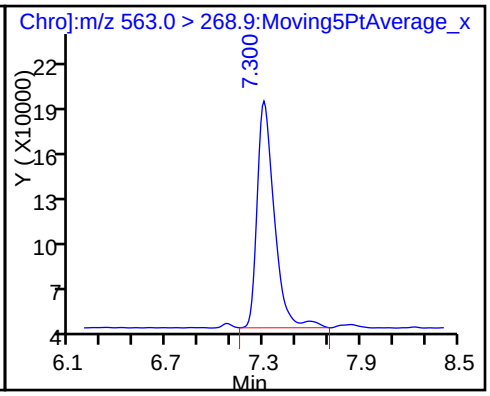
* 26 13C2 PFUnA (IS)



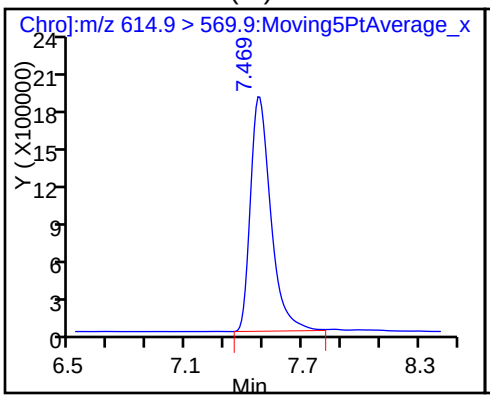
27 Perfluoroundecanoic acid



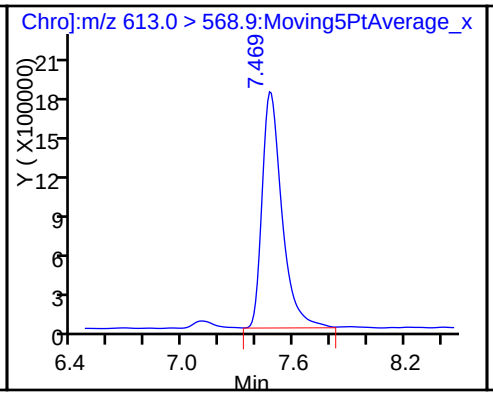
27 Perfluoroundecanoic acid



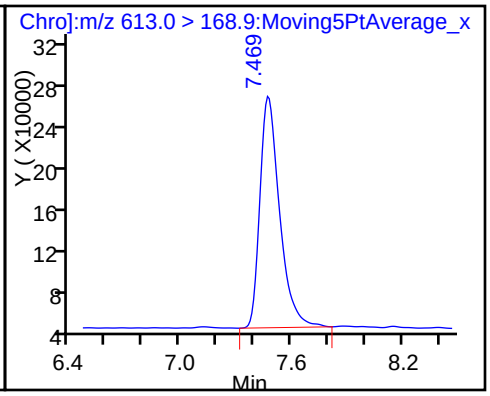
* 28 13C2 PFDoA (IS)



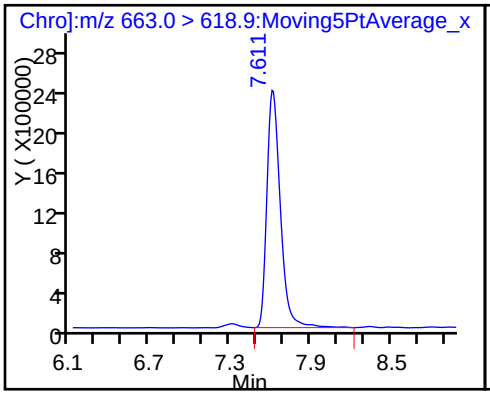
29 Perfluorododecanoic acid



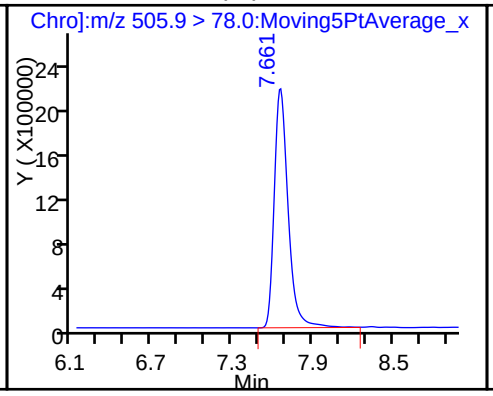
29 Perfluorododecanoic acid



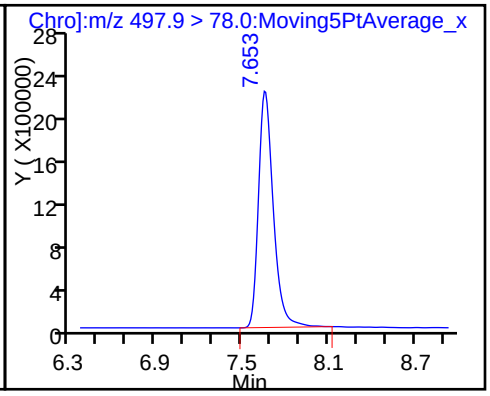
30 Perfluorotridecanoic acid



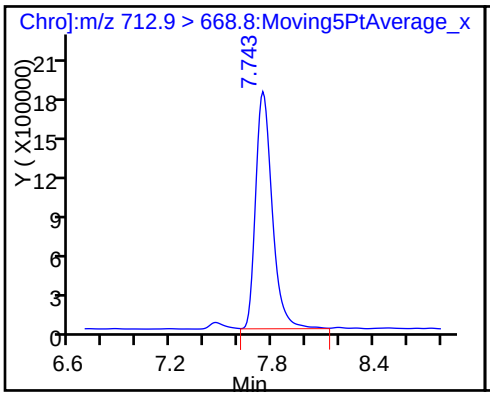
* 31 13C8 FOSA (IS)



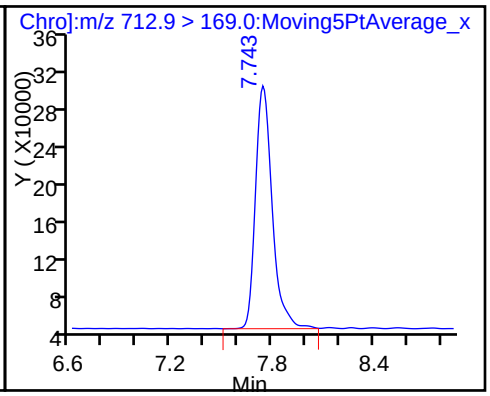
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-340832/46 Calibration Date: 09/02/2016 21:59

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I02058.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.9858		5.11	5.00	2.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.093		4.98	5.00	-0.5	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		3.699		3.71	4.43	-16.1	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		3.699		3.71	4.43	-16.1	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8345		4.67	5.00	-6.5	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.7803		4.64	5.00	-7.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.632		4.29	4.73	-9.2	30.0
Perfluorohexanesulfonic acid	Lin2		3.632		4.29	4.73	-9.2	30.0
Perfluoroheptane Sulfonate	Lin2		1.020		4.45	4.76	-6.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.020		4.45	4.76	-6.5	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.009		5.11	5.00	2.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.020		4.82	4.78	0.8	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.021		4.84	5.00	-3.3	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9665		5.08	5.00	1.6	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.104		5.35	4.83	10.9	30.0
Perfluorodecane Sulfonic acid	Lin2		1.104		5.35	4.83	10.9	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.272		4.85	5.00	-3.0	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9692		4.99	5.00	-0.3	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.063		4.17	5.00	-16.6	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		0.9539		4.61	5.00	-7.9	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7971		4.07	5.00	-18.5	30.0
13C8 PFOA	Lin1		0.8646		6.19	5.00	23.8	30.0
13C8 PFOS	Lin2		0.6136		5.06	4.78	5.8	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02058.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 21:59:37 ALS Bottle#: 0 Worklist Smp#: 46
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:33:54 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:50:44

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.029	4.029	0.0		13930460	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.030	4.030	0.0	1.000	6866293	5.11			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.128	5.128	0.0	0.899	5392355	4.98			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.241	5.241	0.0	0.852	2278232	3.71			
298.9 > 98.9	5.241	5.241	0.0	0.852	682881		3.34(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.241	5.241	0.0	0.852	2278232	3.71			
298.9 > 98.9	5.241	5.241	0.0	0.852	682881		3.34(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.705	0.0		9863227	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.705	5.705	0.0	1.000	4115206	4.67			
313.0 > 118.6	5.705	5.705	0.0	1.000	87977		46.78(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.149	0.0		1316574	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.140	6.140	0.0	0.946	6502946	4.64			
363.0 > 168.9	6.140	6.140	0.0	0.946	1765174		3.68(3.35-6.23)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.140	6.140	0.0	0.998	2388248	4.29			
398.9 > 98.9	6.149	6.140	0.009	1.000	702827		3.40(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.140	6.140	0.0	0.998	2388248	4.29			R
398.9 > 98.9	6.149	6.140	0.009	1.000	702827		3.40(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.479	6.479	0.0	0.960	2478081	4.45			
449.0 > 98.9	6.479	6.479	0.0	0.960	719211		3.45(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.479	6.479	0.0	0.960	2478081	4.45			
449.0 > 98.9	6.479	6.479	0.0	0.960	719211		3.45(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.489	0.0	1.000	7205857	6.19			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.489	0.0		16668237	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.489	0.0	1.000	8409561	5.11			
413.0 > 169.0	6.489	6.489	0.0	1.000	2557430		3.29(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.752	6.752	0.0		4878915	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.752	6.752	0.0	1.000	1496777	5.06			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.752	6.752	0.0	1.000	2484565	4.81			R
498.9 > 98.9	6.752	6.752	0.0	1.000	960576		2.59(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.772	0.0		12162873	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.772	6.772	0.0	1.000	6212012	4.83			
463.0 > 218.9	6.772	6.772	0.0	1.000	886788		7.01(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.016	0.0		11722750	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.007	7.007	0.0	0.999	5664955	5.08			R
513.0 > 219.0	7.007	7.007	0.0	0.999	567508		9.98(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.195	7.195	0.0	1.066	2719043	5.35			
598.9 > 99.0	7.195	7.195	0.0	1.066	778706		3.49(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.195	7.195	0.0	1.066	2719043	5.35			
598.9 > 99.0	7.195	7.195	0.0	1.066	778706		3.49(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.215	0.0		7021149	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.215	0.0	1.000	4463999	4.85			R
563.0 > 268.9	7.224	7.215	0.009	1.001	613795		7.27(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.393	0.0		15892614	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.394	0.0	1.000	7701157	4.99			
613.0 > 168.9	7.394	7.394	0.0	1.000	849079		9.07(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.567	7.567	0.0		16999138	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.568	7.568	0.0	1.000	8107635	4.61			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.020	8445248	4.17			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.668	7.668	0.0	1.037	6334337	4.07			
712.9 > 169.0	7.677	7.668	0.009	1.038	902875		7.02(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00084	Amount Added:	10.00	Units: uL

Report Date: 06-Sep-2016 08:33:55 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02058.d

Injection Date: 02-Sep-2016 21:59:37 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

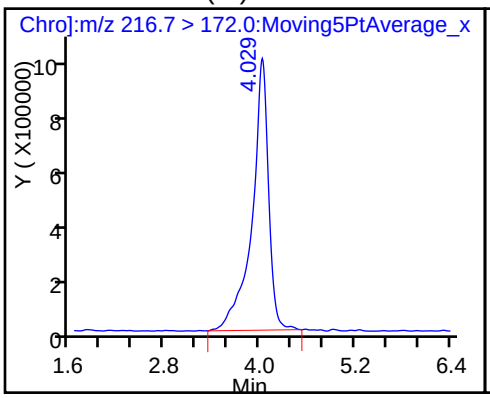
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 46

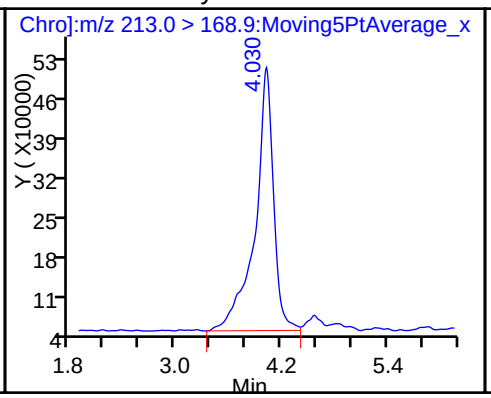
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

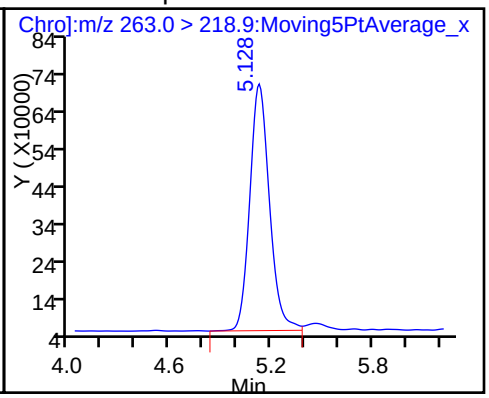
* 1 13C4 PFBA (IS)



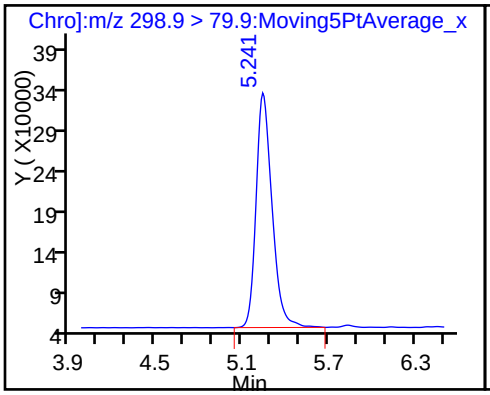
2 Perfluorobutyric acid



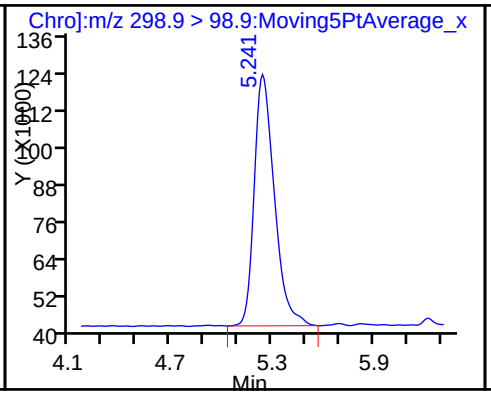
3 Perfluoropentanoic acid



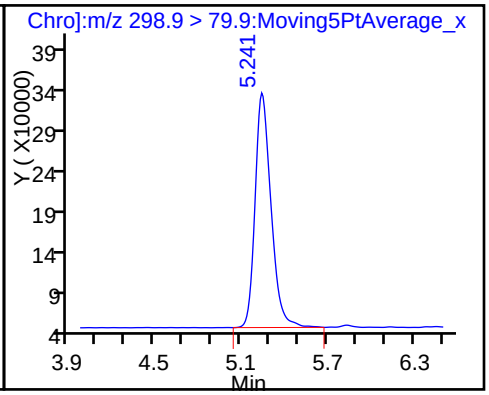
4 Perfluorobutane Sulfonate



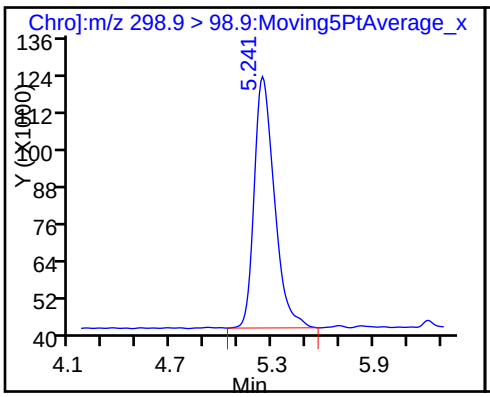
4 Perfluorobutane Sulfonate



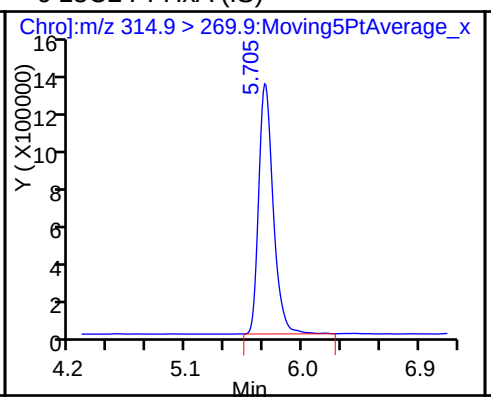
5 Perfluorobutanesulfonic acid



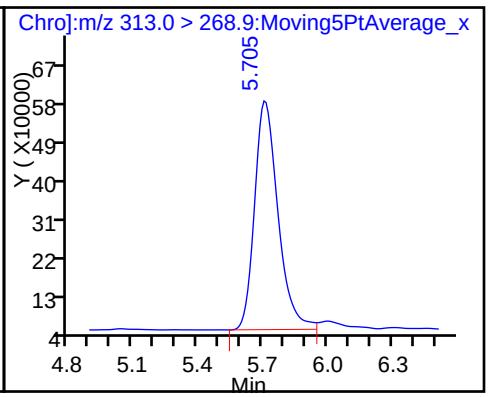
5 Perfluorobutanesulfonic acid



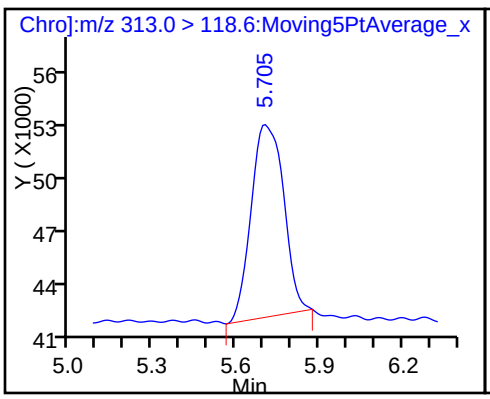
* 6 13C2 PFHxA (IS)



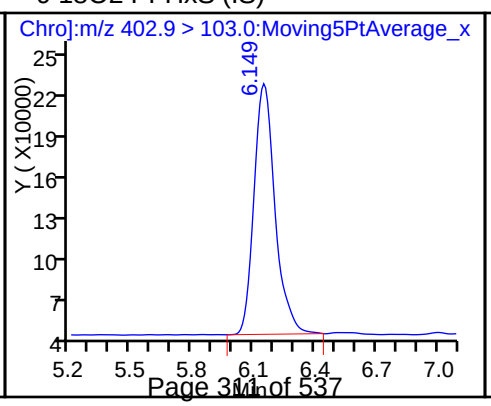
7 Perfluorohexanoic acid



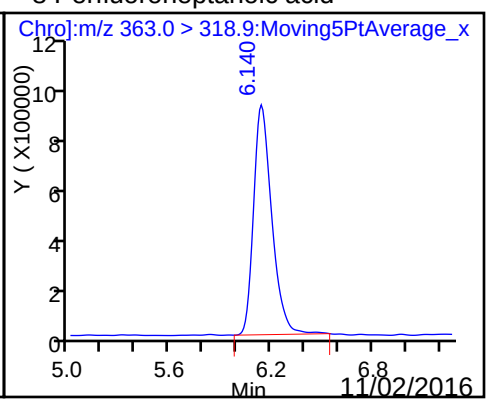
7 Perfluorohexanoic acid



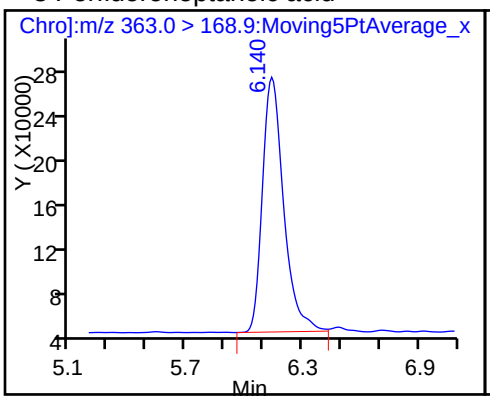
* 9 18O2 PFHxS (IS)



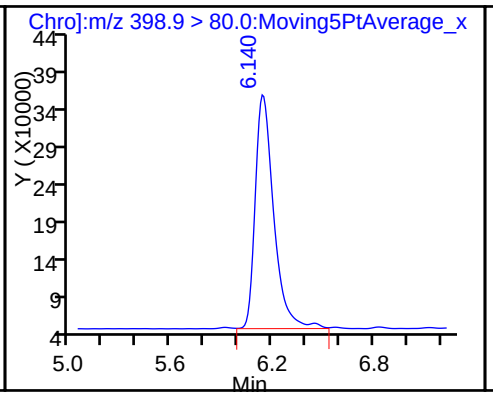
8 Perfluoroheptanoic acid



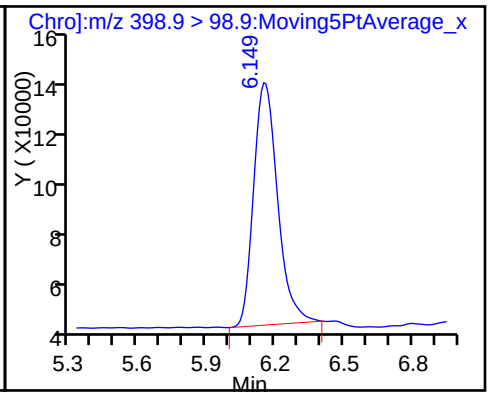
8 Perfluoroheptanoic acid



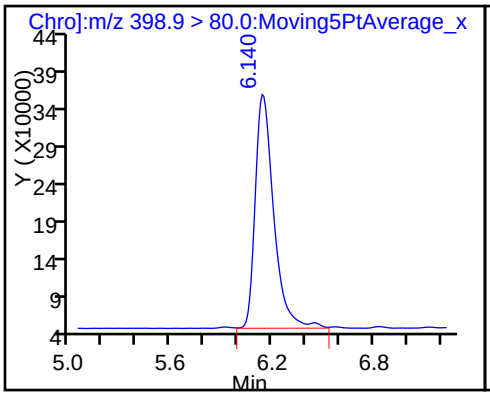
11 Perfluorohexanesulfonic acid



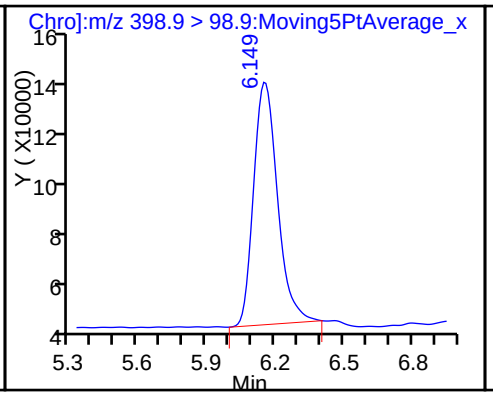
11 Perfluorohexanesulfonic acid



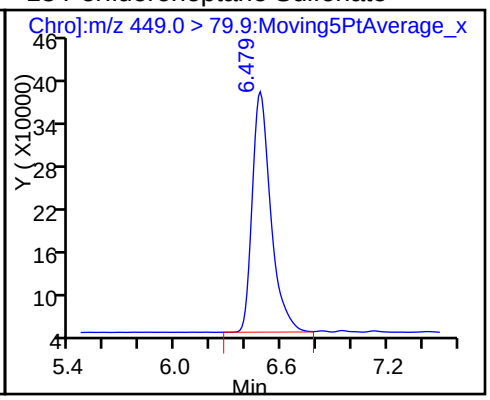
10 Perfluorohexane Sulfonate



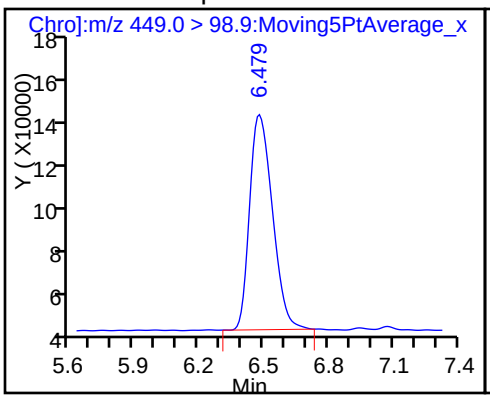
10 Perfluorohexane Sulfonate



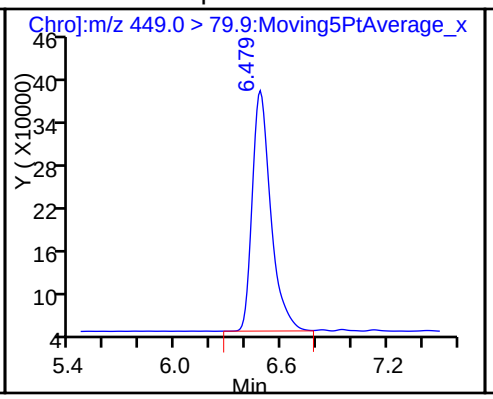
13 Perfluoroheptane Sulfonate



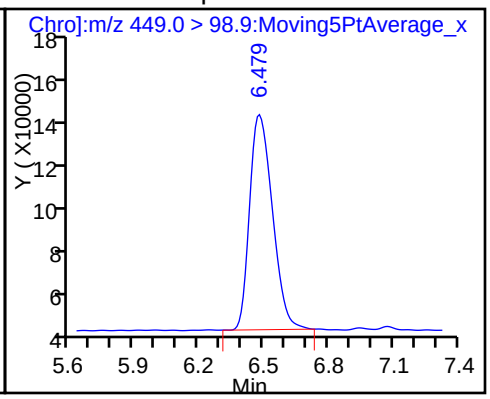
13 Perfluoroheptane Sulfonate



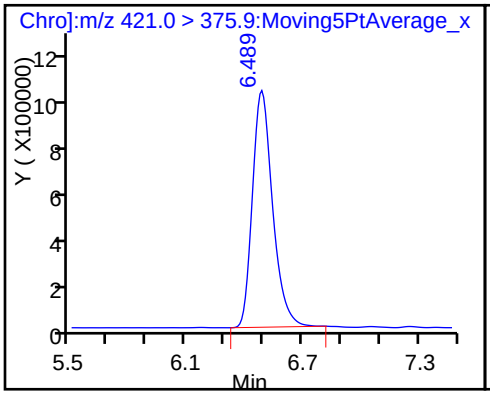
12 Perfluoroheptanesulfonic Acid



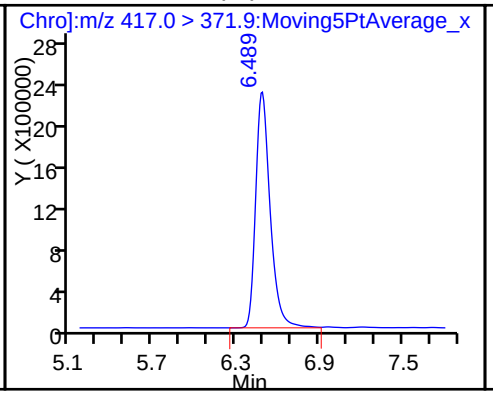
12 Perfluoroheptanesulfonic Acid



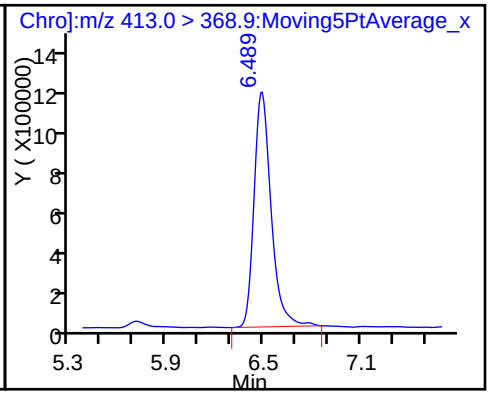
$ 14 13C8 PFOA



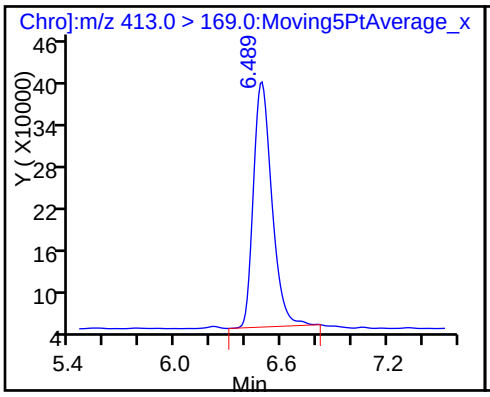
* 15 13C4 PFOA (IS)



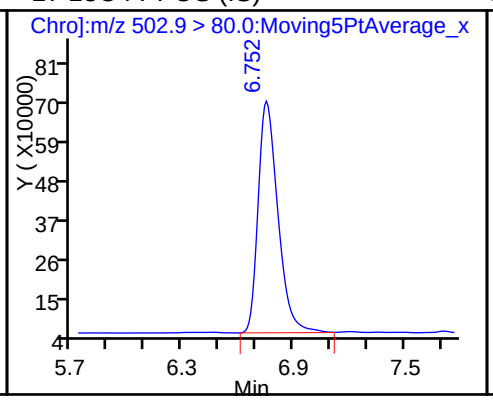
16 Perfluorooctanoic acid



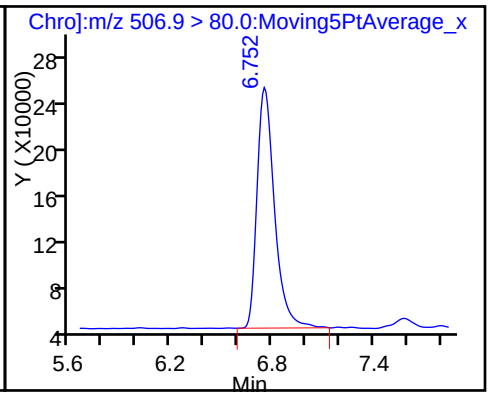
16 Perfluorooctanoic acid



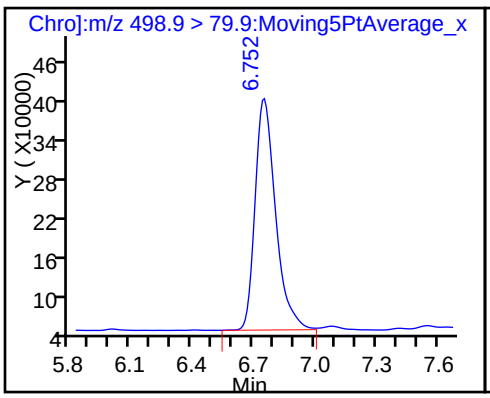
* 17 13C4 PFOS (IS)



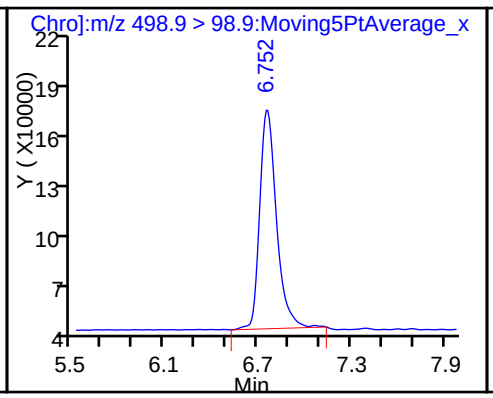
$ 18 13C8 PFOS



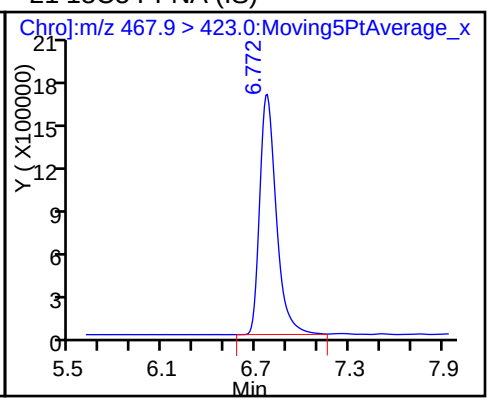
19 Perfluorooctane sulfonic acid



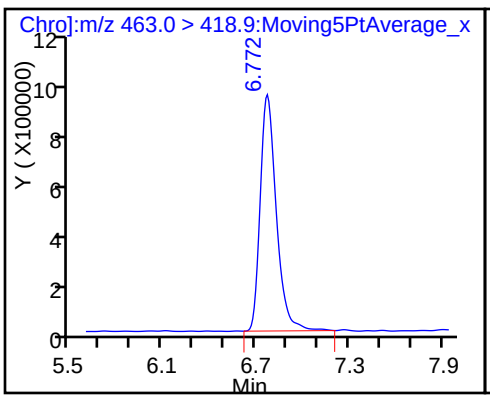
19 Perfluorooctane sulfonic acid



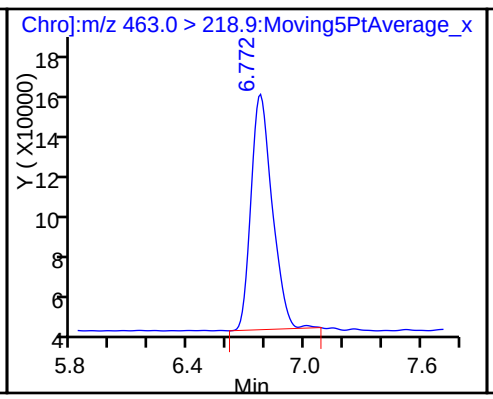
* 21 13C5 PFNA (IS)



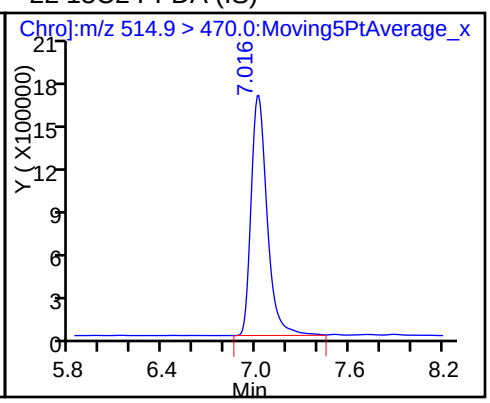
20 Perfluorononanoic acid



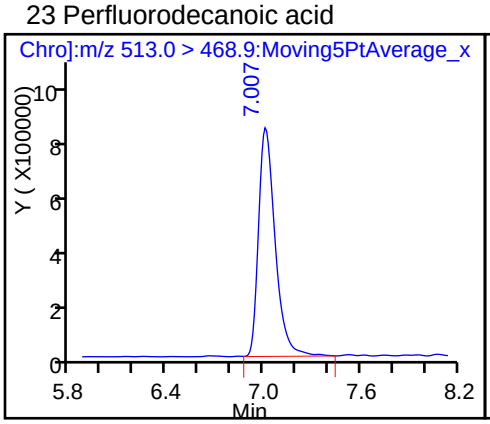
20 Perfluorononanoic acid



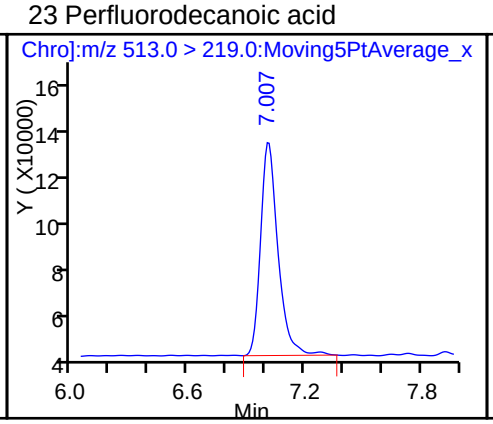
* 22 13C2 PFDA (IS)



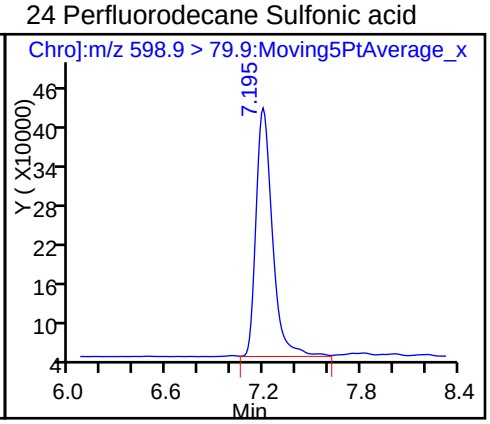
23 Perfluorodecanoic acid



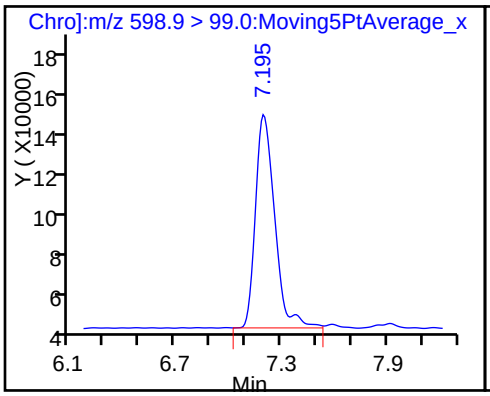
23 Perfluorodecanoic acid



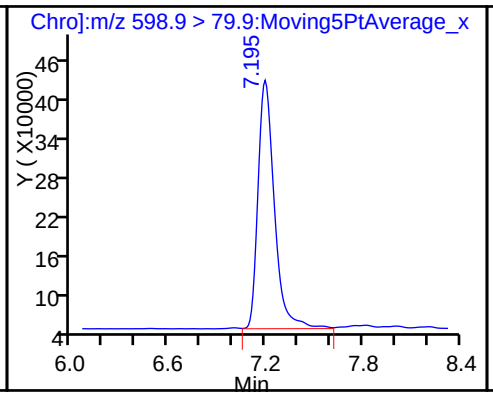
24 Perfluorodecane Sulfonic acid



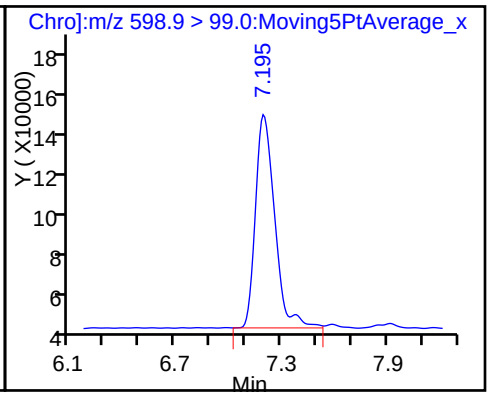
24 Perfluorodecane Sulfonic acid



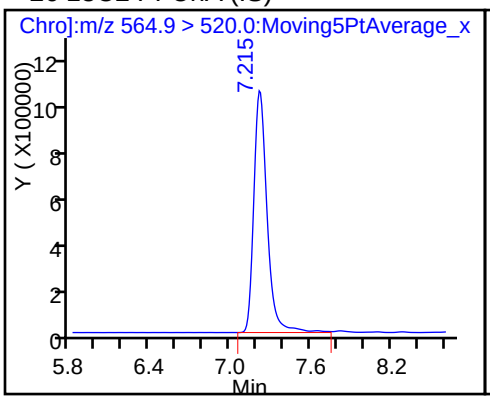
25 Perfluorodecane Sulfonate



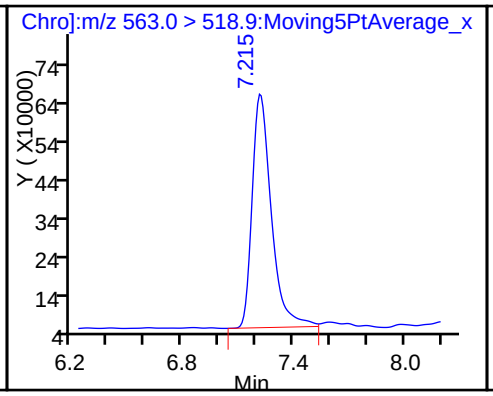
25 Perfluorodecane Sulfonate



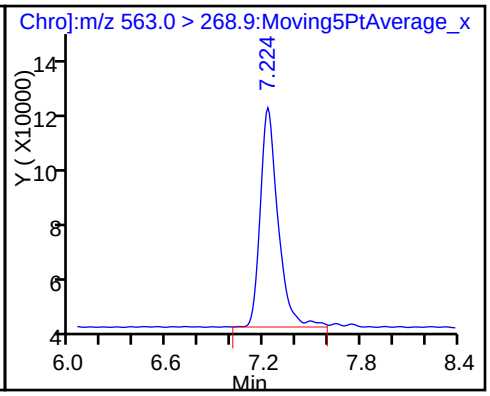
* 26 13C2 PFUnA (IS)



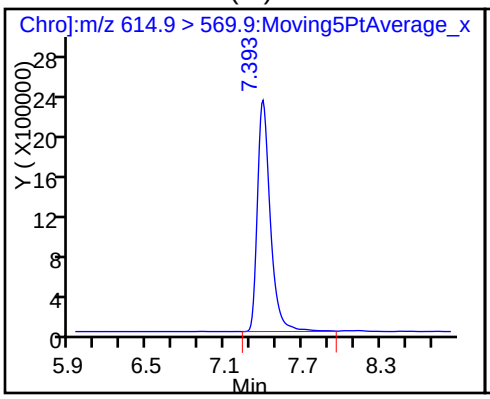
27 Perfluoroundecanoic acid



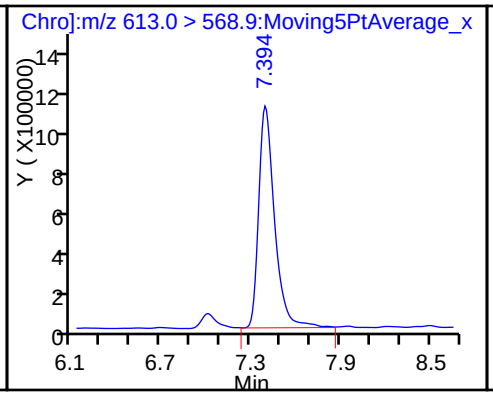
27 Perfluoroundecanoic acid



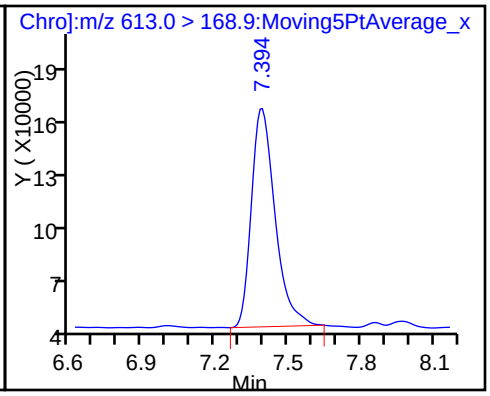
* 28 13C2 PFDoA (IS)



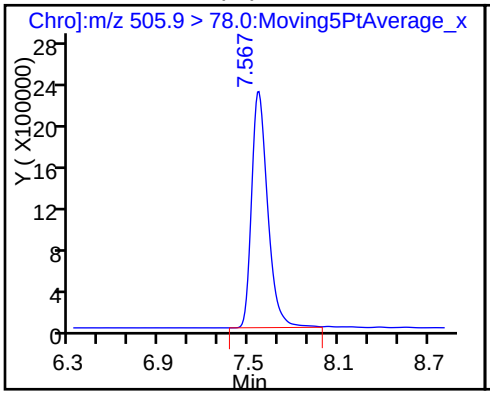
29 Perfluorododecanoic acid



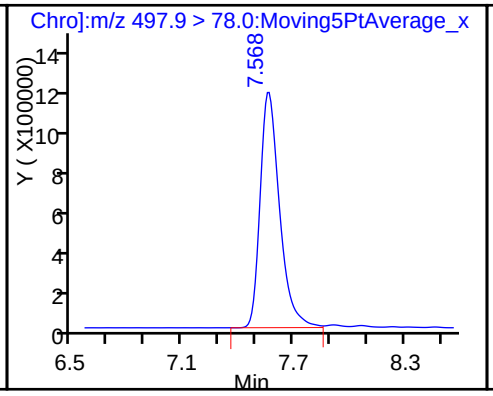
29 Perfluorododecanoic acid



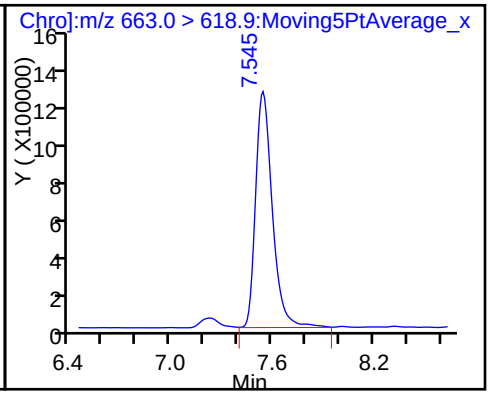
* 31 13C8 FOSA (IS)



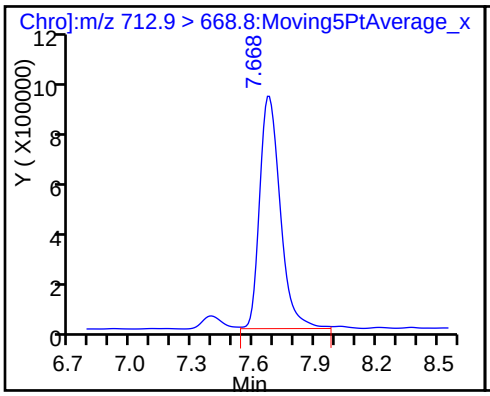
32 Perfluorooctane Sulfonamide



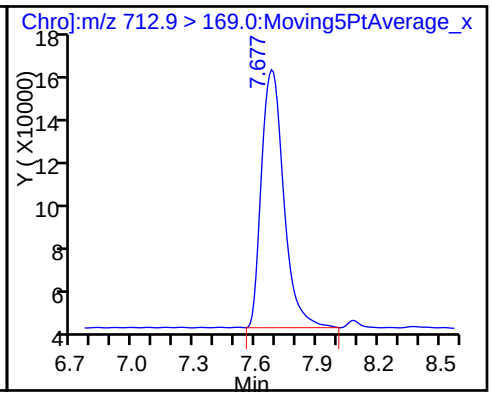
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-340832/53 Calibration Date: 09/02/2016 23:25

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I02065.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.9684		10.0	10.0	0.4	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.182		10.9	10.0	8.5	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		3.990		8.01	8.85	-9.4	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		3.990		8.01	8.85	-9.4	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9365		10.6	10.0	5.5	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.199		9.92	9.45	5.0	30.0
Perfluorohexanesulfonic acid	Lin2		4.199		9.92	9.45	5.0	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8576		10.2	10.0	2.2	30.0
Perfluoroheptane Sulfonate	Lin2		1.038		9.02	9.52	-5.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.038		9.02	9.52	-5.3	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.039		10.6	10.0	6.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.076		10.1	9.55	5.5	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.073		10.1	10.0	1.4	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9210		9.70	10.0	-3.0	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.135		11.1	9.65	14.5	30.0
Perfluorodecane Sulfonic acid	Lin2		1.135		11.1	9.65	14.5	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.322		10.2	10.0	1.7	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9683		9.96	10.0	-0.4	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.044		10.1	10.0	1.0	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.099		8.68	10.0	-13.2	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.8531		8.77	10.0	-12.3	30.0
13C8 PFOA	Lin1		0.7948		11.6	10.0	15.8	30.0
13C8 PFOS	Lin2		0.5692		9.47	9.56	-1.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02065.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 02-Sep-2016 23:25:51 ALS Bottle#: 0 Worklist Smp#: 53
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:34:27 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:51:17

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
2 Perfluorobutyric acid									M
213.0 > 168.9	4.266	4.266	0.0	1.000	14941390	10.0			M
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.266	4.266	0.0		15428447	10.0			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.308	5.308	0.0	0.902	11360960	10.9			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.421	5.421	0.0	0.860	5108245	8.01			
298.9 > 98.9	5.421	5.421	0.0	0.860	1561038		3.27(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.421	5.421	0.0	0.860	5108245	8.01			
298.9 > 98.9	5.421	5.421	0.0	0.860	1561038		3.27(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.885	5.885	0.0		9609778	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.885	5.885	0.0	1.000	8999721	10.5			
313.0 > 118.6	5.876	5.885	-0.009	0.998	257483		34.95(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.310	6.310	0.0	1.002	5740293	9.92			R
398.9 > 98.9	6.310	6.310	0.0	1.002	1789914		3.21(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.310	6.310	0.0	1.002	5740293	9.92			
398.9 > 98.9	6.310	6.310	0.0	1.002	1789914		3.21(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.311	6.311	0.0	0.952	13112636	10.2			
363.0 > 168.9	6.301	6.311	-0.010	0.950	3249509		4.04(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.300	6.300	0.0		1368372	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.631	6.631	0.0	0.962	5153159	9.02			
449.0 > 98.9	6.631	6.631	0.0	0.962	1762471		2.92(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.631	6.631	0.0	0.962	5153159	9.02			
449.0 > 98.9	6.631	6.631	0.0	0.962	1762471		2.92(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.631	6.631	0.0	1.000	12152104	11.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.631	6.631	0.0		15290501	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.632	6.632	0.0	1.000	15891719	10.6			
413.0 > 169.0	6.632	6.632	0.0	1.000	5406486		2.94(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.894	6.894	0.0	1.000	2836136	9.47			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.895	6.895	0.0	1.000	5354547	10.1			R
498.9 > 98.9	6.904	6.895	0.009	1.001	2171709		2.47(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.894	6.894	0.0		4983044	9.56			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.914	6.914	0.0		11553612	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.914	6.914	0.0	1.000	12393715	10.1			
463.0 > 218.9	6.924	6.914	0.010	1.001	1747207		7.09(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.149	7.149	0.0		11607510	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.159	7.159	0.0	1.001	10690596	9.70			R
513.0 > 219.0	7.159	7.159	0.0	1.001	1036794		10.31(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.337	7.337	0.0	1.064	5710414	11.0			
598.9 > 99.0	7.337	7.337	0.0	1.064	1765027		3.24(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.337	7.337	0.0	1.064	5710414	11.0			
598.9 > 99.0	7.337	7.337	0.0	1.064	1765027		3.24(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.357	7.357	0.0		6512319	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.366	7.366	0.0	1.001	8608565	10.2			R
563.0 > 268.9	7.357	7.366	-0.009	1.000	1039912		8.28(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.536	7.536	0.0		14718016	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.536	7.536	0.0	1.000	14251543	9.96			
613.0 > 168.9	7.536	7.536	0.0	1.000	1782183		8.00(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.624	7.624	0.0		16612920	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.624	7.624	0.0	1.000	17337268	10.1			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.696	7.696	0.0	1.021	16168642	8.68			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.819	7.819	0.0	1.038	12555826	8.77			
712.9 > 169.0	7.819	7.819	0.0	1.038	1910928		6.57(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-LCS_00084	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFC-IS_00023	Amount Added:	20.00	Units: uL

Report Date: 06-Sep-2016 08:34:28 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02065.d

Injection Date: 02-Sep-2016 23:25:51 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

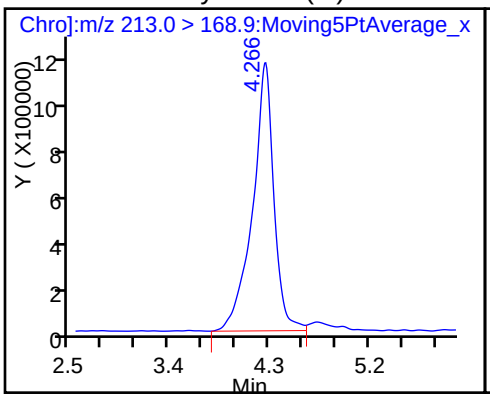
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 53

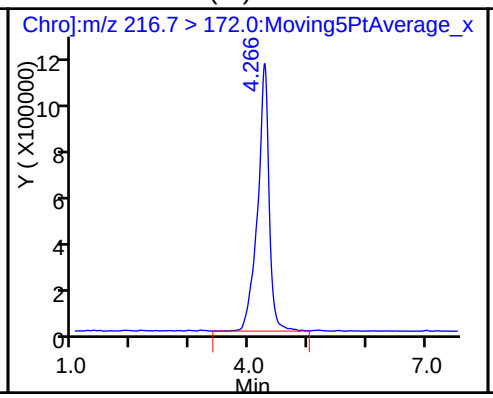
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

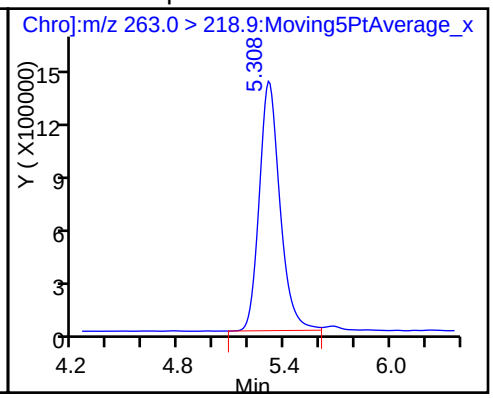
2 Perfluorobutyric acid (M)



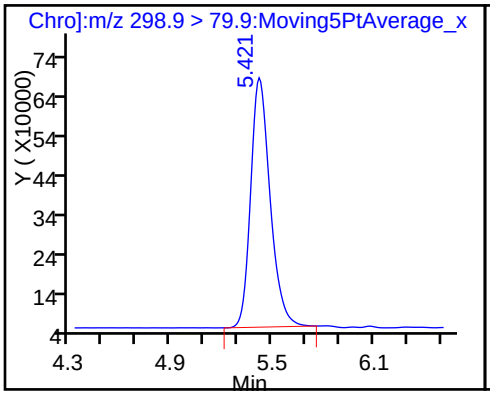
* 1 13C4 PFBA (IS)



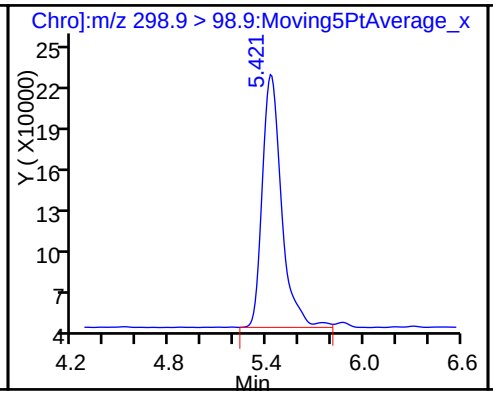
3 Perfluoropentanoic acid



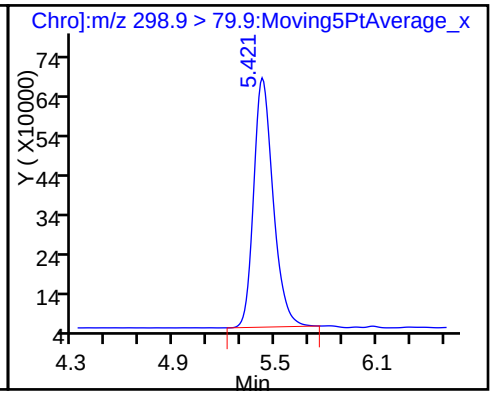
4 Perfluorobutane Sulfonate



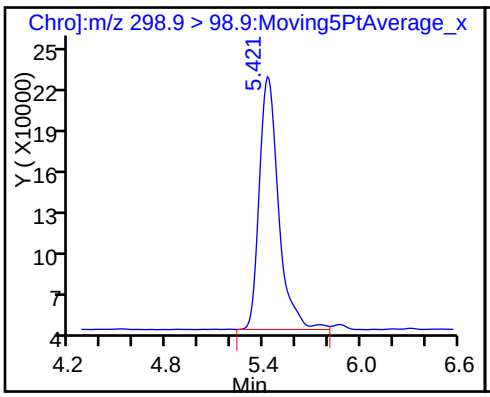
4 Perfluorobutane Sulfonate



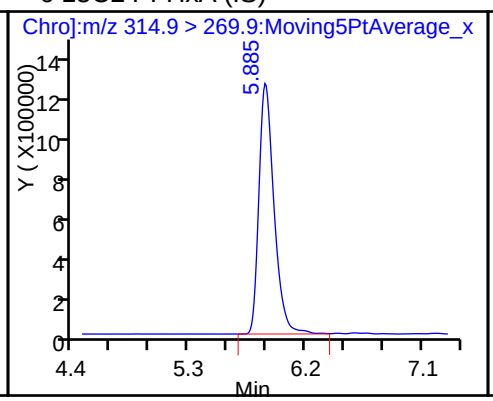
5 Perfluorobutanesulfonic acid



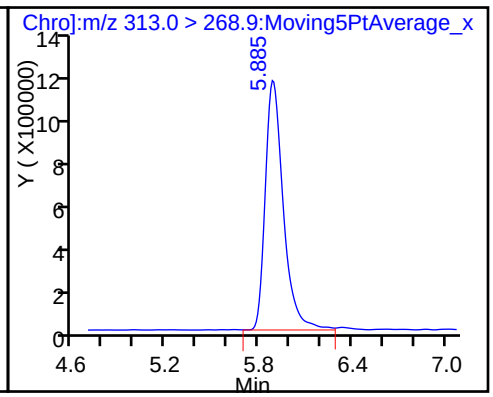
5 Perfluorobutanesulfonic acid



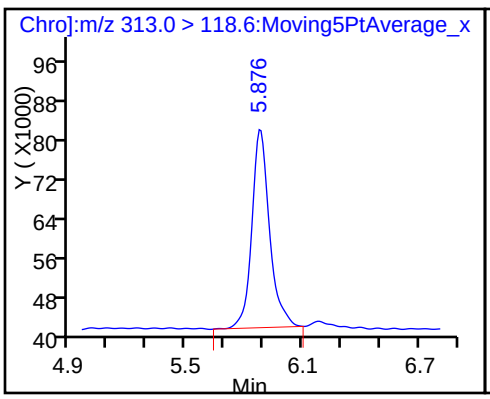
* 6 13C2 PFHxA (IS)



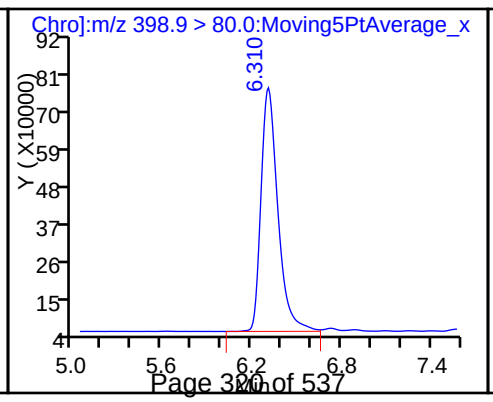
7 Perfluorohexanoic acid



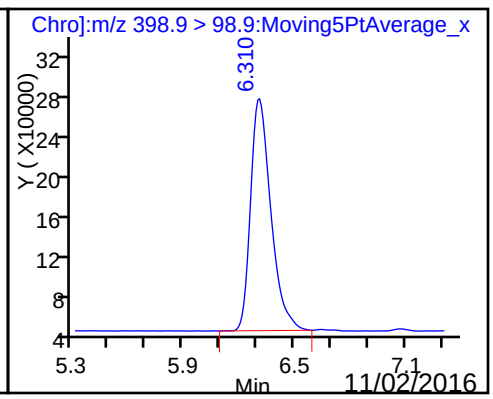
7 Perfluorohexanoic acid



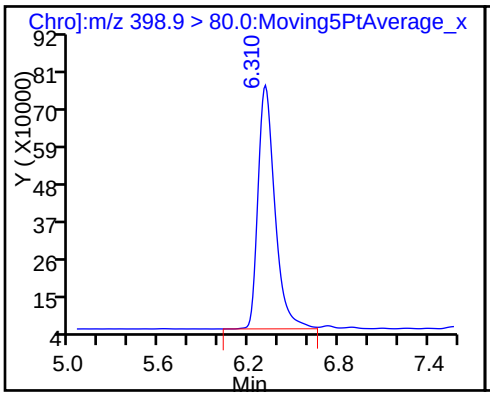
10 Perfluorohexane Sulfonate



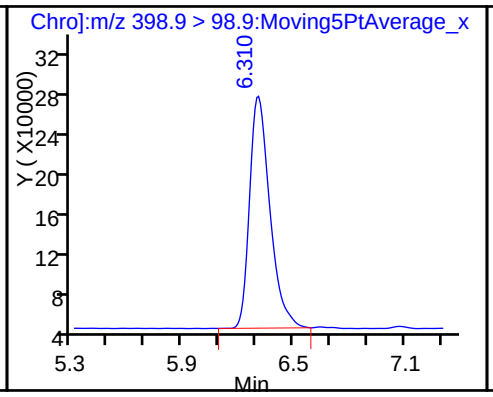
10 Perfluorohexane Sulfonate



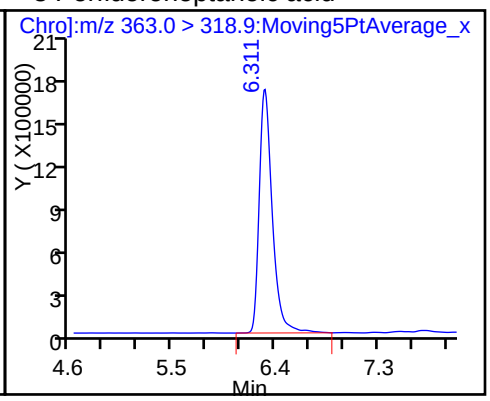
11 Perfluorohexanesulfonic acid



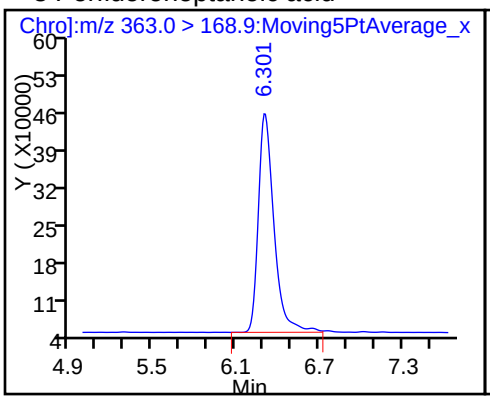
11 Perfluorohexanesulfonic acid



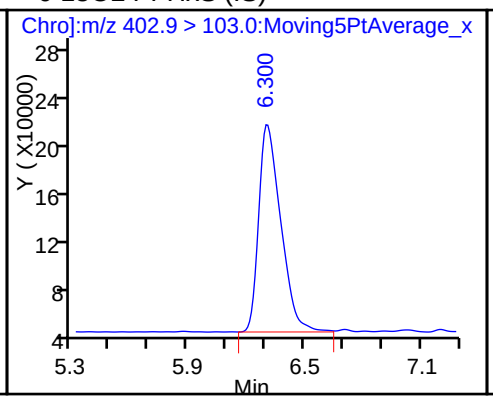
8 Perfluoroheptanoic acid



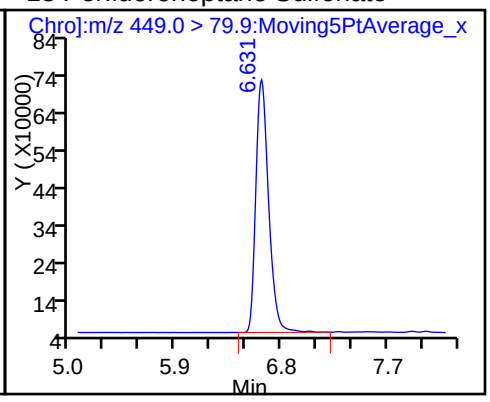
8 Perfluoroheptanoic acid



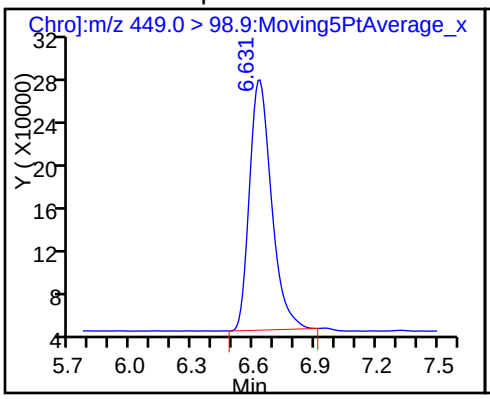
* 9 18O2 PFHxS (IS)



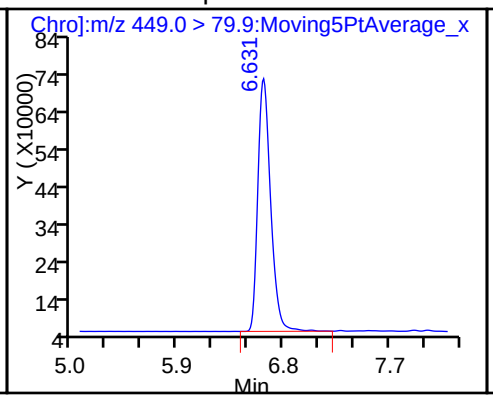
13 Perfluoroheptane Sulfonate



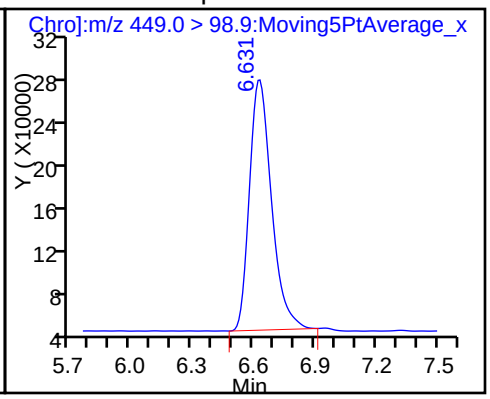
13 Perfluoroheptane Sulfonate



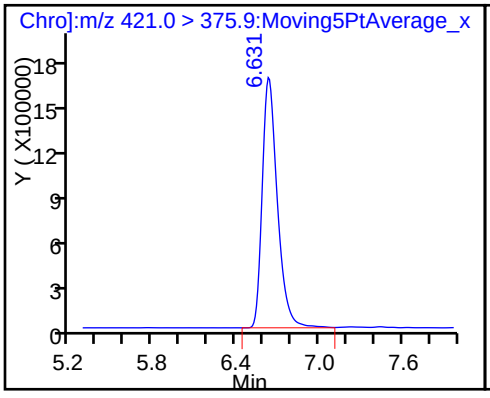
12 Perfluoroheptanesulfonic Acid



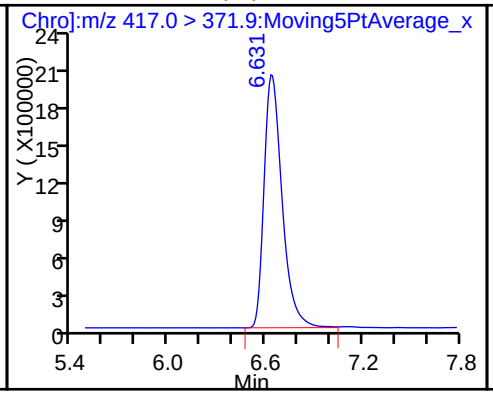
12 Perfluoroheptanesulfonic Acid



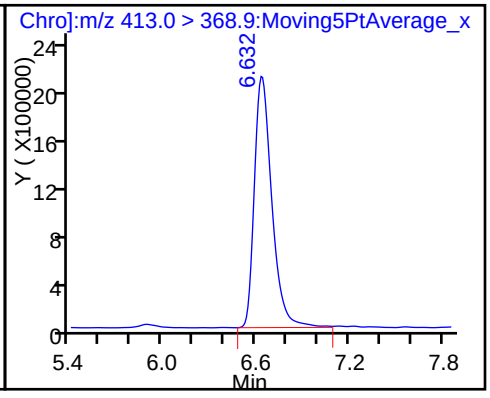
$ 14 13C8 PFOA



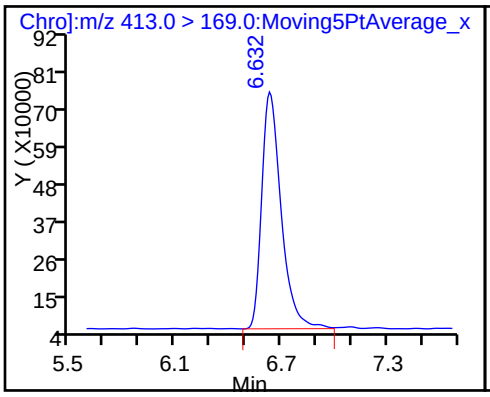
* 15 13C4 PFOA (IS)



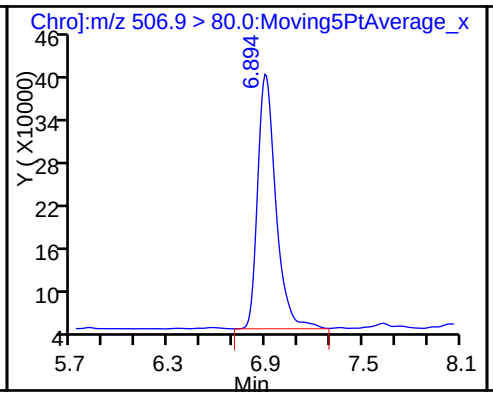
16 Perfluorooctanoic acid



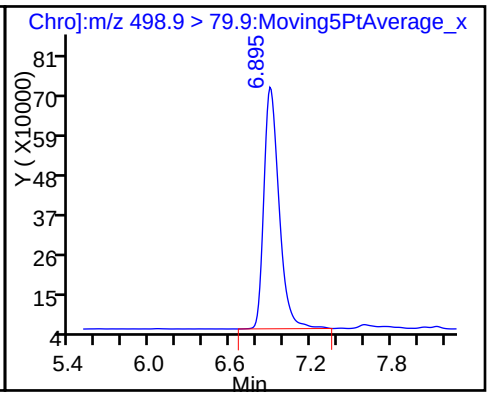
16 Perfluorooctanoic acid



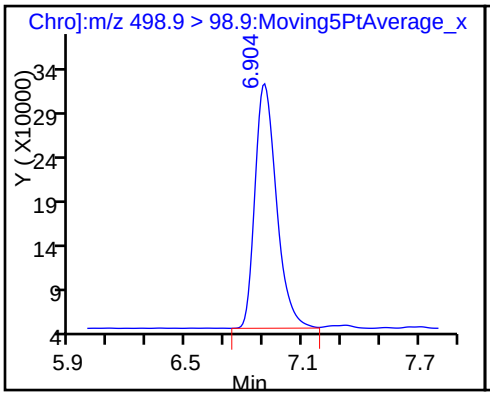
$ 18 13C8 PFOS



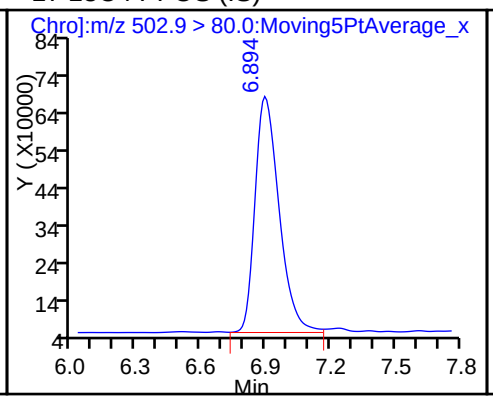
19 Perfluorooctane sulfonic acid



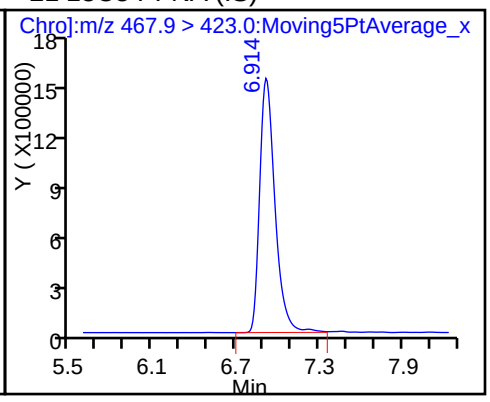
19 Perfluorooctane sulfonic acid



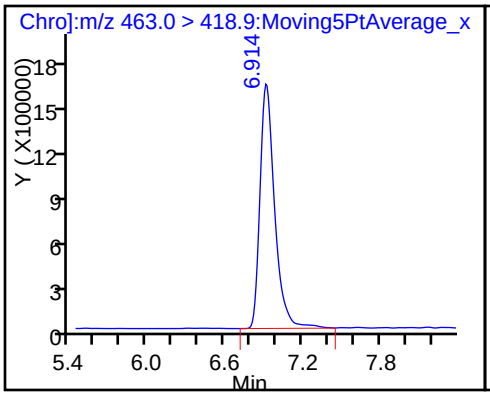
* 17 13C4 PFOS (IS)



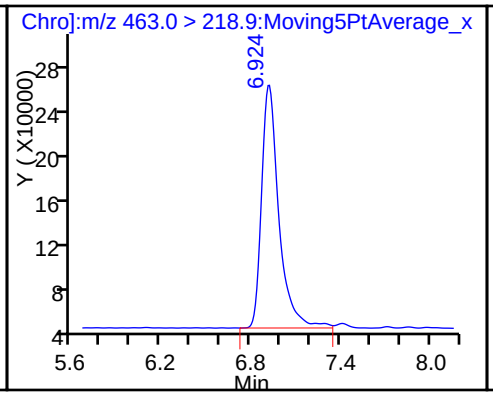
* 21 13C5 PFNA (IS)



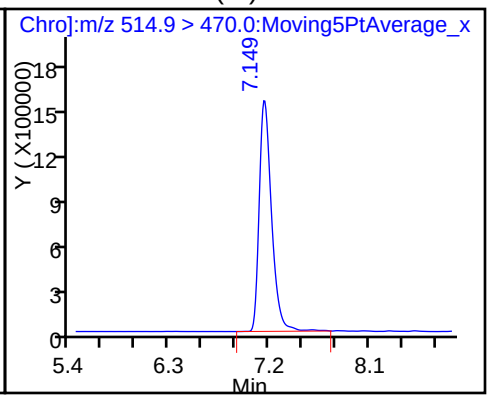
20 Perfluorononanoic acid



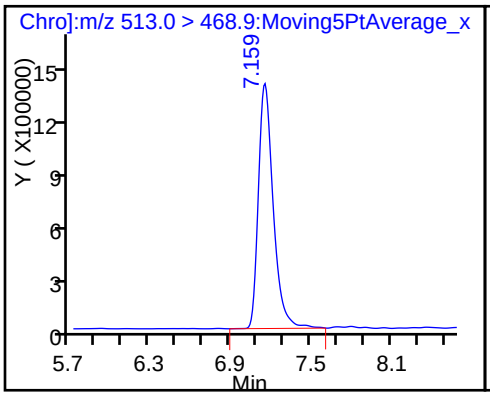
20 Perfluorononanoic acid



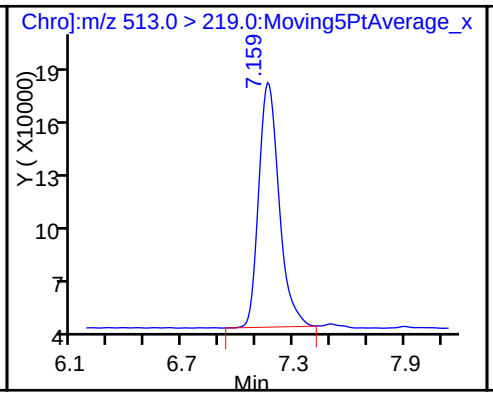
* 22 13C2 PFDA (IS)



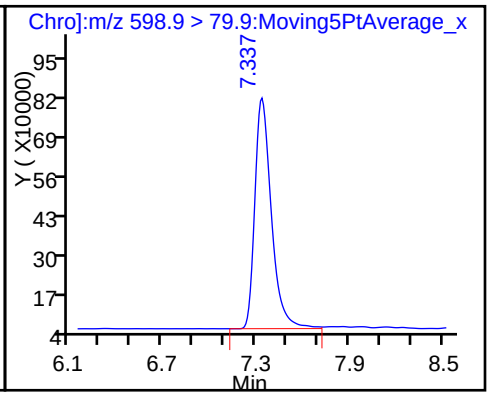
23 Perfluorodecanoic acid



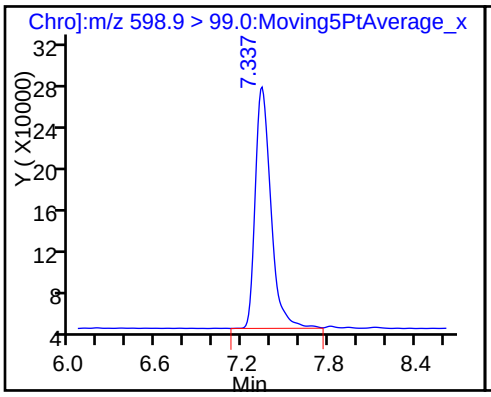
23 Perfluorodecanoic acid



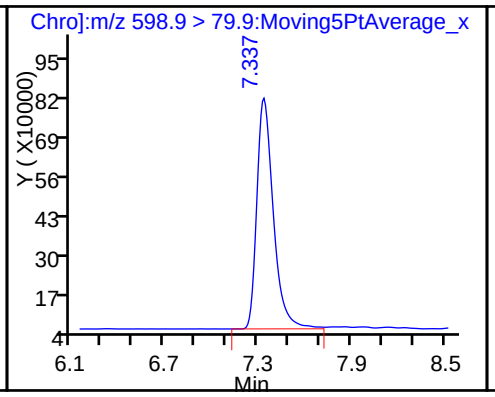
24 Perfluorodecane Sulfonic acid



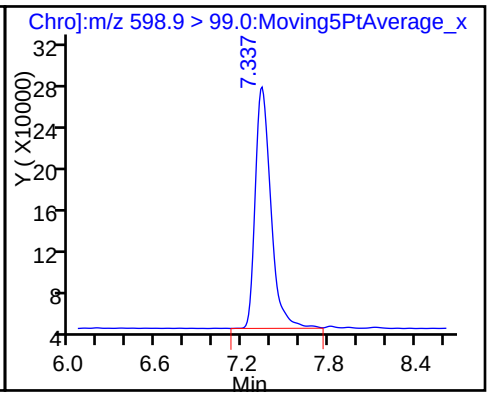
24 Perfluorodecane Sulfonic acid



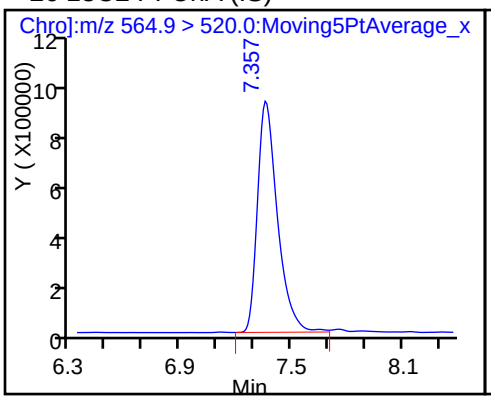
25 Perfluorodecane Sulfonate



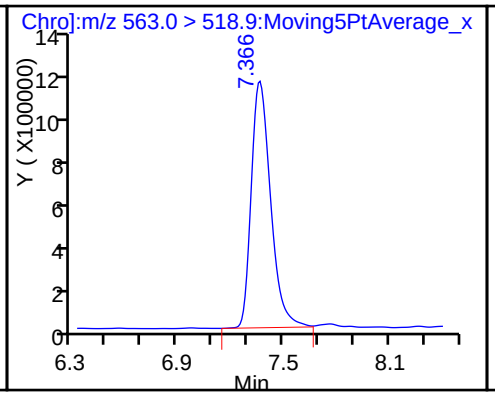
25 Perfluorodecane Sulfonate



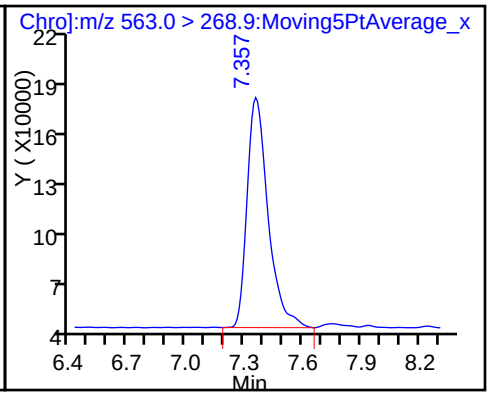
* 26 13C2 PFUnA (IS)



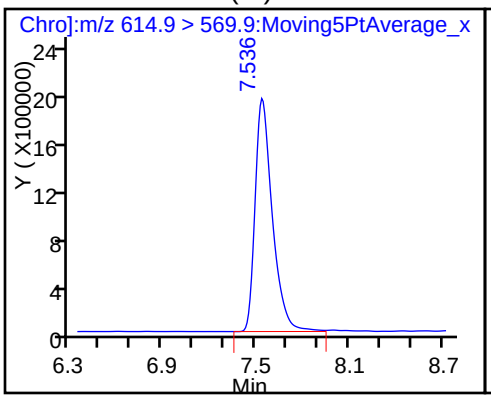
27 Perfluoroundecanoic acid



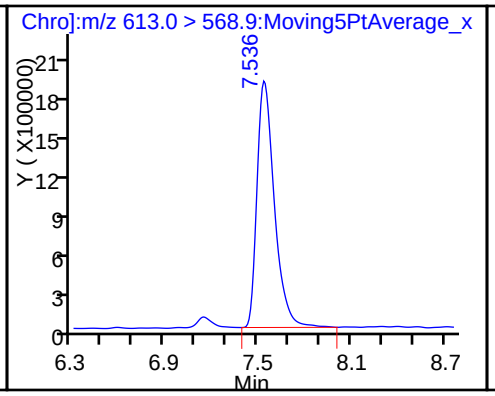
27 Perfluoroundecanoic acid



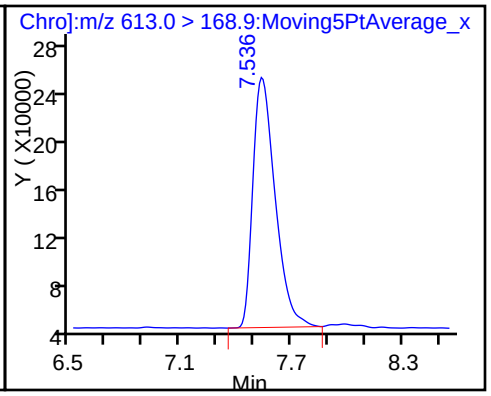
* 28 13C2 PFDoA (IS)



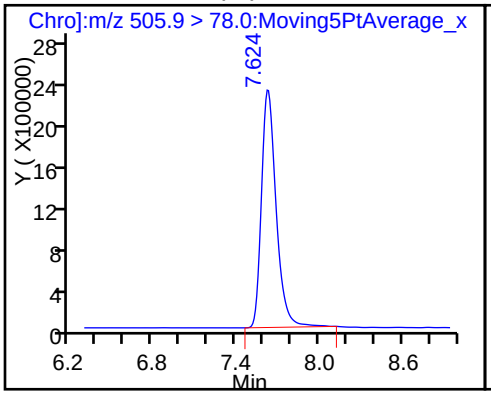
29 Perfluorododecanoic acid



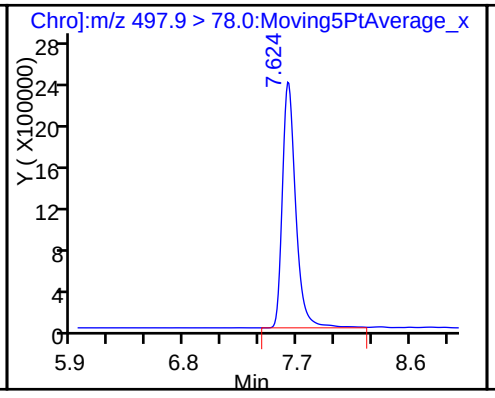
29 Perfluorododecanoic acid



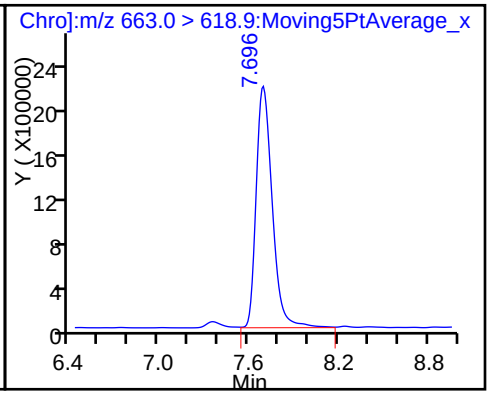
* 31 13C8 FOSA (IS)



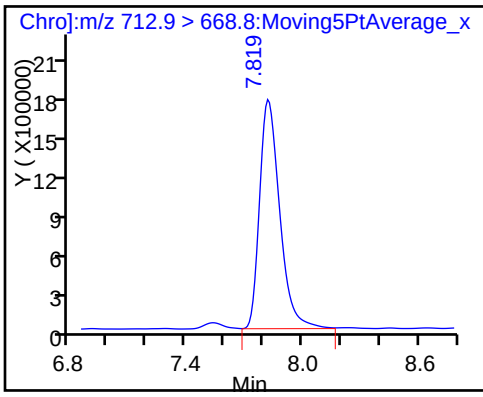
32 Perfluorooctane Sulfonamide



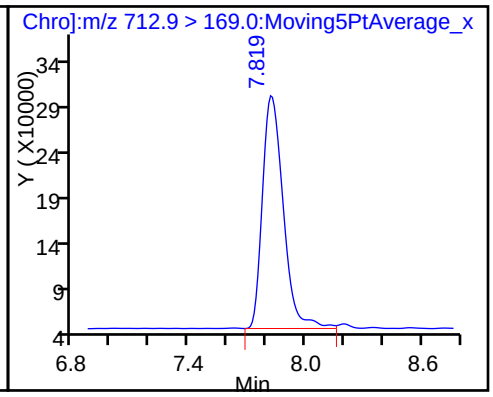
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



Manual Integration/User Assign Peak Report

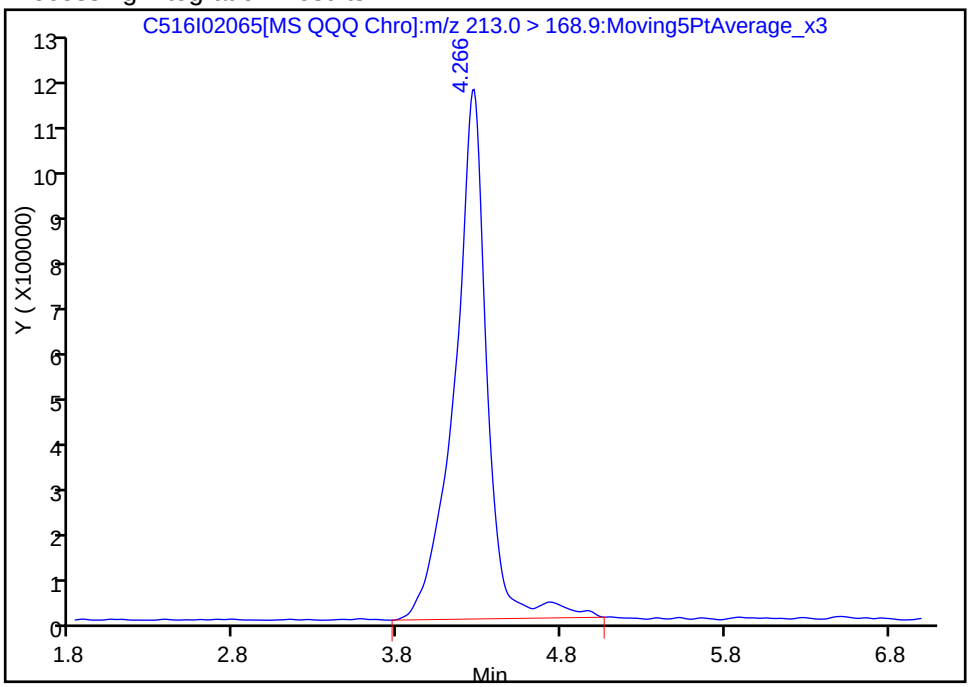
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02065.d
Injection Date: 02-Sep-2016 23:25:51 Instrument ID: LC_LCMS5
Lims ID: CCV PFC L6
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 53
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

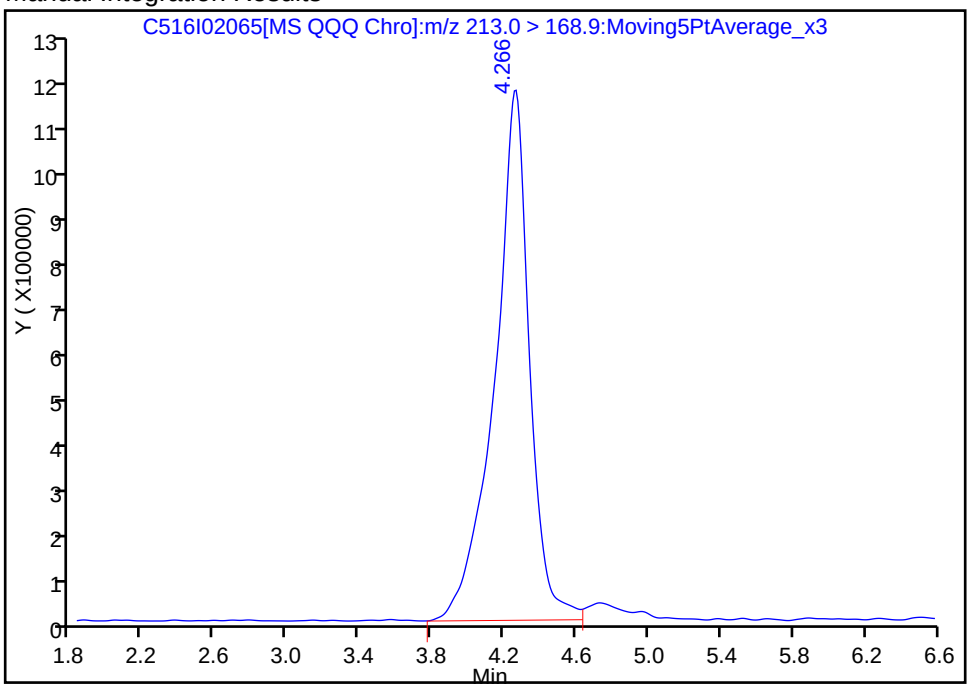
Processing Integration Results

RT: 4.27
Area: 15377809
Amount: 10.337359
Amount Units: ug/L



Manual Integration Results

RT: 4.27
Area: 14941390
Amount: 10.044038
Amount Units: ug/L



Reviewer: meyera, 06-Sep-2016 08:01:01
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-340832/59 Calibration Date: 09/03/2016 00:40

Instrument ID: LC_LCMS5 Calib Start Date: 09/01/2016 10:55

GC Column: Gemini-NX ID: Calib End Date: 09/01/2016 12:33

Lab File ID: PC516I02071.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.8554		4.44	5.00	-11.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.139		5.19	5.00	3.7	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		3.446		3.46	4.43	-21.9	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		3.446		3.46	4.43	-21.9	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9444		5.30	5.00	5.9	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8156		4.85	5.00	-3.0	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.087		4.83	4.73	2.1	30.0
Perfluorohexanesulfonic acid	Lin2		4.087		4.83	4.73	2.1	30.0
Perfluoroheptane Sulfonate	Lin2		1.036		4.52	4.76	-5.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.036		4.52	4.76	-5.0	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.9909		5.02	5.00	0.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.023		4.83	4.78	1.1	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.084		5.13	5.00	2.6	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9328		4.90	5.00	-2.0	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		0.9804		4.74	4.83	-1.7	30.0
Perfluorodecane Sulfonic acid	Lin2		0.9804		4.74	4.83	-1.7	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.274		4.86	5.00	-2.9	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9297		4.78	5.00	-4.3	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.020		4.93	5.00	-1.5	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		1.110		4.36	5.00	-12.8	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.8427		4.31	5.00	-13.8	30.0
13C8 PFOA	Lin1		0.8866		6.35	5.00	27.1	30.0
13C8 PFOS	Lin2		0.6033		4.97	4.78	4.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02071.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 03-Sep-2016 00:40:15 ALS Bottle#: 0 Worklist Smp#: 59
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:34:54 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:55:24

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.067	4.067	0.0		15687503	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.077	4.077	0.0	1.002	6709889	4.44			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.147	5.147	0.0	0.896	5670610	5.19			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.270	5.270	0.0	0.853	2298171	3.46			
298.9 > 98.9	5.270	5.270	0.0	0.853	735259		3.13(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.270	5.270	0.0	0.853	2298171	3.46			
298.9 > 98.9	5.270	5.270	0.0	0.853	735259		3.13(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.743	5.743	0.0		9955736	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.743	5.743	0.0	1.000	4701141	5.30			
313.0 > 118.6	5.724	5.743	-0.019	0.997	104346		45.05(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.178	6.178	0.0	1.000	2910079	4.83			R
398.9 > 98.9	6.178	6.178	0.0	1.000	793696		3.67(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.178	6.178	0.0	1.000	2910079	4.83			
398.9 > 98.9	6.178	6.178	0.0	1.000	793696		3.67(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.178	6.178	0.0	0.948	6865628	4.85			
363.0 > 168.9	6.169	6.178	-0.009	0.946	1753305		3.92(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.177	6.177	0.0		1425689	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.508	6.508	0.0	0.958	2804164	4.52			
449.0 > 98.9	6.517	6.508	0.009	0.960	838807		3.34(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.508	6.508	0.0	0.958	2804164	4.52			
449.0 > 98.9	6.517	6.508	0.009	0.960	838807		3.34(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.517	0.0	1.000	7463160	6.35			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.518	0.0		16835415	10.0			
16 Perfluorooctanoic acid									R
413.0 > 368.9	6.518	6.518	0.0	1.000	8341069	5.02			R
413.0 > 169.0	6.518	6.518	0.0	1.000	2958321		2.82(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.790	0.0	1.000	1639458	4.97			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.790	0.0		5434648	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.790	6.790	0.0	1.000	2775570	4.83			R
498.9 > 98.9	6.790	6.790	0.0	1.000	1101842		2.52(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.810	0.0		12398815	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.810	6.810	0.0	1.000	6718329	5.13			
463.0 > 218.9	6.801	6.810	-0.009	0.999	940423		7.14(5.59-10.38)		
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.054	7.054	0.0	1.000	5544481	4.90			R
513.0 > 219.0	7.054	7.054	0.0	1.000	560528		9.89(10.49-19.48)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.054	0.0		11888240	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.243	7.243	0.0	1.067	2689193	4.74			
598.9 > 99.0	7.243	7.243	0.0	1.067	966102		2.78(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.243	7.243	0.0	1.067	2689193	4.74			
598.9 > 99.0	7.243	7.243	0.0	1.067	966102		2.78(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.271	0.0		7590998	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.272	7.272	0.0	1.000	4835175	4.86			R
563.0 > 268.9	7.272	7.272	0.0	1.000	583447		8.29(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.450	0.0		15852735	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.451	7.451	0.0	1.000	7369102	4.78			
613.0 > 168.9	7.441	7.451	-0.010	0.999	917820		8.03(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.602	0.0	1.020	8796967	4.36			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.538	0.0		18496771	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.539	0.0	1.000	9434337	4.93			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734	7.734	0.0	1.038	6679813	4.31			
712.9 > 169.0	7.734	7.734	0.0	1.038	1118880		5.97(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00084	Amount Added: 10.00	Units: uL
PFC_Surr_00023	Amount Added: 10.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

Report Date: 06-Sep-2016 08:34:55 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02071.d

Injection Date: 03-Sep-2016 00:40:15 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

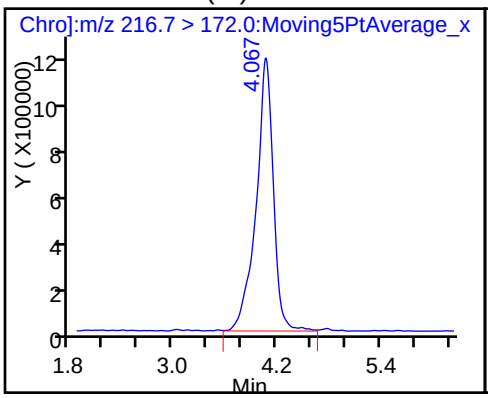
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 59

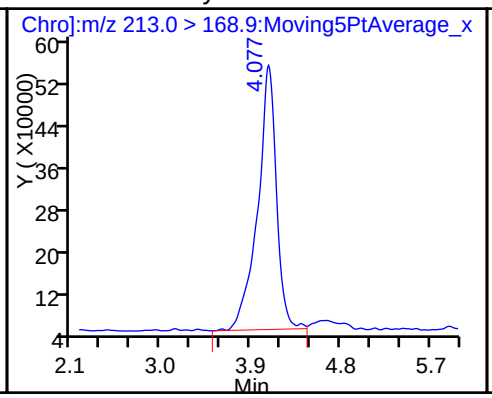
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

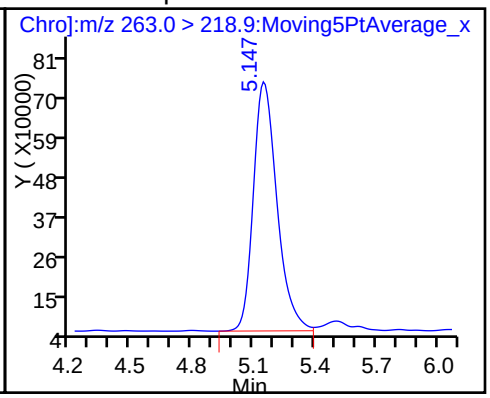
* 1 13C4 PFBA (IS)



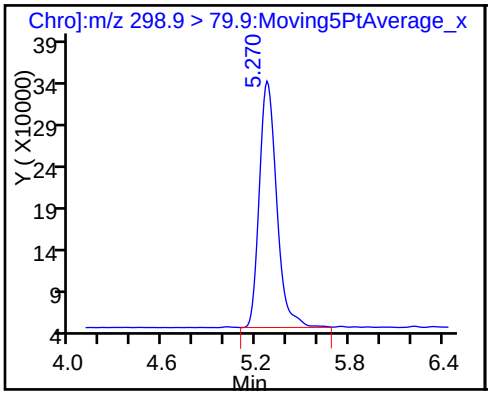
2 Perfluorobutyric acid



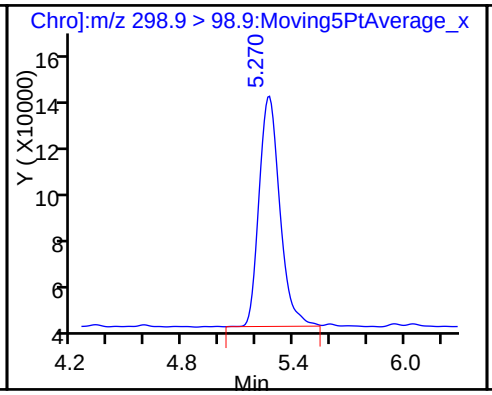
3 Perfluoropentanoic acid



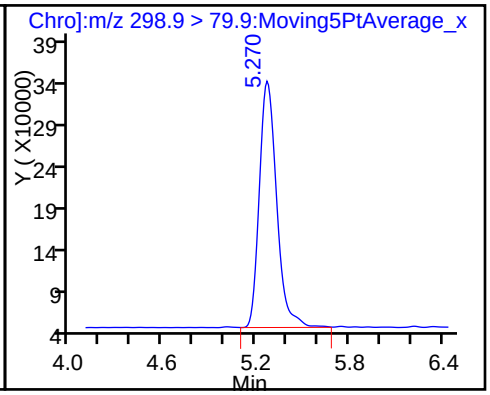
4 Perfluorobutane Sulfonate



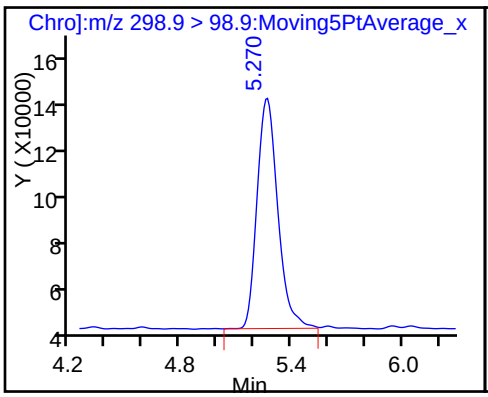
4 Perfluorobutane Sulfonate



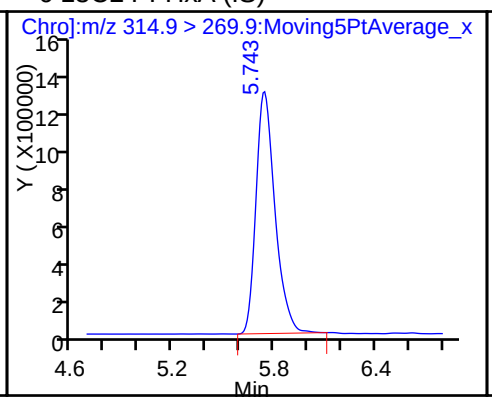
5 Perfluorobutanesulfonic acid



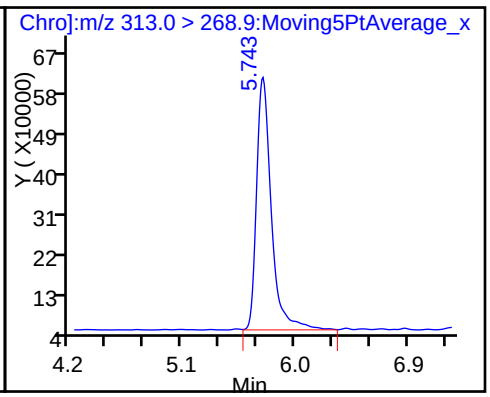
5 Perfluorobutanesulfonic acid



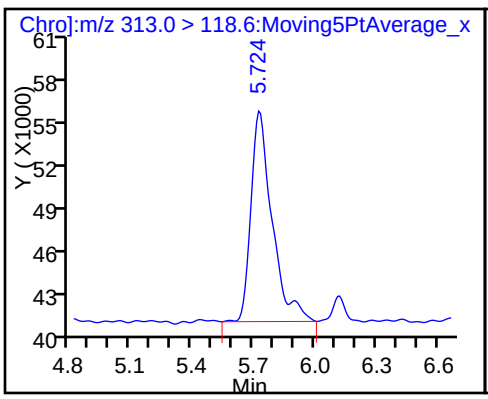
* 6 13C2 PFHxA (IS)



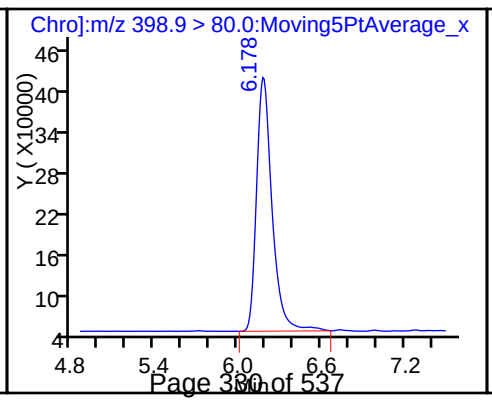
7 Perfluorohexanoic acid



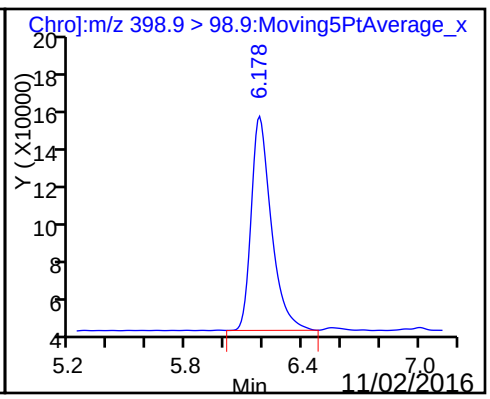
7 Perfluorohexanoic acid



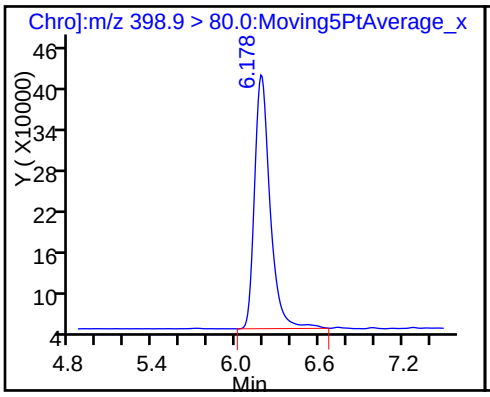
10 Perfluorohexane Sulfonate



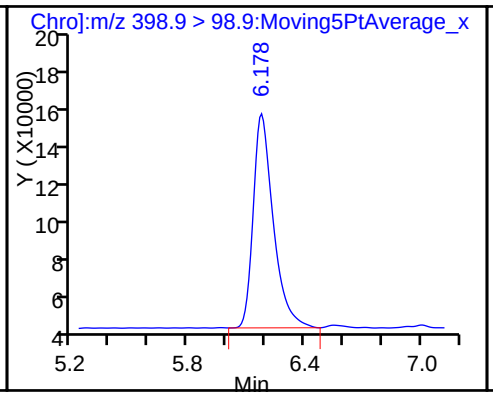
10 Perfluorohexane Sulfonate



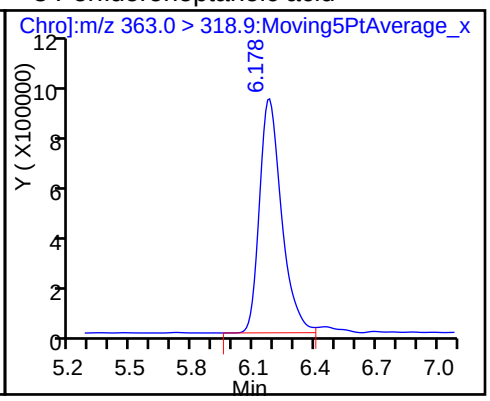
11 Perfluorohexanesulfonic acid



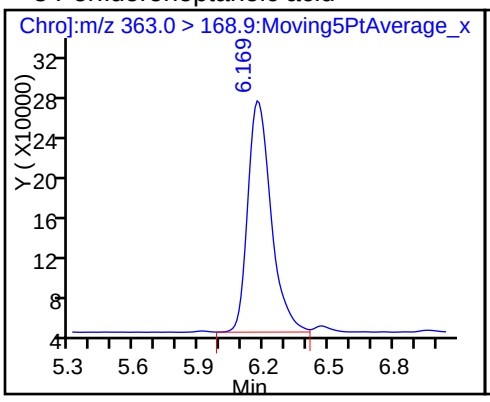
11 Perfluorohexanesulfonic acid



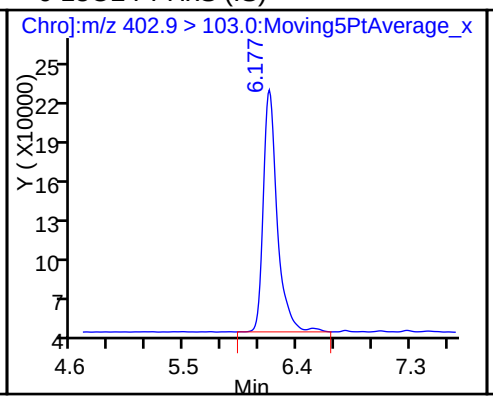
8 Perfluoroheptanoic acid



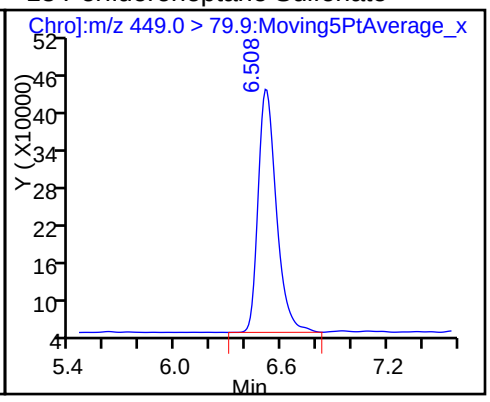
8 Perfluoroheptanoic acid



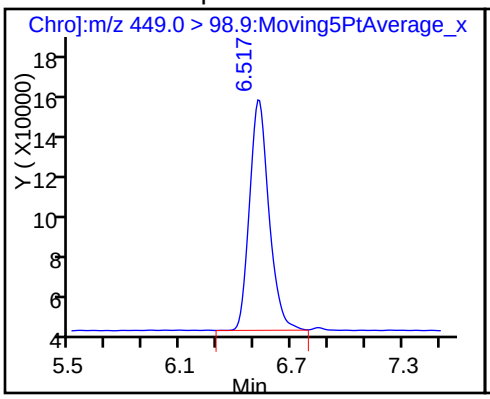
* 9 18O2 PFHxS (IS)



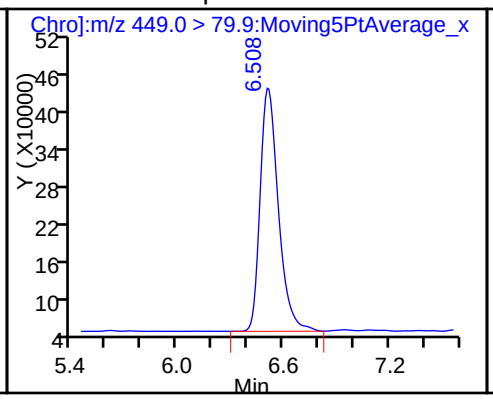
13 Perfluoroheptane Sulfonate



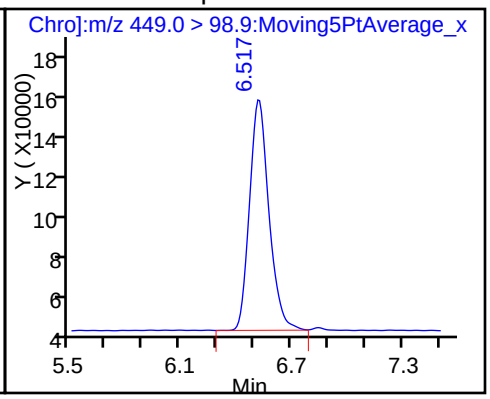
13 Perfluoroheptane Sulfonate



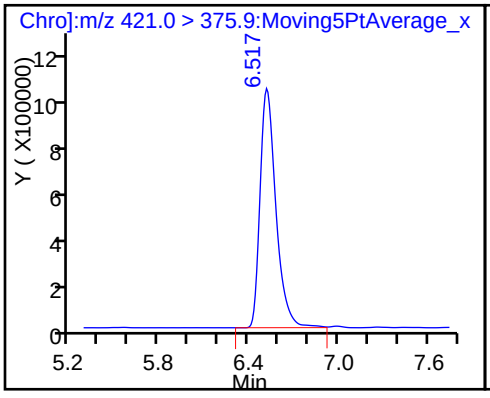
12 Perfluoroheptanesulfonic Acid



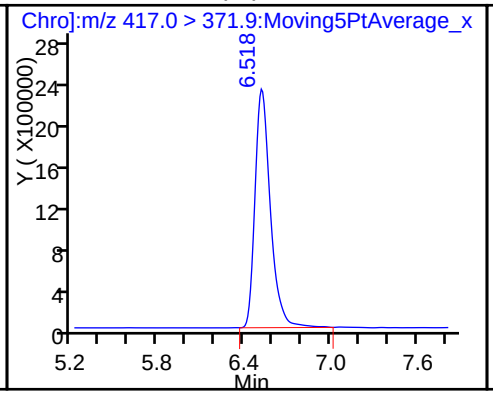
12 Perfluoroheptanesulfonic Acid



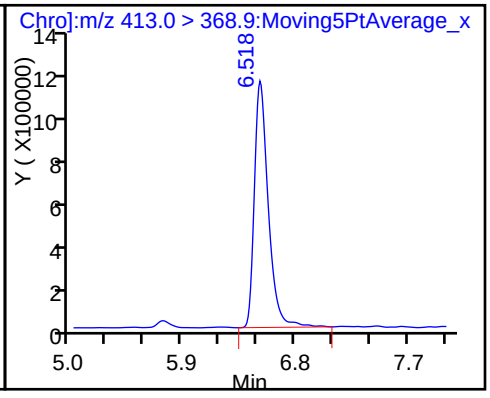
$ 14 13C8 PFOA



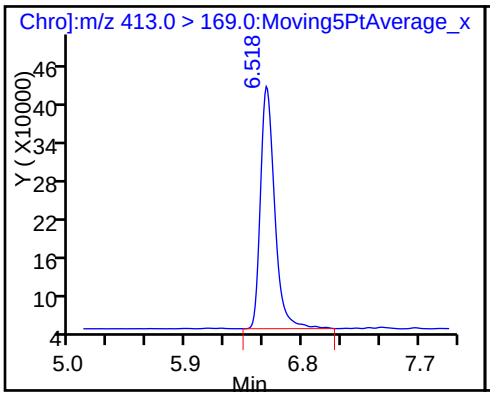
* 15 13C4 PFOA (IS)



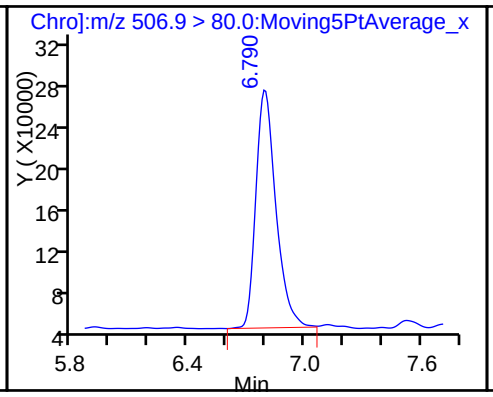
16 Perfluorooctanoic acid



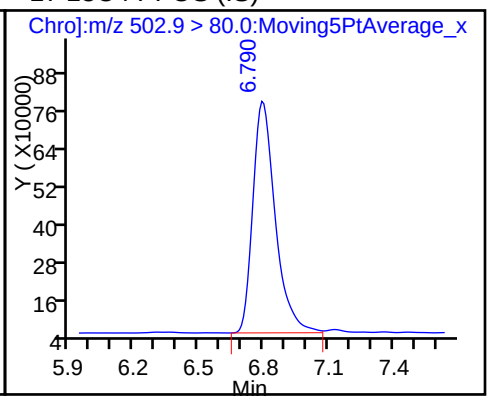
16 Perfluorooctanoic acid



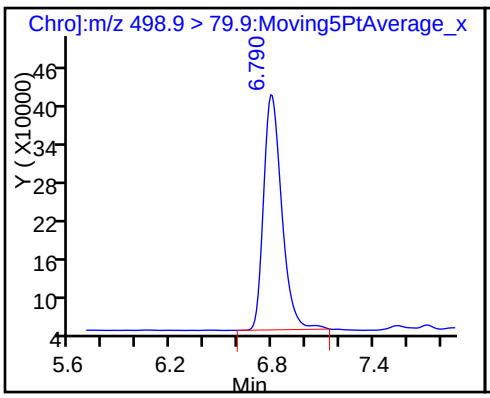
$ 18 13C8 PFOS



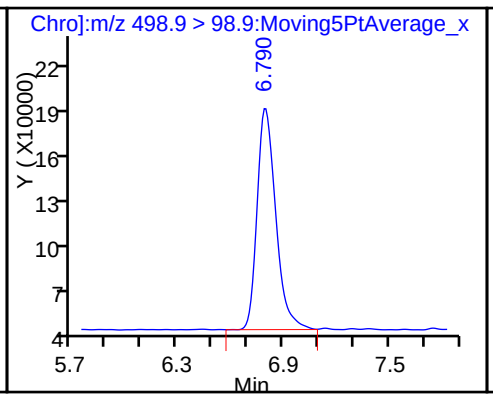
* 17 13C4 PFOS (IS)



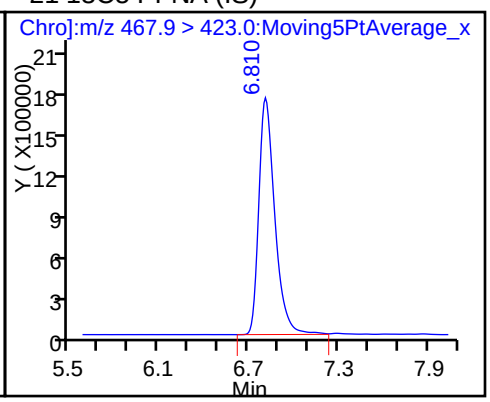
19 Perfluorooctane sulfonic acid



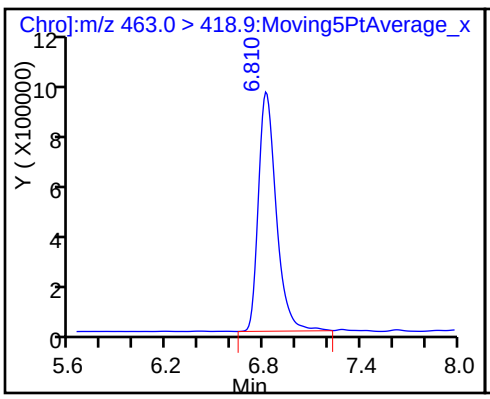
19 Perfluorooctane sulfonic acid



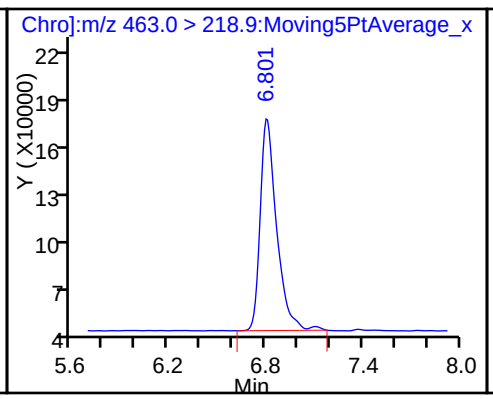
* 21 13C5 PFNA (IS)



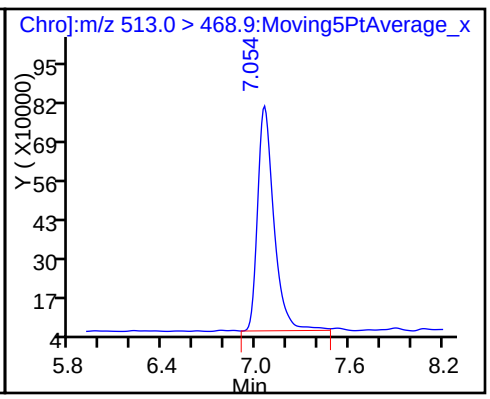
20 Perfluorononanoic acid



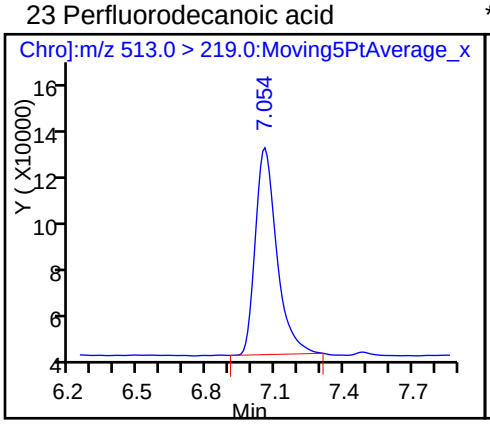
20 Perfluorononanoic acid



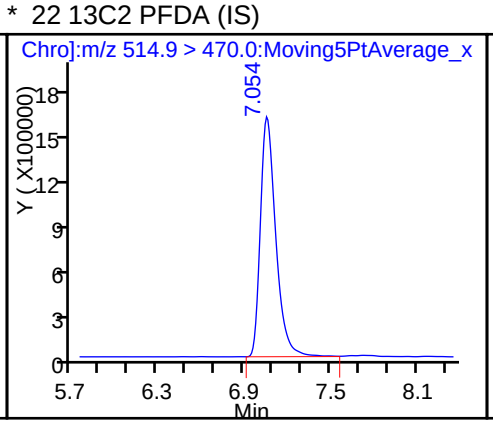
23 Perfluorodecanoic acid



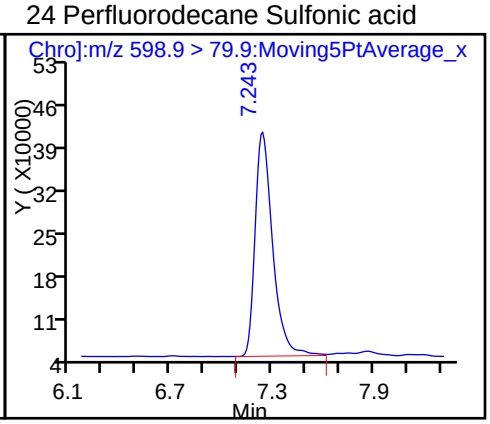
23 Perfluorodecanoic acid



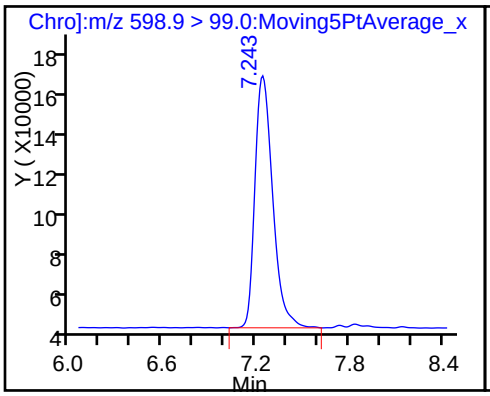
* 22 13C2 PFDA (IS)



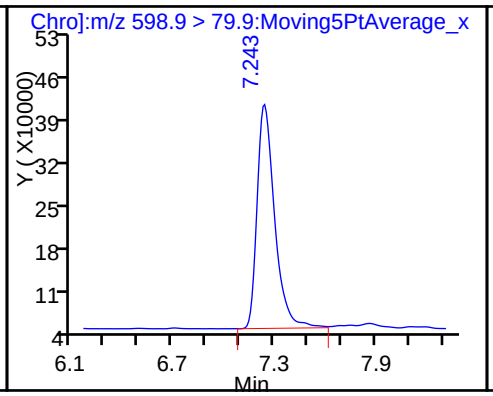
24 Perfluorodecane Sulfonic acid



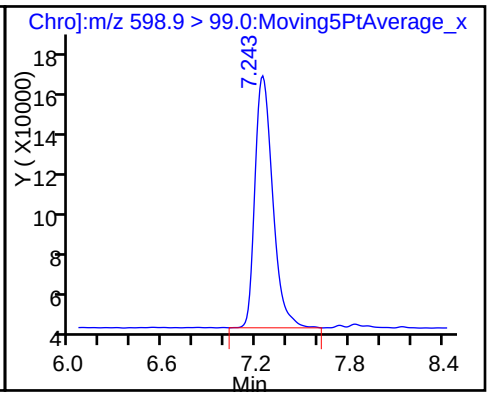
24 Perfluorodecane Sulfonic acid



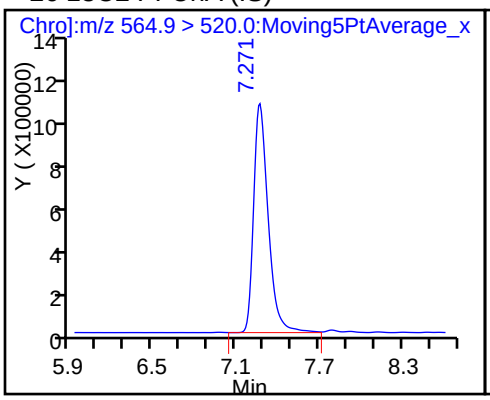
25 Perfluorodecane Sulfonate



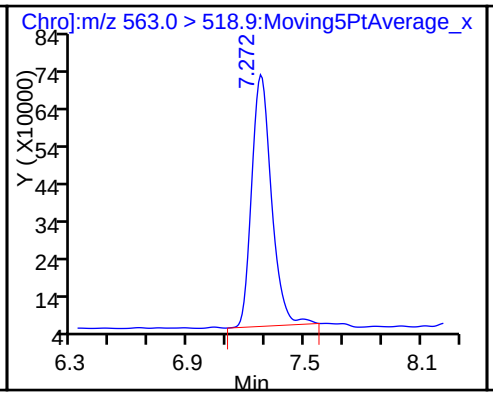
25 Perfluorodecane Sulfonate



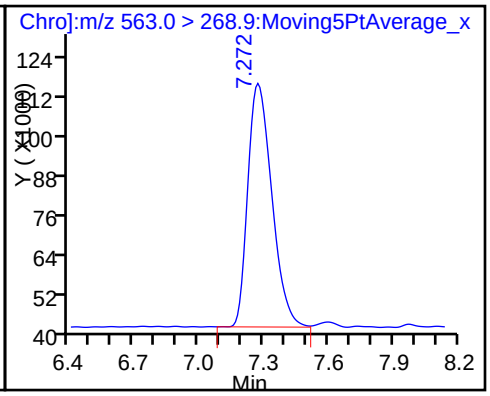
* 26 13C2 PFUnA (IS)



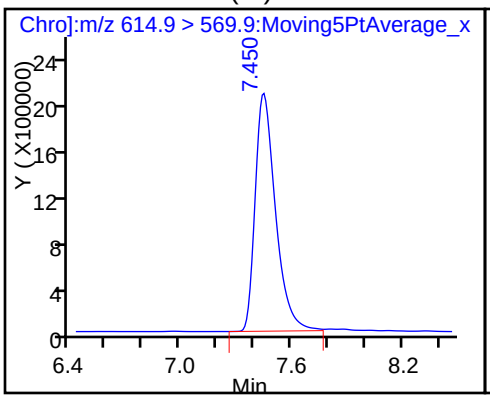
27 Perfluoroundecanoic acid



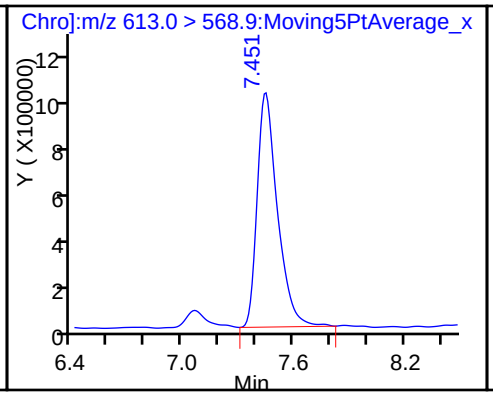
27 Perfluoroundecanoic acid



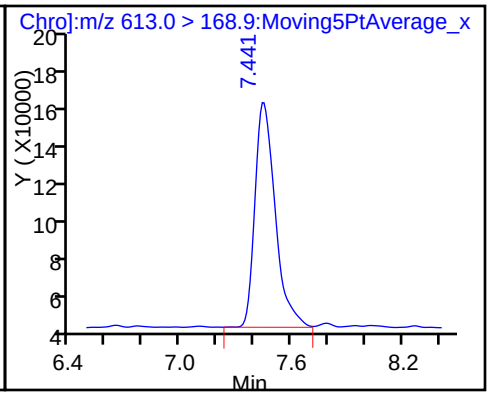
* 28 13C2 PFDoA (IS)



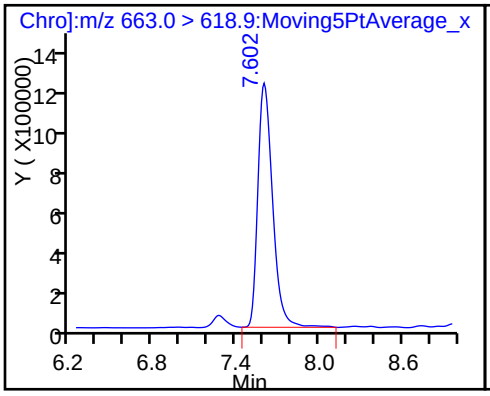
29 Perfluorododecanoic acid



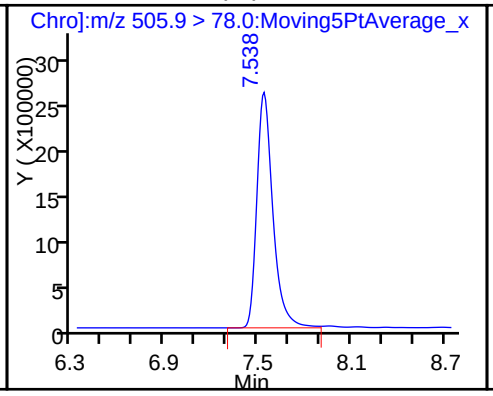
29 Perfluorododecanoic acid



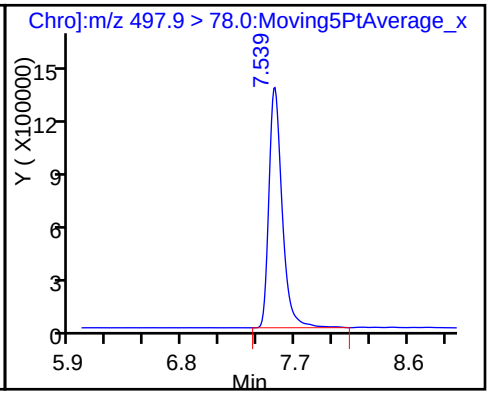
30 Perfluorotridecanoic acid



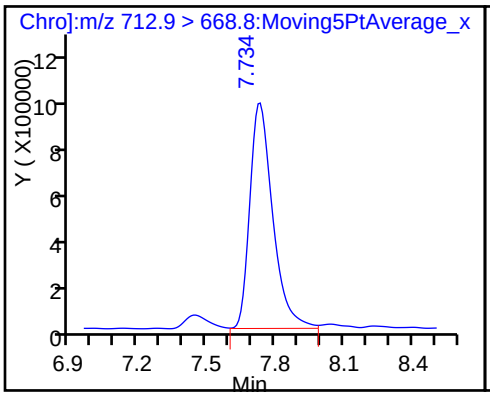
* 31 13C8 FOSA (IS)



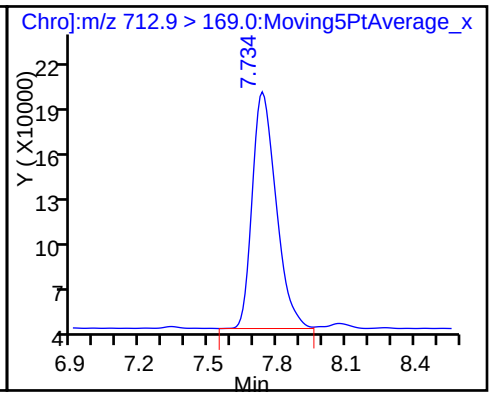
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: ICV 280-341287/13 Calibration Date: 09/07/2016 15:09

Instrument ID: LC_LCMS5 Calib Start Date: 09/07/2016 13:06

GC Column: Gemini-NX ID: Calib End Date: 09/07/2016 14:44

Lab File ID: PC516I07016.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin1		1.116		2.21	2.00	10.4	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.209		2.08	2.00	4.2	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.694		2.04	1.77	15.0	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9104		1.96	2.00	-2.0	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9301		2.27	2.00	13.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.500		2.15	1.82	18.1	30.0
Perfluoroheptane Sulfonate	Lin2		1.119		2.06	1.90	8.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.119		2.06	1.90	8.0	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.054		2.08	2.00	3.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.177		2.26	2.00	12.8	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.163		2.20	2.00	10.0	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.063		2.18	2.00	9.2	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.171		2.08	1.93	7.6	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.585		2.29	2.00	14.5	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.998		1.98	2.00	-1.1	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.169		2.29	2.00	14.4	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9227		1.78	2.00	-11.3	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.8299		2.08	2.00	3.8	30.0
13C8 PFOA	Lin2		0.8248		10.2	10.0	2.4	30.0
13C8 PFOS	Lin1		0.5661		10.8	9.56	13.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07016.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 07-Sep-2016 15:09:26 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: ICV, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist:

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:46 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:13:27

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.982	3.982	0.0		17317387	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.982	3.982	0.0	1.000	3865212	2.21			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.071	5.071	0.0	0.895	2755056	2.08			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.194	5.194	0.0	0.850	1424561	2.04			R
298.9 > 98.9	5.194	5.194	0.0	0.850	368080		3.87(1.80-3.35)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.658	5.658	0.0	0.998	2073753	1.96			
313.0 > 118.6	5.696	5.658	0.038	1.005	74168		27.96(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.667	5.667	0.0		11389614	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		1622000	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.946	3398111	2.26			
363.0 > 168.9	6.112	6.102	0.010	0.947	880836		3.86(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	1.000	1405655	2.15			R
398.9 > 98.9	6.111	6.111	0.0	1.000	430679		3.26(1.30-2.41)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.441	0.0	0.958	1426924	2.06			
449.0 > 98.9	6.441	6.441	0.0	0.958	446503		3.20(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.441	0.0	0.958	1426924	2.06			
449.0 > 98.9	6.441	6.441	0.0	0.958	446503		3.20(0.00-0.00)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
$ 14 13C8 PFOA									
421.0 > 375.9	6.451	6.451	0.0	1.000	15067953	10.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.451	0.0		18268218	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.452	6.452	0.0	1.000	3851049	2.08			
413.0 > 169.0	6.452	6.452	0.0	1.000	1225789		3.14(2.86-5.31)		
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.715	0.0	0.999	1576682	2.26			R
498.9 > 98.9	6.734	6.715	0.019	1.001	485961		3.24(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.724	0.0		6403036	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.723	0.0	1.000	3624556	10.8			
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.744	0.0	1.000	3132216	2.20			
463.0 > 218.9	6.744	6.744	0.0	1.000	536157		5.84(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.744	0.0		13469612	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	6.997	0.0		13741680	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.988	6.988	0.0	0.999	2921305	2.18			R
513.0 > 219.0	6.988	6.988	0.0	0.999	292519		9.99(10.49-19.48)		
25 Perfluorodecane Sulfonate									R
598.9 > 79.9	7.176	7.176	0.0	1.067	1512653	2.07			R
598.9 > 99.0	7.186	7.176	0.010	1.069	400442		3.78(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.205	7.205	0.0		7906065	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.205	7.205	0.0	1.000	2506211	2.29			R
563.0 > 268.9	7.205	7.205	0.0	1.000	308561		8.12(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.384	0.0		18351451	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.384	7.384	0.0	1.000	3664322	1.98			
613.0 > 168.9	7.394	7.384	0.010	1.001	484679		7.56(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.511	0.0	1.000	4344287	2.29			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.510	0.0		18576700	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.022	3386600	1.77			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.677	0.0	1.040	3045949	2.08			
712.9 > 169.0	7.677	7.677	0.0	1.040	417338		7.30(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_ICV_00010	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFHpS-LCS_00002	Amount Added:	4.00	Units: uL

Report Date: 08-Sep-2016 09:39:47 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07016.d

Injection Date: 07-Sep-2016 15:09:26 Instrument ID: LC_LCMS5

Lims ID: ICV

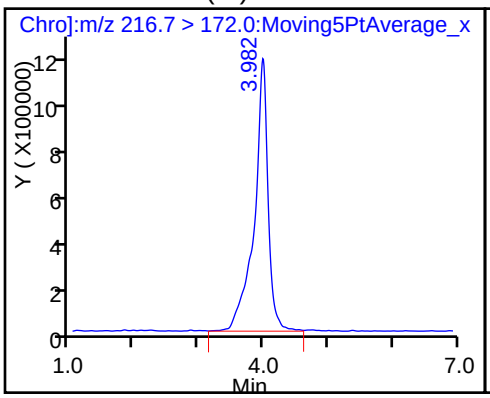
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 13

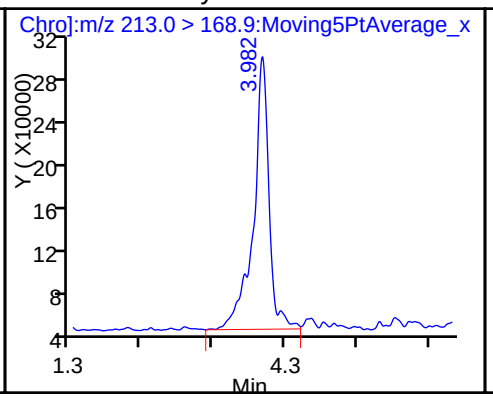
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

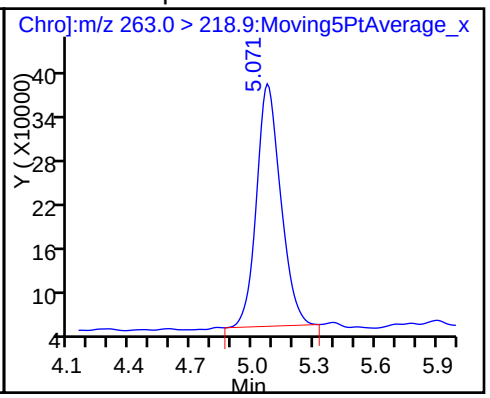
* 1 13C4 PFBA (IS)



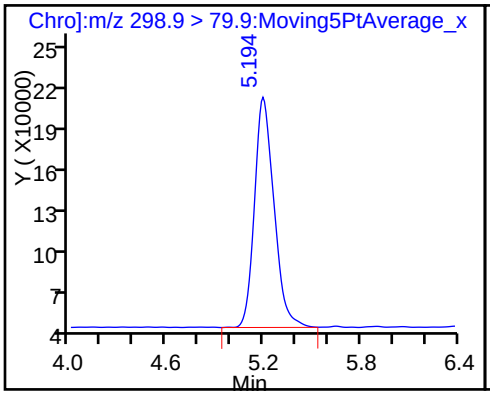
2 Perfluorobutyric acid



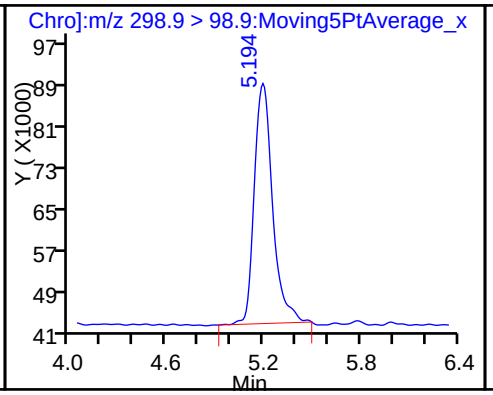
3 Perfluoropentanoic acid



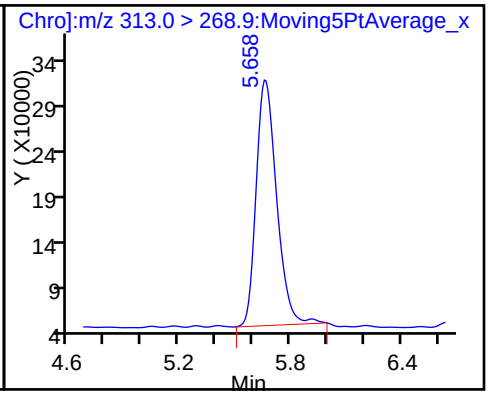
4 Perfluorobutane Sulfonate



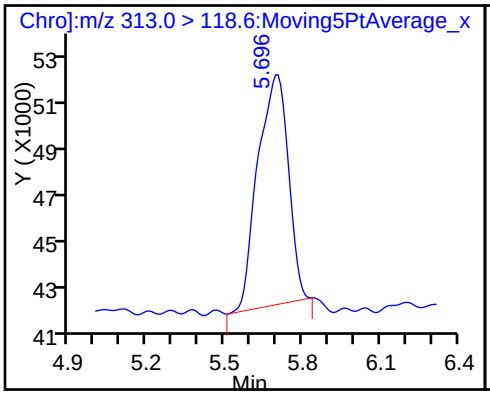
4 Perfluorobutane Sulfonate



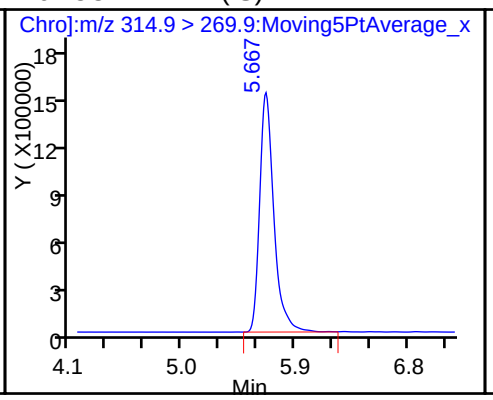
7 Perfluorohexanoic acid



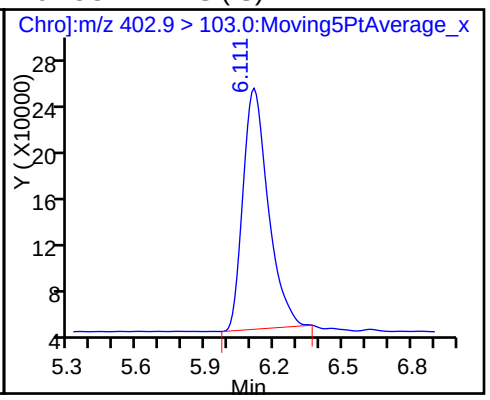
7 Perfluorohexanoic acid



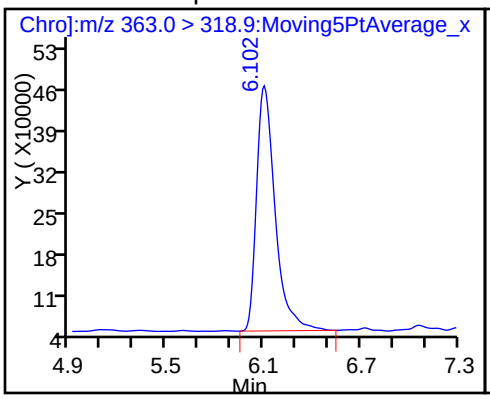
* 6 13C2 PFHxA (IS)



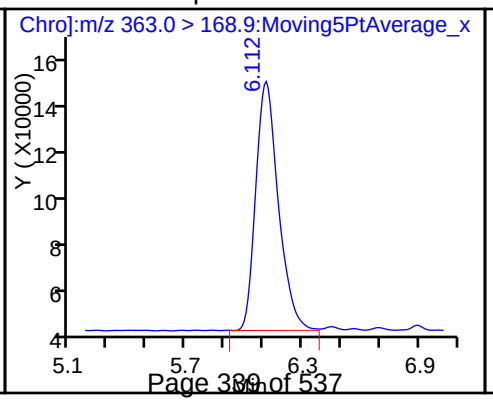
* 9 18O2 PFHxS (IS)



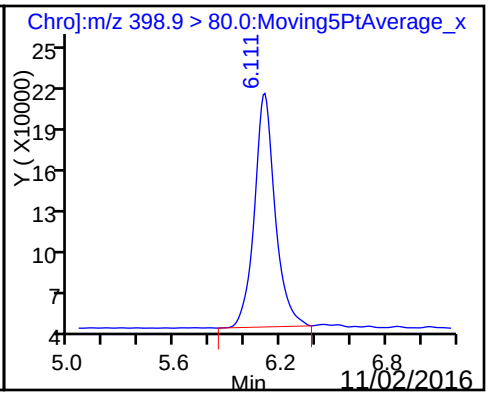
8 Perfluoroheptanoic acid



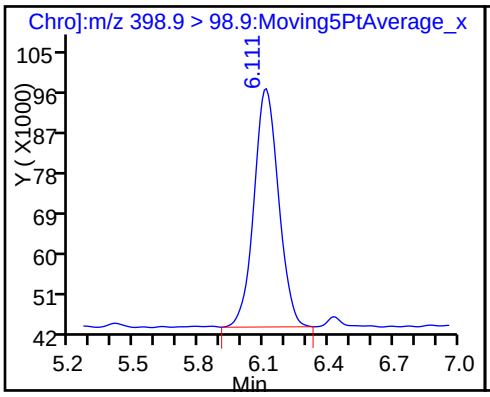
8 Perfluoroheptanoic acid



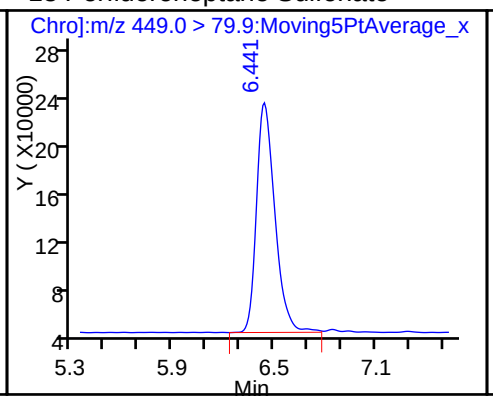
10 Perfluorohexane Sulfonate



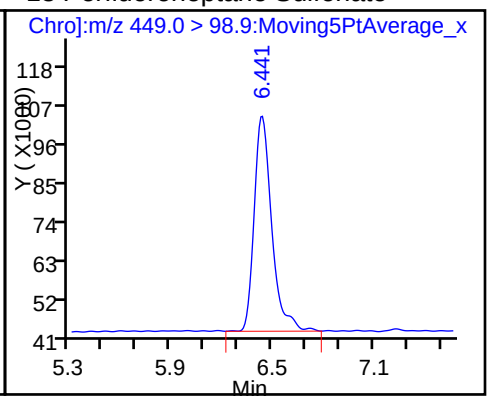
10 Perfluorohexane Sulfonate



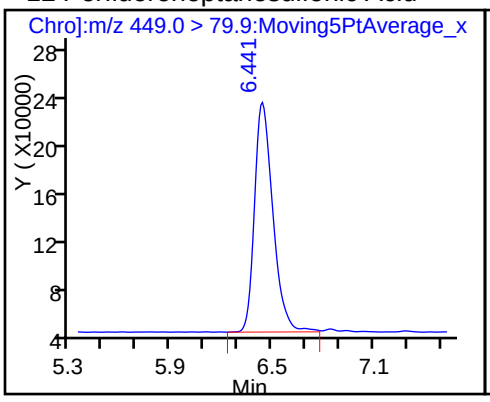
13 Perfluoroheptane Sulfonate



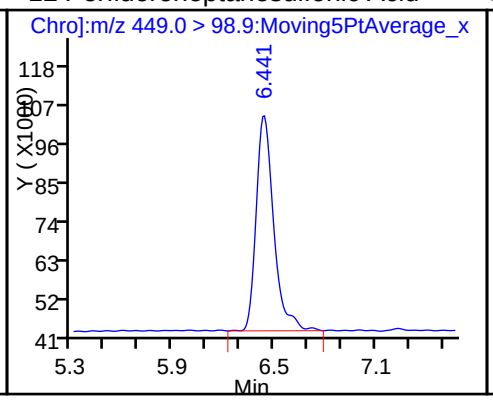
13 Perfluoroheptane Sulfonate



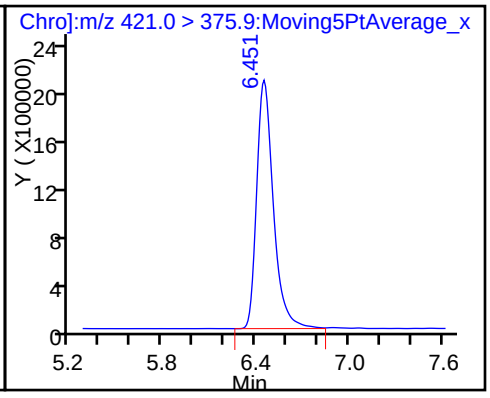
12 Perfluoroheptanesulfonic Acid



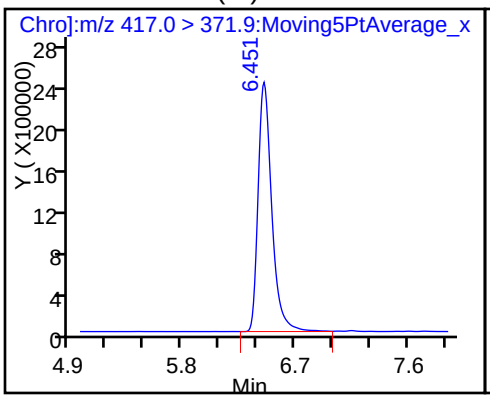
12 Perfluoroheptanesulfonic Acid



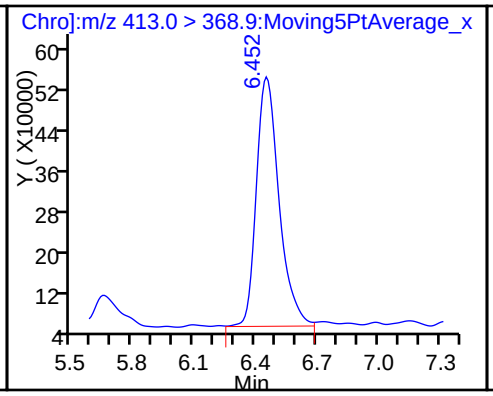
$ 14 13C8 PFOA



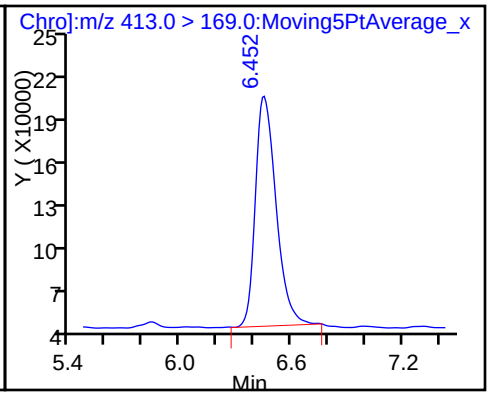
* 15 13C4 PFOA (IS)



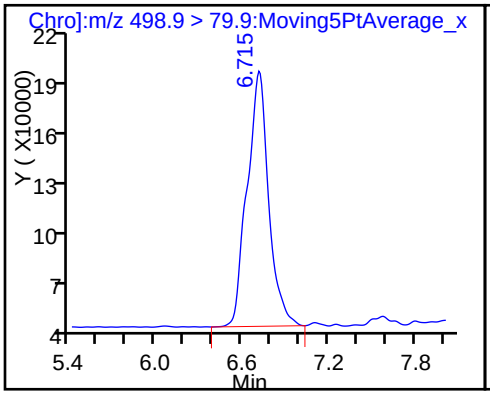
16 Perfluorooctanoic acid



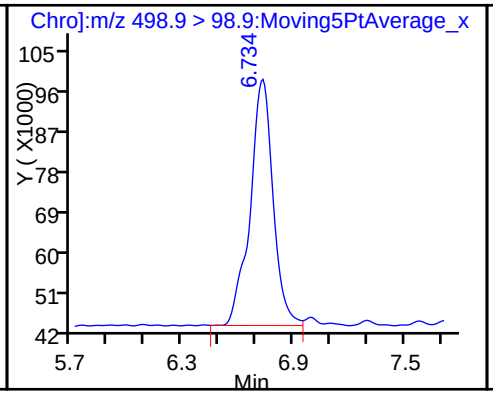
16 Perfluorooctanoic acid



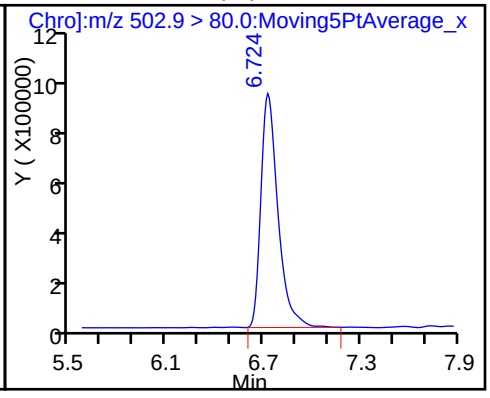
19 Perfluorooctane sulfonic acid



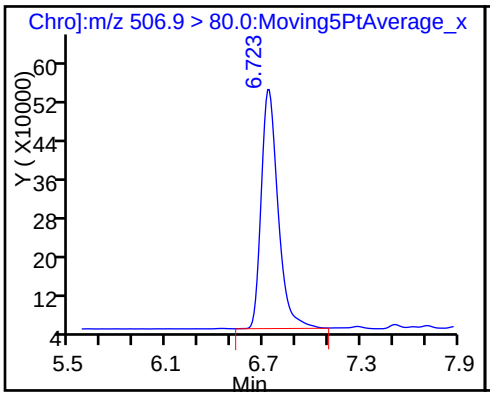
19 Perfluorooctane sulfonic acid



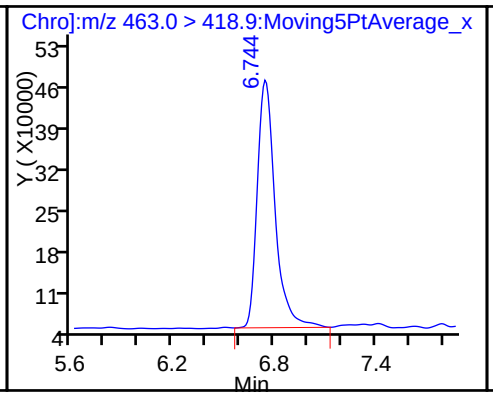
* 17 13C4 PFOS (IS)



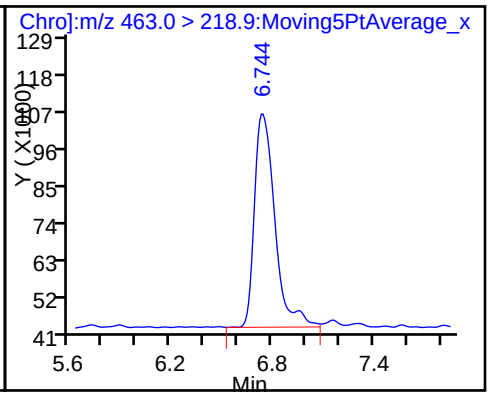
$ 18 13C8 PFOS



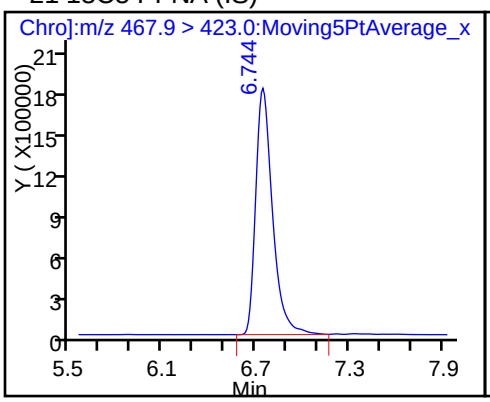
20 Perfluorononanoic acid



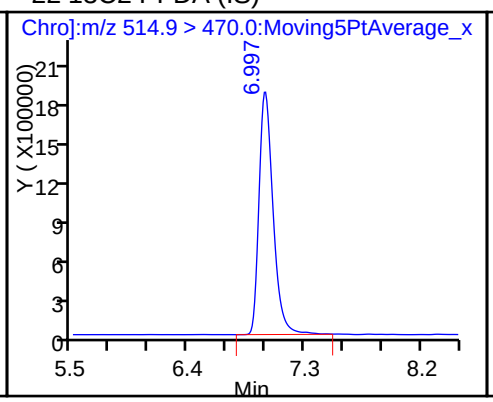
20 Perfluorononanoic acid



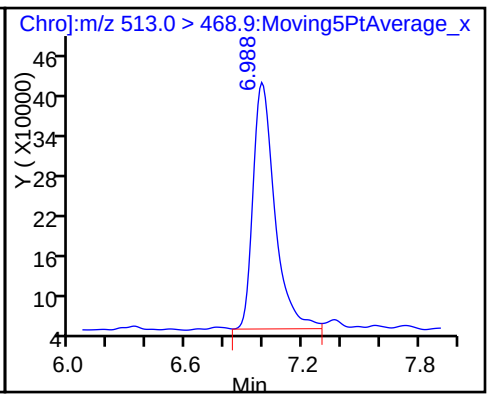
* 21 13C5 PFNA (IS)



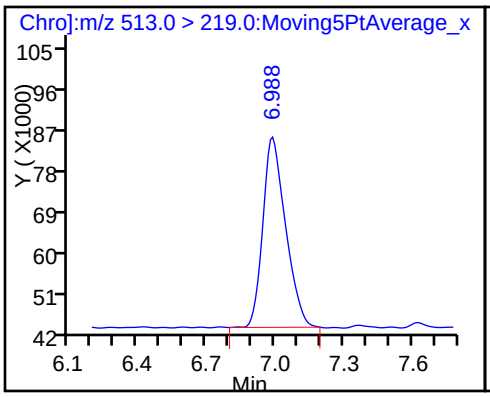
* 22 13C2 PFDA (IS)



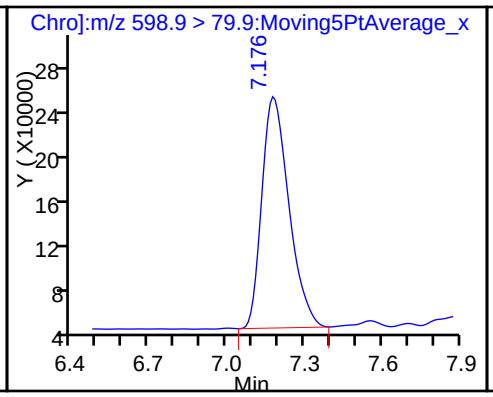
23 Perfluorodecanoic acid



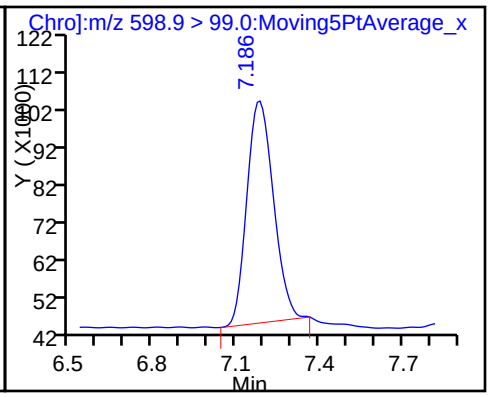
23 Perfluorodecanoic acid



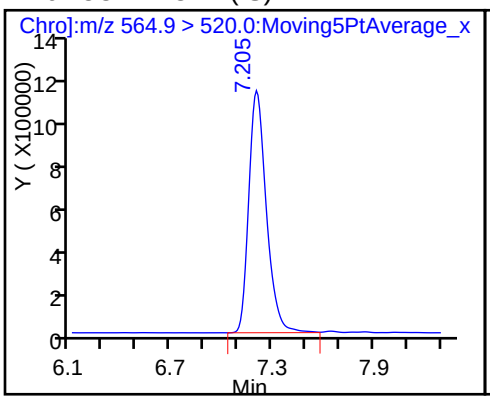
25 Perfluorodecane Sulfonate



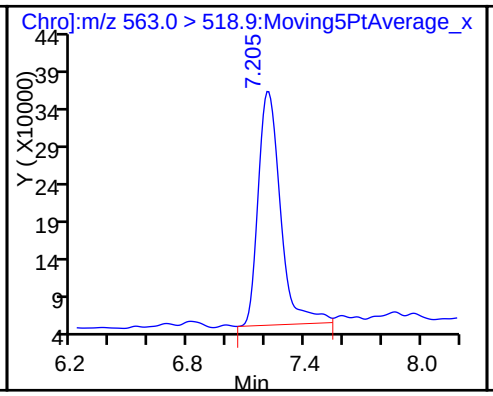
25 Perfluorodecane Sulfonate



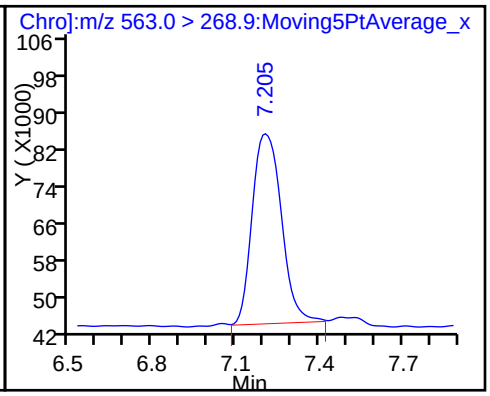
* 26 13C2 PFUnA (IS)



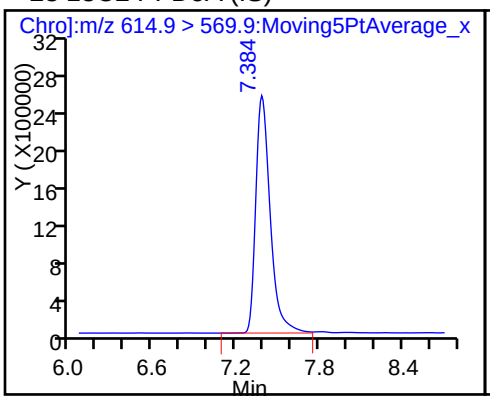
27 Perfluoroundecanoic acid



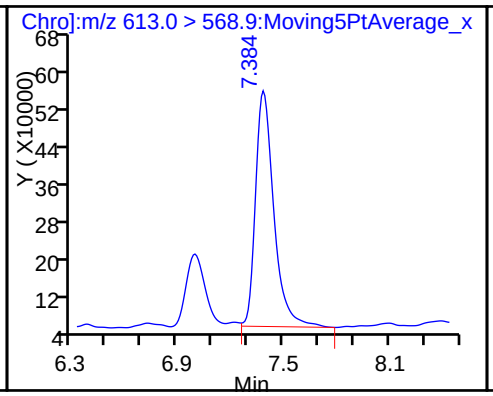
27 Perfluoroundecanoic acid



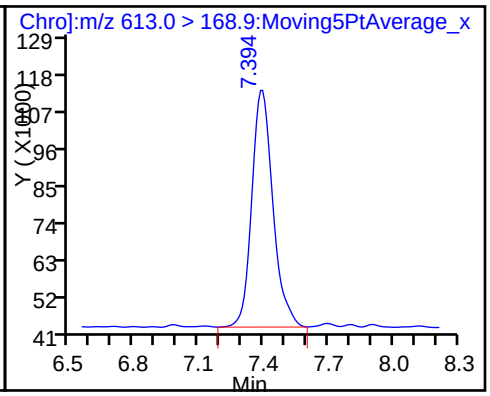
* 28 13C2 PFDoA (IS)



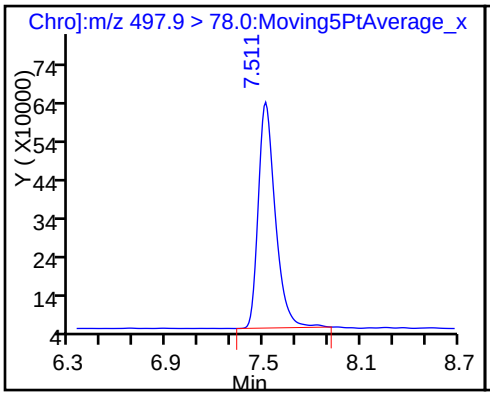
29 Perfluorododecanoic acid



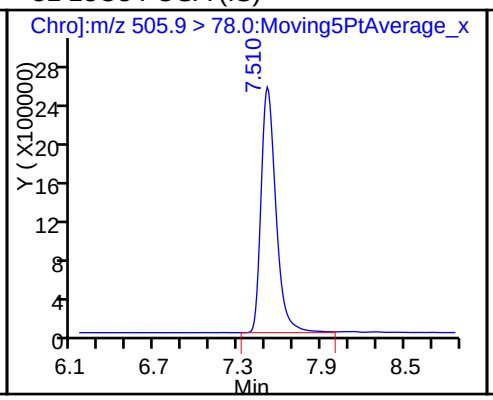
29 Perfluorododecanoic acid



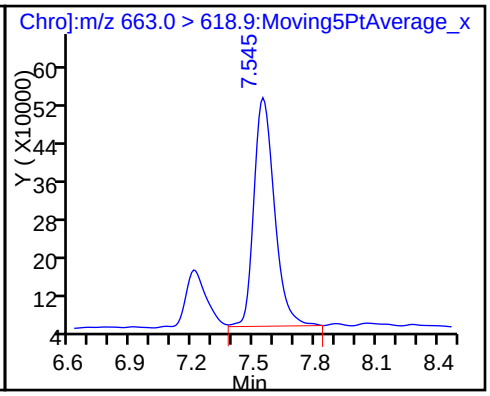
32 Perfluorooctane Sulfonamide



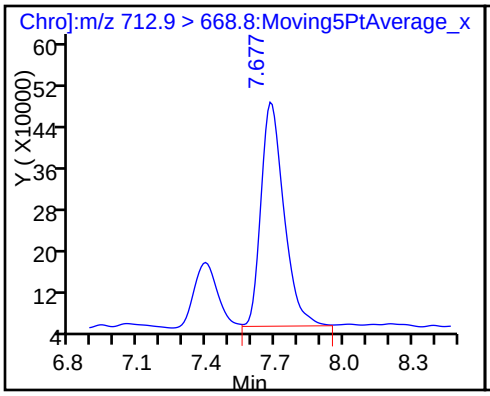
* 31 13C8 FOSA (IS)



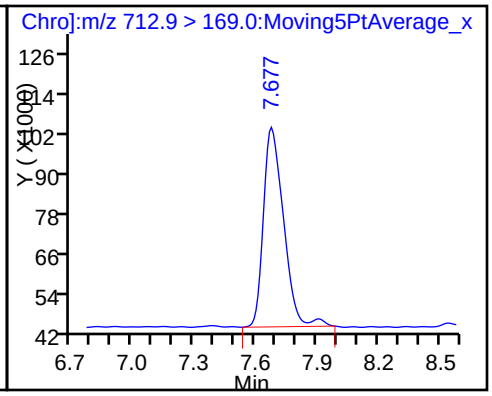
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-341350/3 Calibration Date: 09/08/2016 11:00

Instrument ID: LC_LCMS5 Calib Start Date: 09/07/2016 13:06

GC Column: Gemini-NX ID: Calib End Date: 09/07/2016 14:44

Lab File ID: PC516I08006.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin1		0.9731		9.97	10.0	-0.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.133		9.97	10.0	-0.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.097		8.92	8.85	0.7	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.097		8.92	8.85	0.7	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8932		10.0	10.0	0.1	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8949		11.1	10.0	11.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.966		10.2	9.45	7.4	30.0
Perfluorohexanesulfonic acid	Lin2		3.966		10.2	9.45	7.4	30.0
Perfluoroheptane Sulfonate	Lin2		1.058		9.79	9.52	2.9	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.058		9.79	9.52	2.9	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.056		10.7	10.0	6.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.132		10.5	9.55	9.7	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.055		10.1	10.0	1.2	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.995		10.3	10.0	3.1	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.124		9.98	9.65	3.4	30.0
Perfluorodecane Sulfonic acid	Lin2		1.124		9.98	9.65	3.4	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.375		10.4	10.0	3.8	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9947		10.0	10.0	0.4	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.088		10.7	10.0	7.0	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9811		9.51	10.0	-4.9	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7406		9.30	10.0	-7.0	30.0
13C8 PFOA	Lin2		0.8194		10.2	10.0	1.7	30.0
13C8 PFOS	Lin1		0.6008		11.5	9.56	20.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08006.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 08-Sep-2016 11:00:47 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 20:38:36 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK012

First Level Reviewer: fiedlerh Date: 08-Sep-2016 20:32:30

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.048	4.048	0.0		17402131	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.049	4.049	0.0	1.000	16933385	9.97			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.138	5.138	0.0	0.898	13025516	9.97			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.251	5.251	0.0	0.851	6616841	8.92			R
298.9 > 98.9	5.251	5.251	0.0	0.851	1968566		3.36(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.251	5.251	0.0	0.851	6616841	8.92			
298.9 > 98.9	5.251	5.251	0.0	0.851	1968566		3.36(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.724	0.0		11493273	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.724	5.724	0.0	1.000	10265239	10.0			
313.0 > 118.6	5.724	5.724	0.0	1.000	337753		30.39(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.159	6.159	0.0	0.945	15663739	11.1			
363.0 > 168.9	6.169	6.159	0.010	0.946	3820118		4.10(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.168	6.168	0.0		1726572	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.168	6.168	0.0	1.000	6840135	10.1			R
398.9 > 98.9	6.168	6.168	0.0	1.000	2383922		2.87(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.168	6.168	0.0	1.000	6840135	10.1			
398.9 > 98.9	6.168	6.168	0.0	1.000	2383922		2.87(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.508	6.508	0.0	0.958	6645254	9.79			
449.0 > 98.9	6.508	6.508	0.0	0.958	1948506		3.41(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.508	6.508	0.0	0.958	6645254	9.79			
449.0 > 98.9	6.508	6.508	0.0	0.958	1948506		3.41(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.508	0.0	0.999	14341574	10.2			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	0.999	18476022	10.7			
413.0 > 169.0	6.508	6.508	0.0	0.999	5436954		3.40(2.86-5.31)		
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.518	0.0		17503702	10.0			
$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.790	0.0	1.000	3789088	11.5			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.790	0.0		6307217	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.790	6.790	0.0	1.000	7135333	10.5			R
498.9 > 98.9	6.790	6.790	0.0	1.000	2865523		2.49(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.810	0.0		13896611	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.810	6.810	0.0	1.000	14664116	10.1			
463.0 > 218.9	6.810	6.810	0.0	1.000	2115680		6.93(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.054	0.0		13886873	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.054	7.054	0.0	1.000	13821795	10.3			
513.0 > 219.0	7.054	7.054	0.0	1.000	1243479		11.12(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.243	7.243	0.0	1.067	7153224	9.98			
598.9 > 99.0	7.233	7.243	-0.010	1.065	2200465		3.25(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.243	7.243	0.0	1.067	7153224	9.98			
598.9 > 99.0	7.233	7.243	-0.010	1.065	2200465		3.25(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.271	0.0		8460016	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.272	7.272	0.0	1.000	11630411	10.4			R
563.0 > 268.9	7.272	7.272	0.0	1.000	1361786		8.54(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.450	0.0		18675428	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.451	7.451	0.0	1.000	18575920	10.0			
613.0 > 168.9	7.451	7.451	0.0	1.000	2213611		8.39(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.510	0.0		18076103	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.511	0.0	1.000	19658559	10.7			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.602	0.0	1.020	18322947	9.51			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734	7.734	0.0	1.038	13831074	9.30			
712.9 > 169.0	7.743	7.734	0.009	1.039	2187818		6.32(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00084	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFC-IS_00023	Amount Added:	20.00	Units: uL

Report Date: 08-Sep-2016 20:38:37 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08006.d

Injection Date: 08-Sep-2016 11:00:47 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

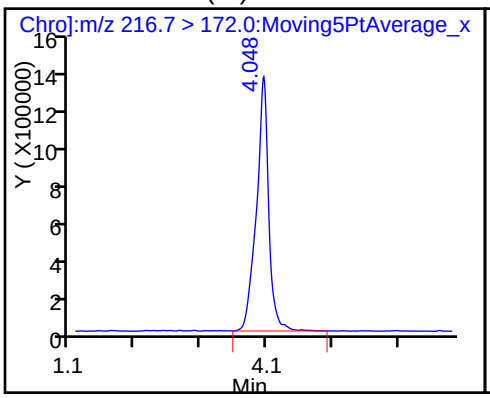
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

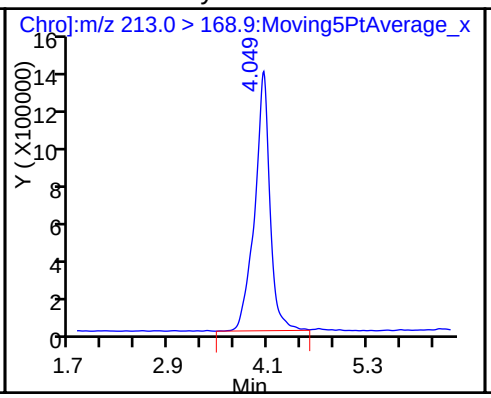
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

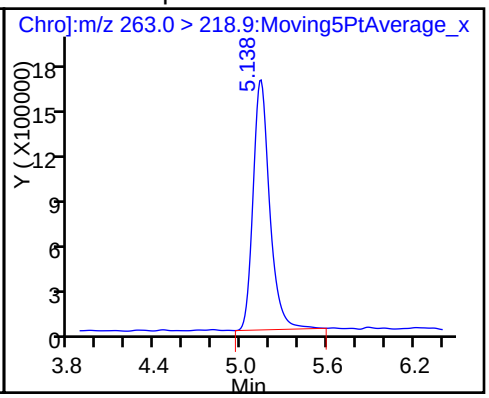
* 1 13C4 PFBA (IS)



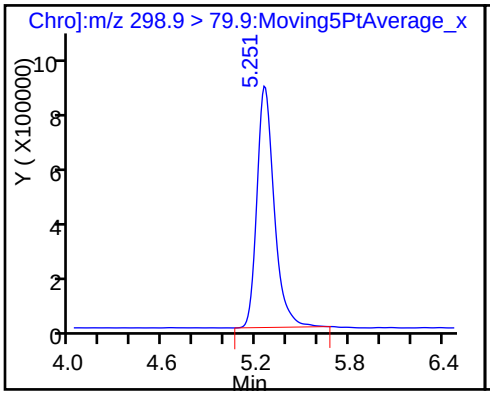
2 Perfluorobutyric acid



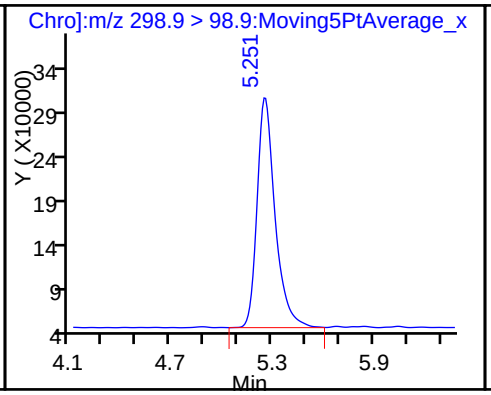
3 Perfluoropentanoic acid



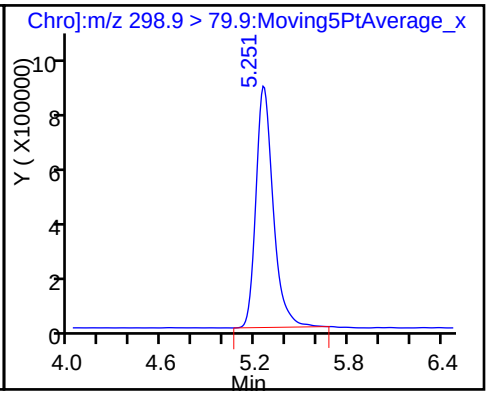
4 Perfluorobutane Sulfonate



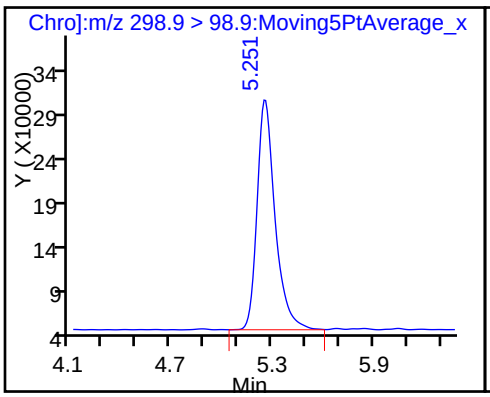
4 Perfluorobutane Sulfonate



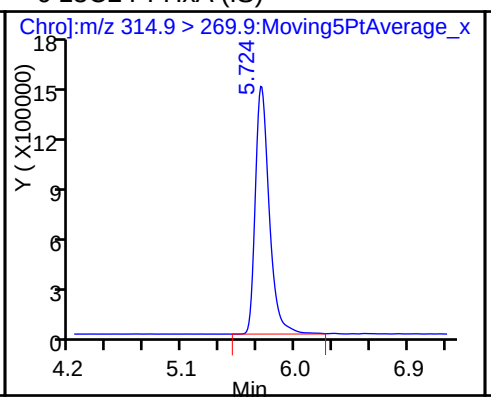
5 Perfluorobutanesulfonic acid



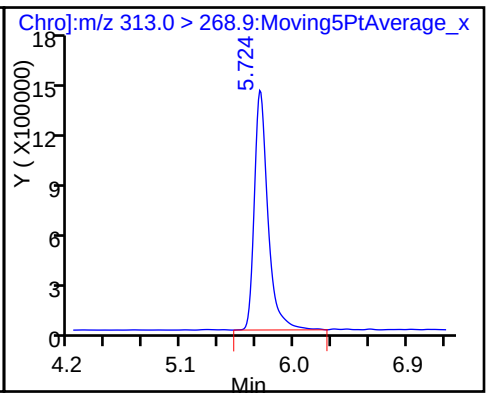
5 Perfluorobutanesulfonic acid



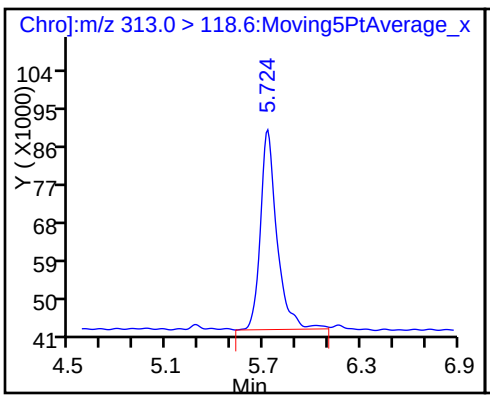
* 6 13C2 PFHxA (IS)



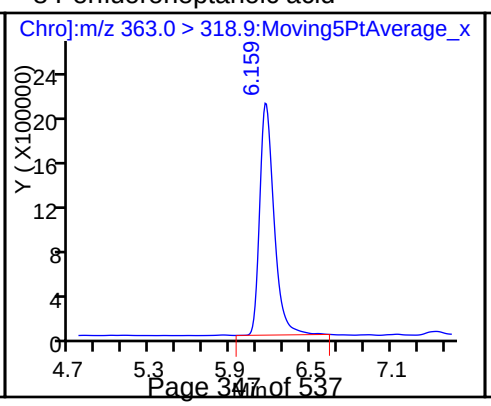
7 Perfluorohexanoic acid



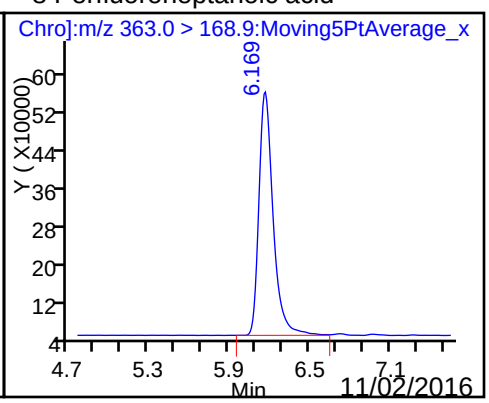
7 Perfluorohexanoic acid



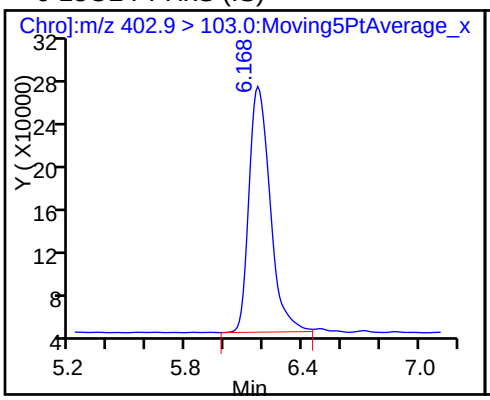
8 Perfluoroheptanoic acid



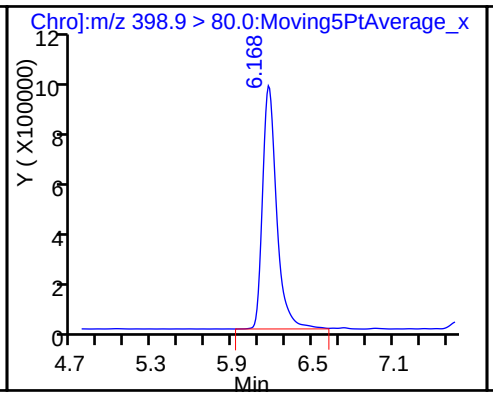
8 Perfluoroheptanoic acid



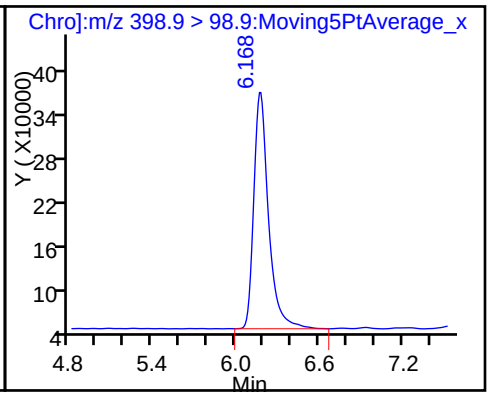
* 9 18O2 PFHxS (IS)



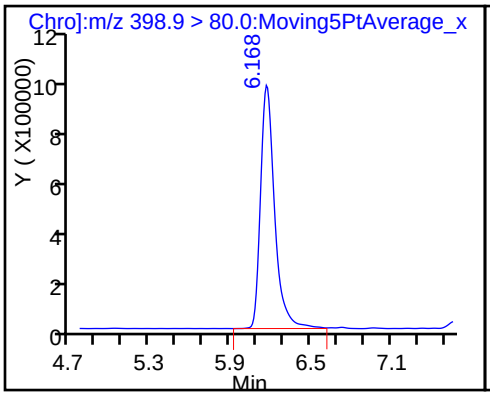
10 Perfluorohexane Sulfonate



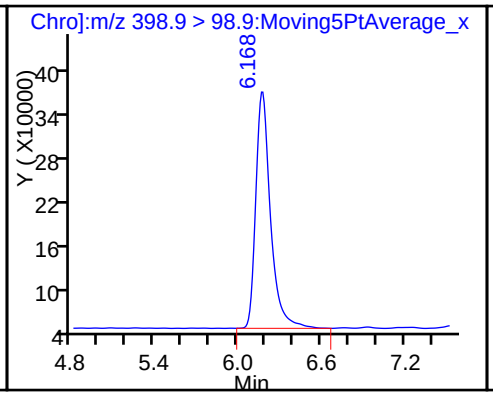
10 Perfluorohexane Sulfonate



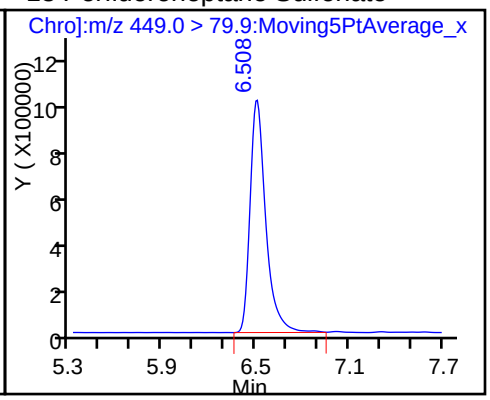
11 Perfluorohexanesulfonic acid



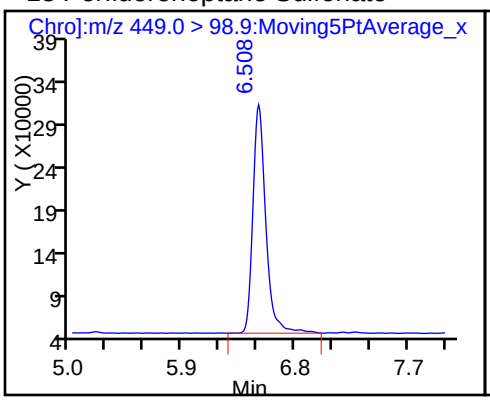
11 Perfluorohexanesulfonic acid



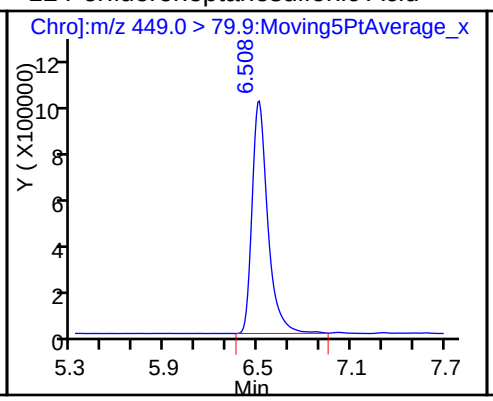
13 Perfluoroheptane Sulfonate



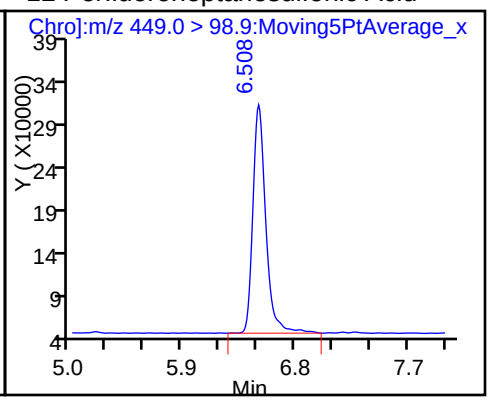
13 Perfluoroheptane Sulfonate



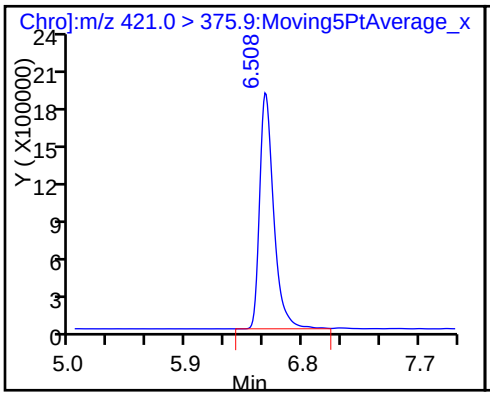
12 Perfluoroheptanesulfonic Acid



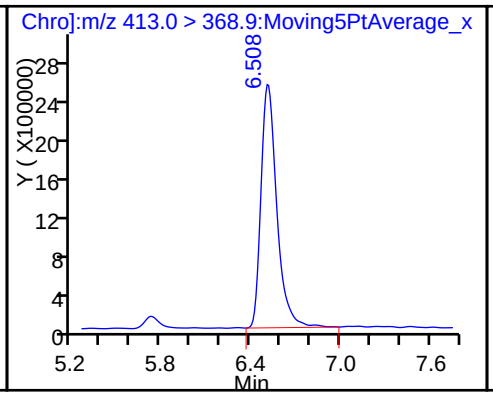
12 Perfluoroheptanesulfonic Acid



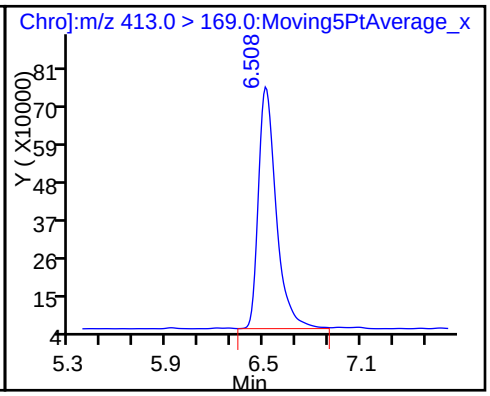
$ 14 13C8 PFOA



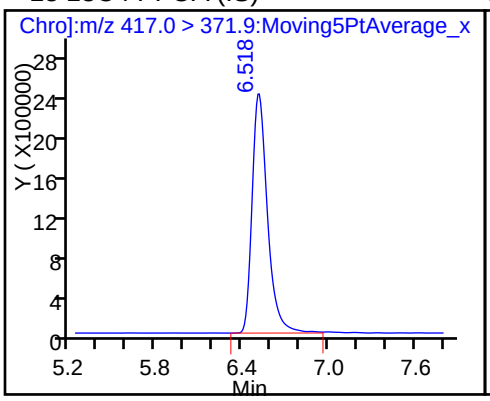
16 Perfluorooctanoic acid



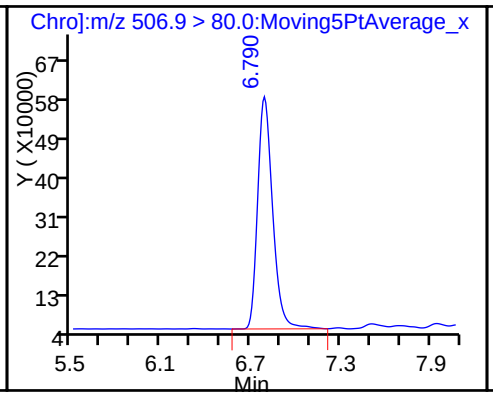
16 Perfluorooctanoic acid



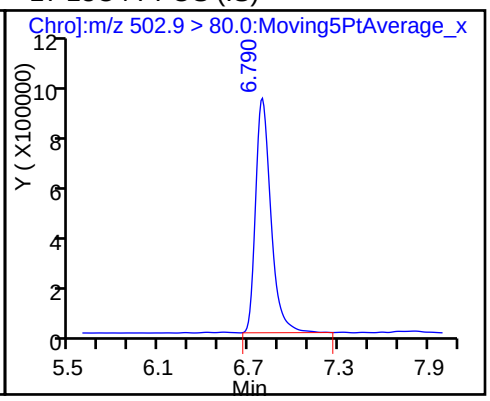
* 15 13C4 PFOA (IS)



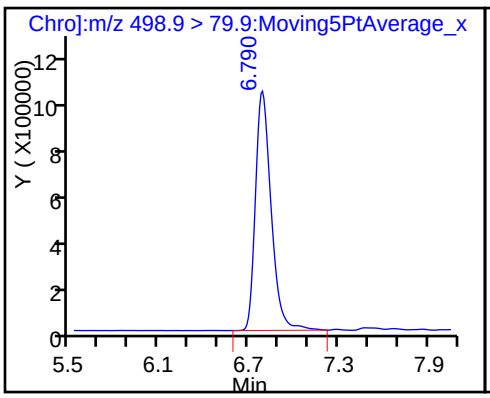
$ 18 13C8 PFOS



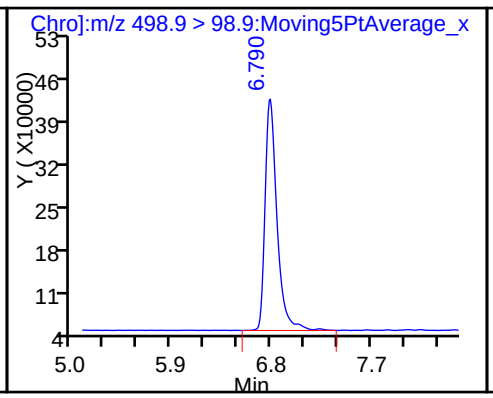
* 17 13C4 PFOS (IS)



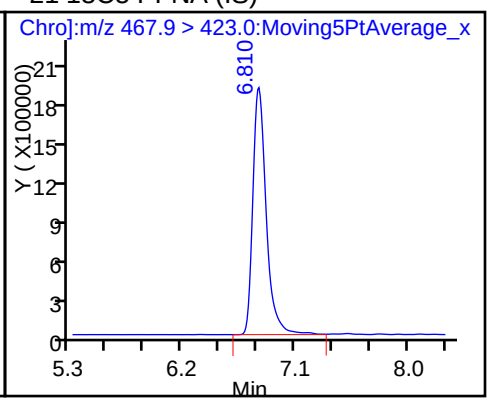
19 Perfluorooctane sulfonic acid



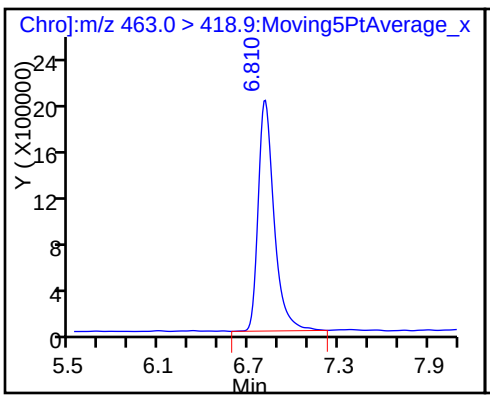
19 Perfluorooctane sulfonic acid



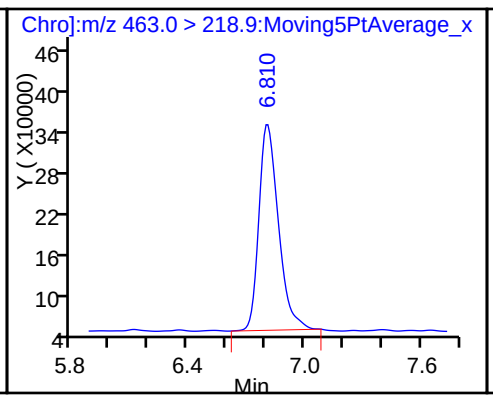
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid



20 Perfluorononanoic acid



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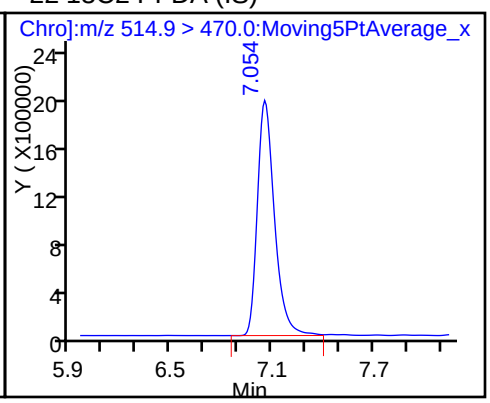
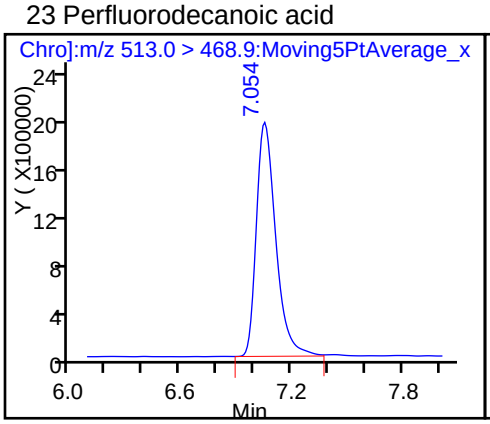
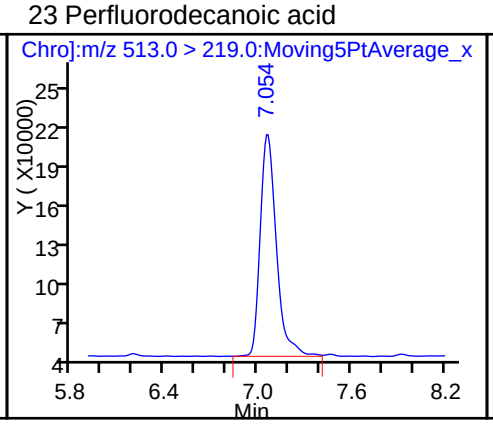


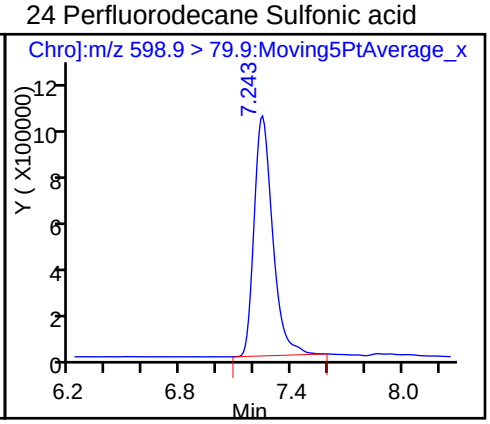
23 Perfluorodecanoic acid



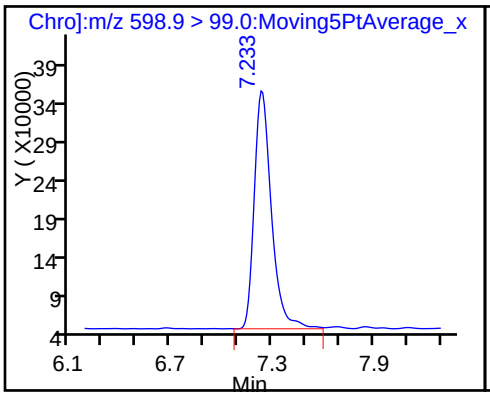
23 Perfluorodecanoic acid



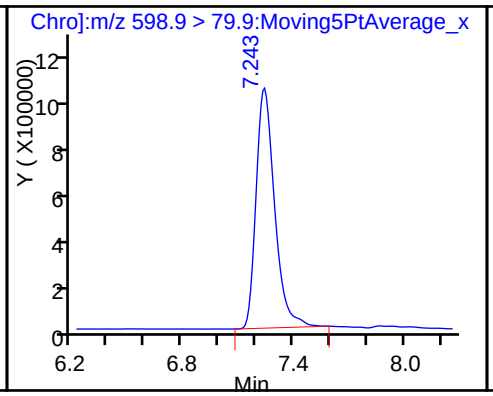
24 Perfluorodecane Sulfonic acid



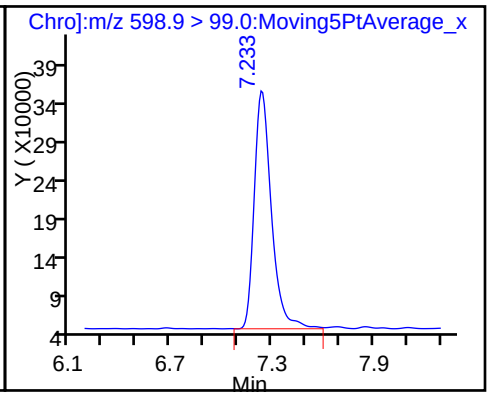
24 Perfluorodecane Sulfonic acid



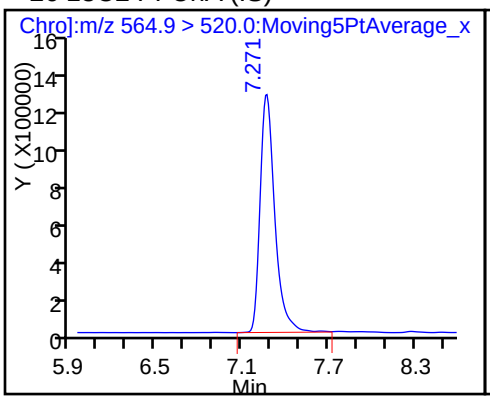
25 Perfluorodecane Sulfonate



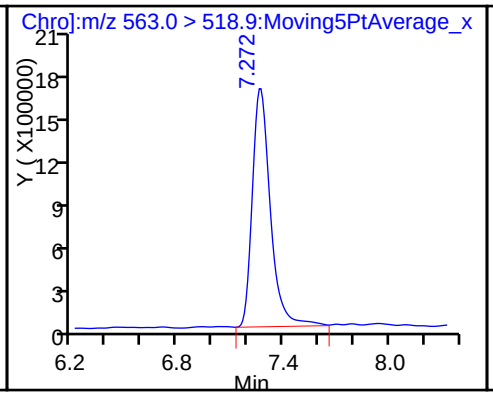
25 Perfluorodecane Sulfonate



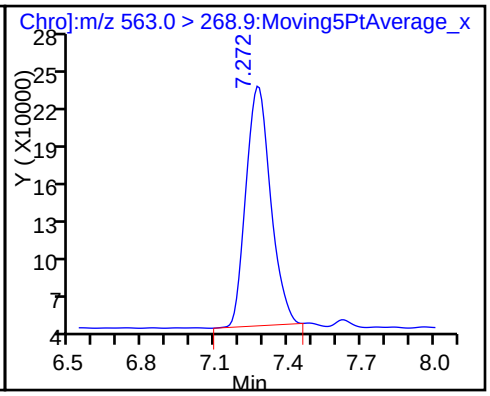
* 26 13C2 PFUnA (IS)



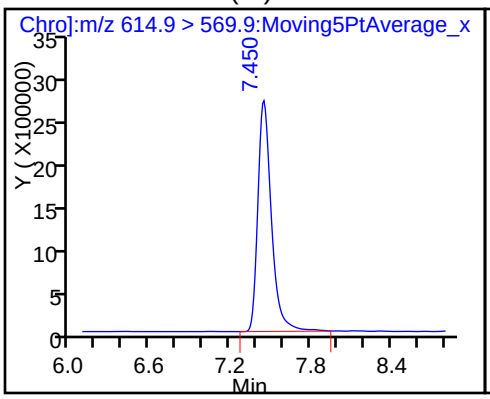
27 Perfluoroundecanoic acid



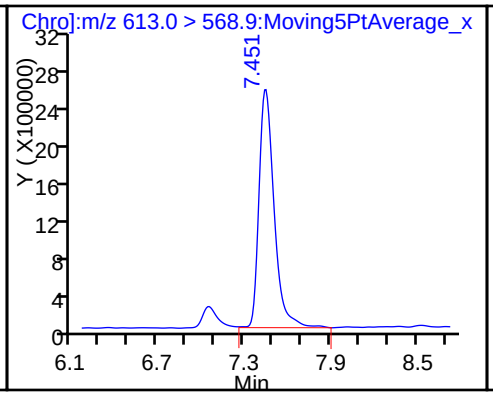
27 Perfluoroundecanoic acid



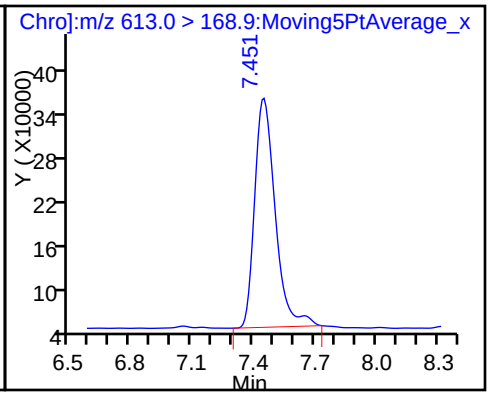
* 28 13C2 PFDoA (IS)



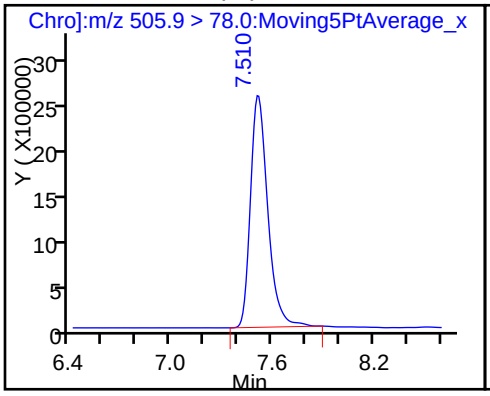
29 Perfluorododecanoic acid



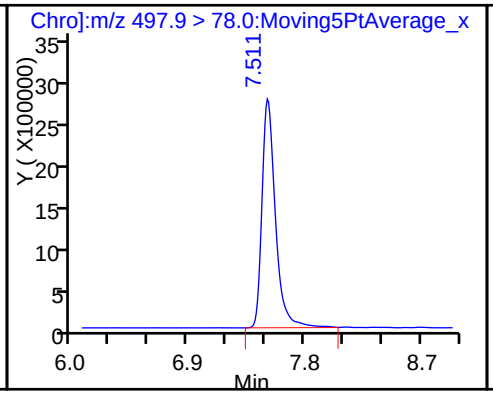
29 Perfluorododecanoic acid



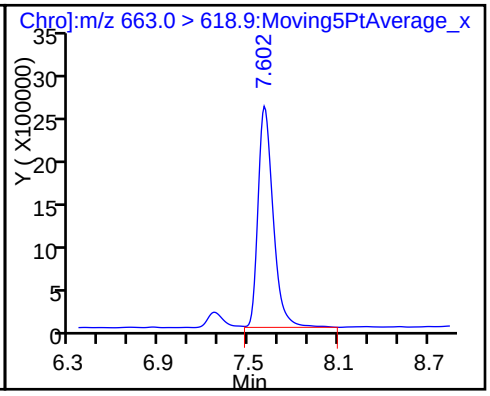
* 31 13C8 FOSA (IS)



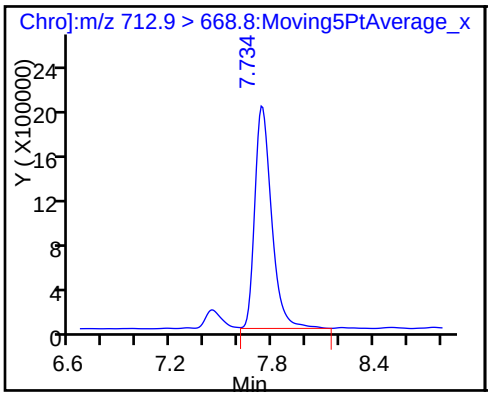
32 Perfluorooctane Sulfonamide



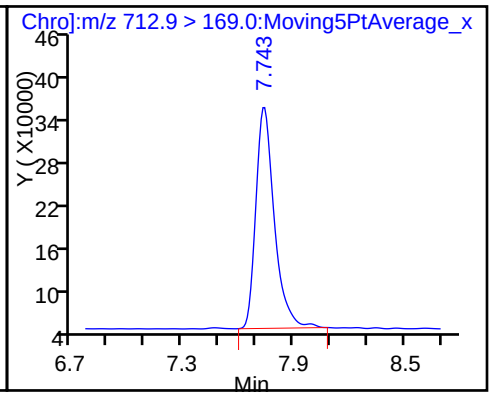
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-341350/13 Calibration Date: 09/08/2016 13:03

Instrument ID: LC_LCMS5 Calib Start Date: 09/07/2016 13:06

GC Column: Gemini-NX ID: Calib End Date: 09/07/2016 14:44

Lab File ID: PC516I08016.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin1		0.9933		5.04	5.00	0.8	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.075		4.70	5.00	-6.0	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.448		4.84	4.43	9.3	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.448		4.84	4.43	9.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9205		5.11	5.00	2.2	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.7590		4.68	5.00	-6.4	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.737		4.74	4.73	0.2	30.0
Perfluorohexanesulfonic acid	Lin2		3.737		4.74	4.73	0.2	30.0
Perfluoroheptane Sulfonate	Lin2		0.9764		4.51	4.76	-5.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		0.9764		4.51	4.76	-5.3	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.035		5.20	5.00	4.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.003		4.62	4.78	-3.2	30.0
Perfluorononanoic acid (PFNA)	Lin2		0.9911		4.73	5.00	-5.3	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9865		5.10	5.00	1.9	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.038		4.61	4.83	-4.5	30.0
Perfluorodecane Sulfonic acid	Lin2		1.038		4.61	4.83	-4.5	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.354		5.04	5.00	0.9	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9419		4.73	5.00	-5.4	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.015		4.99	5.00	-0.2	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9019		4.36	5.00	-12.8	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6882		4.32	5.00	-13.7	30.0
13C8 PFOA	Lin2		0.9093		5.63	5.00	12.5	30.0
13C8 PFOS	Lin1		0.6125		5.80	4.78	21.3	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08016.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 08-Sep-2016 13:03:58 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 20:39:07 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK012

First Level Reviewer: fiedlerh Date: 08-Sep-2016 20:38:19

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.887	3.887	0.0		15964329	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.897	3.897	0.0	1.002	7928519	5.04			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.024	5.024	0.0	0.894	6188587	4.70			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.147	5.147	0.0	0.849	3539196	4.84			R
298.9 > 98.9	5.147	5.147	0.0	0.849	1037641		3.41(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.147	5.147	0.0	0.849	3539196	4.84			
298.9 > 98.9	5.147	5.147	0.0	0.849	1037641		3.41(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.620	5.620	0.0		11516511	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.620	5.620	0.0	1.000	5300513	5.11			
313.0 > 118.6	5.610	5.620	-0.010	0.998	151015		35.10(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.055	6.055	0.0	0.945	7685181	4.68			
363.0 > 168.9	6.055	6.055	0.0	0.945	1956684		3.93(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.064	6.064	0.0		1700938	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.064	6.064	0.0	1.000	3174530	4.73			R
398.9 > 98.9	6.073	6.064	0.009	1.002	1043639		3.04(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.064	6.064	0.0	1.000	3174530	4.73			
398.9 > 98.9	6.073	6.064	0.009	1.002	1043639		3.04(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.403	6.403	0.0	0.959	3127537	4.51			
449.0 > 98.9	6.403	6.403	0.0	0.959	906282		3.45(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.403	6.403	0.0	0.959	3127537	4.51			
449.0 > 98.9	6.403	6.403	0.0	0.959	906282		3.45(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.404	6.404	0.0	1.000	9207652	5.63			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.404	6.404	0.0		20251630	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.404	6.404	0.0	1.000	10481232	5.20			
413.0 > 169.0	6.404	6.404	0.0	1.000	2957204		3.54(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.676	6.676	0.0	1.000	1969957	5.80			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.676	6.676	0.0		6433060	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.677	6.677	0.0	1.000	3222770	4.62			R
498.9 > 98.9	6.686	6.677	0.009	1.001	1245366		2.59(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.696	6.696	0.0		14692280	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.697	6.697	0.0	1.000	7281075	4.73			
463.0 > 218.9	6.697	6.697	0.0	1.000	1032447		7.05(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.941	6.941	0.0		14181655	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.941	6.941	0.0	1.000	6995072	5.10			
513.0 > 219.0	6.941	6.941	0.0	1.000	637866		10.97(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.129	7.129	0.0	1.068	3371422	4.61			
598.9 > 99.0	7.129	7.129	0.0	1.068	975812		3.45(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.129	7.129	0.0	1.068	3371422	4.61			
598.9 > 99.0	7.129	7.129	0.0	1.068	975812		3.45(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.158	7.158	0.0		8500393	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.158	7.158	0.0	1.000	5755106	5.04			R
563.0 > 268.9	7.158	7.158	0.0	1.000	762393		7.55(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.337	7.337	0.0		19160587	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.337	7.337	0.0	1.000	9023706	4.73			
613.0 > 168.9	7.337	7.337	0.0	1.000	1180619		7.64(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.491	7.491	0.0		18618901	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.492	7.492	0.0	1.000	9453114	4.99			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.497	7.497	0.0	1.022	8640683	4.36			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.630	7.630	0.0	1.040	6592824	4.31			
712.9 > 169.0	7.630	7.630	0.0	1.040	973471		6.77(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 10.00	Units: uL
PFC-LCS_00084	Amount Added: 10.00	Units: uL

Report Date: 08-Sep-2016 20:39:08 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08016.d

Injection Date: 08-Sep-2016 13:03:58 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

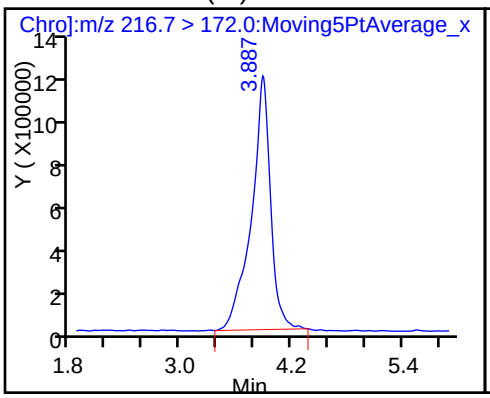
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 13

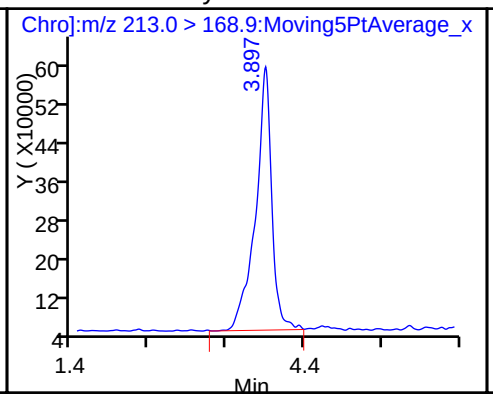
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

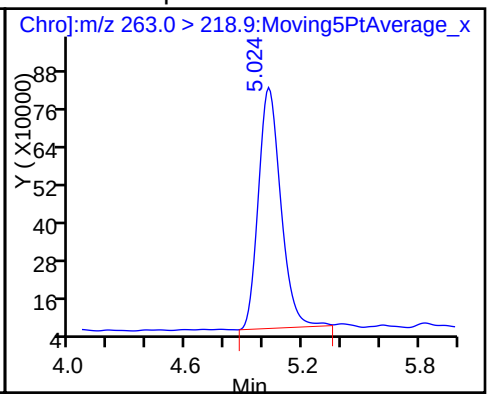
* 1 13C4 PFBA (IS)



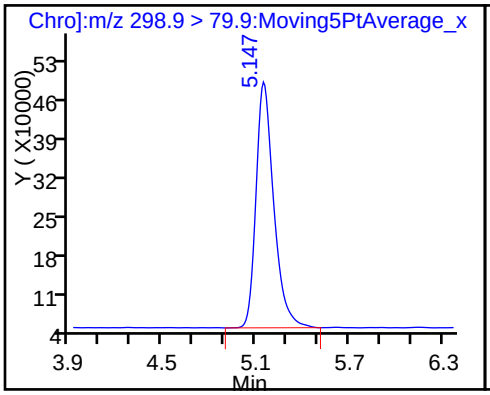
2 Perfluorobutyric acid



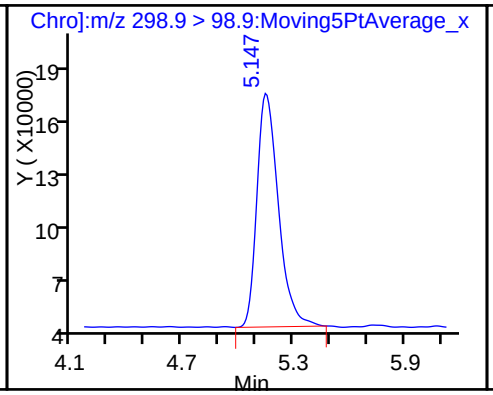
3 Perfluoropentanoic acid



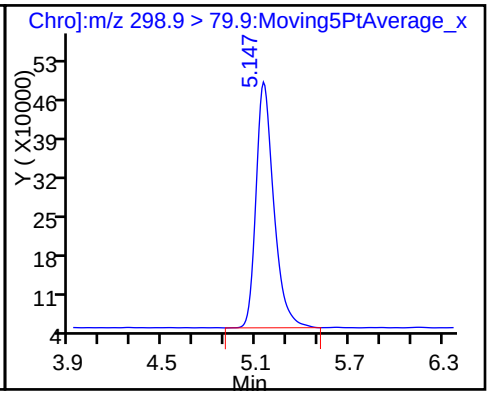
4 Perfluorobutane Sulfonate



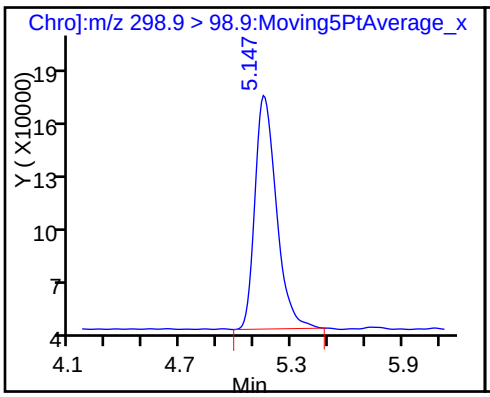
4 Perfluorobutane Sulfonate



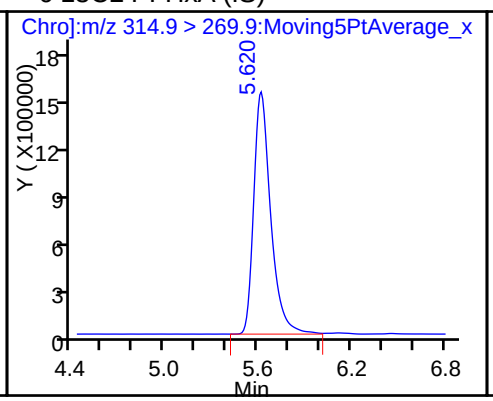
5 Perfluorobutanesulfonic acid



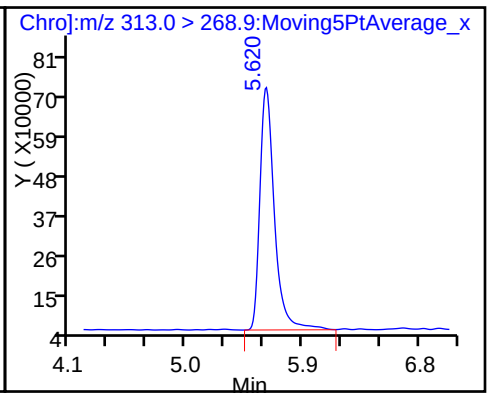
5 Perfluorobutanesulfonic acid



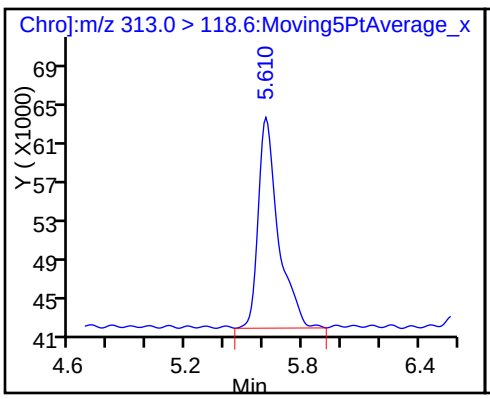
* 6 13C2 PFHxA (IS)



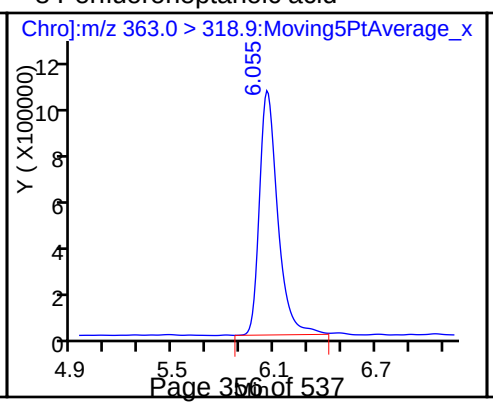
7 Perfluorohexanoic acid



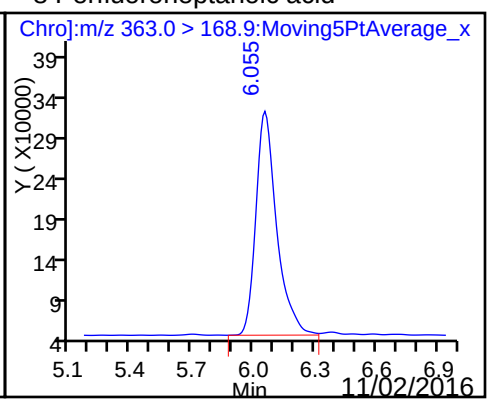
7 Perfluorohexanoic acid



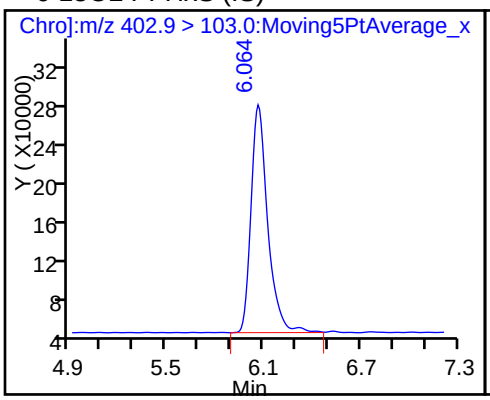
8 Perfluoroheptanoic acid



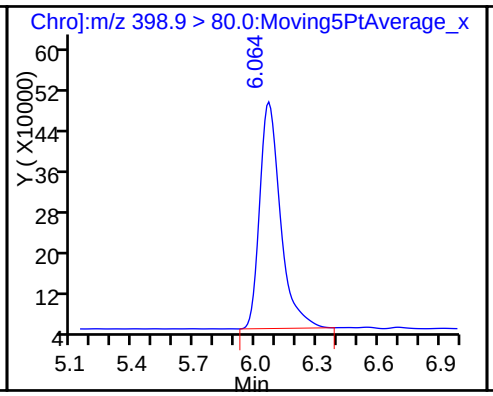
8 Perfluoroheptanoic acid



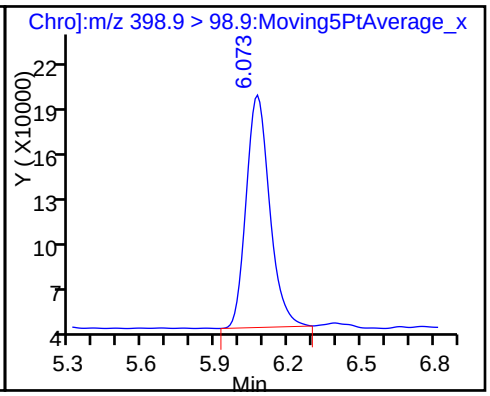
* 9 18O2 PFHxS (IS)



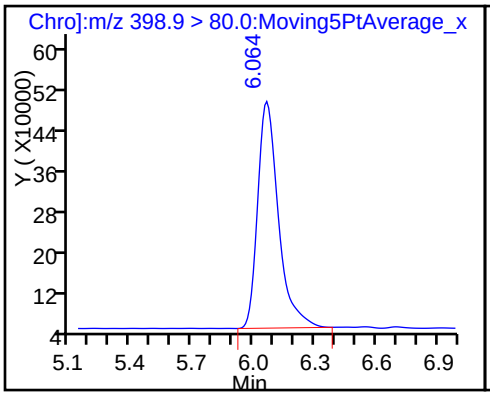
10 Perfluorohexane Sulfonate



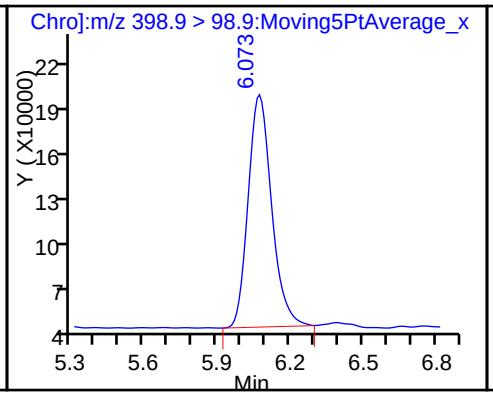
10 Perfluorohexane Sulfonate



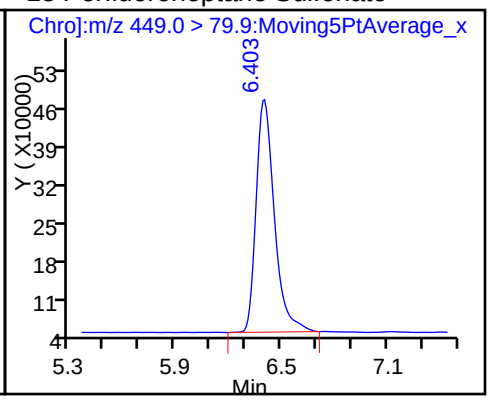
11 Perfluorohexanesulfonic acid



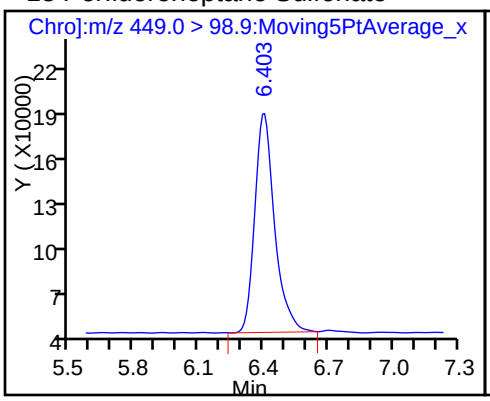
11 Perfluorohexanesulfonic acid



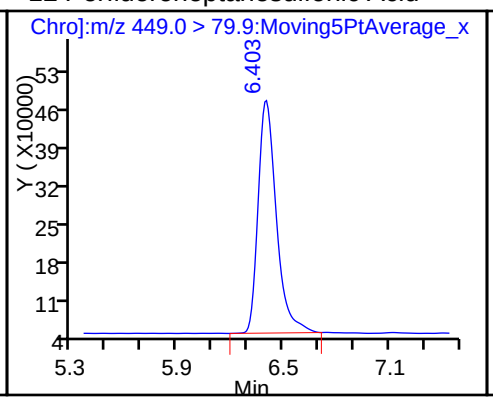
13 Perfluoroheptane Sulfonate



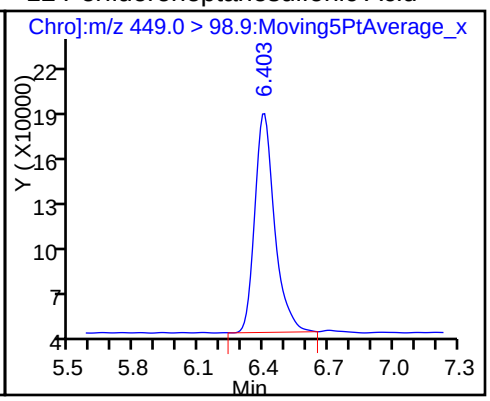
13 Perfluoroheptane Sulfonate



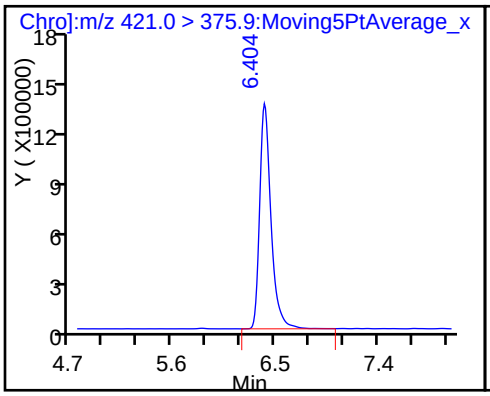
12 Perfluoroheptanesulfonic Acid



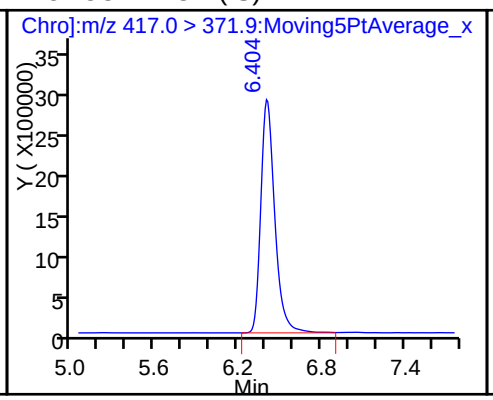
12 Perfluoroheptanesulfonic Acid



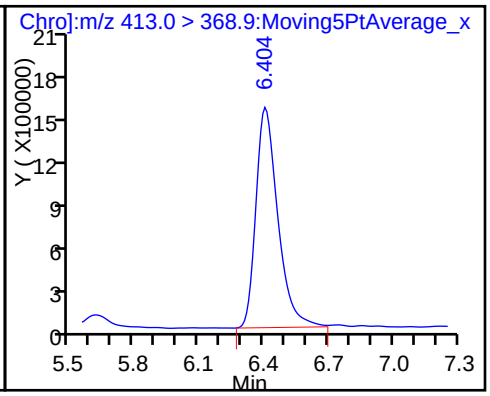
$ 14 13C8 PFOA



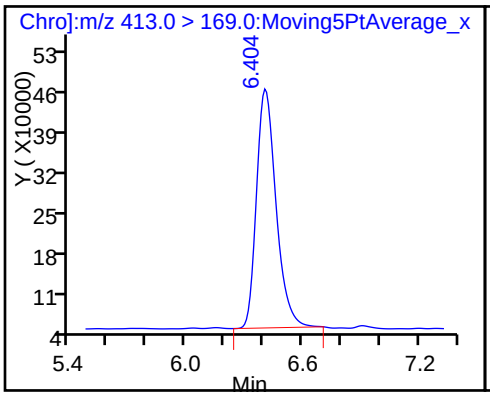
* 15 13C4 PFOA (IS)



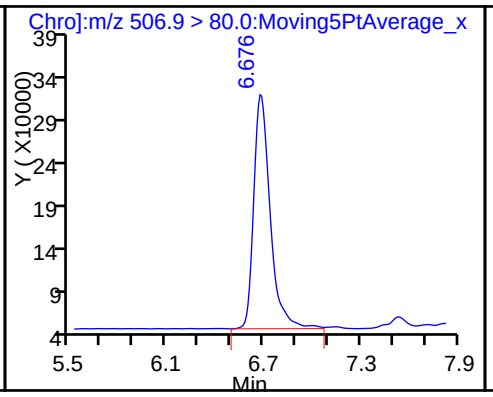
16 Perfluorooctanoic acid



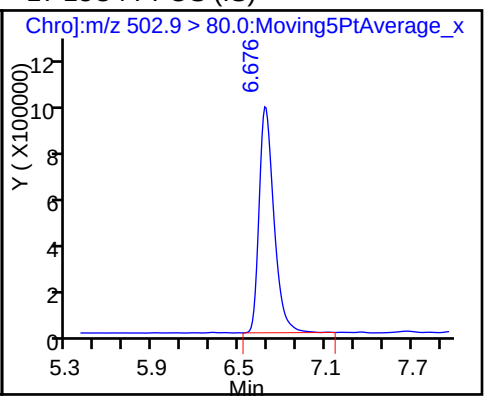
16 Perfluorooctanoic acid



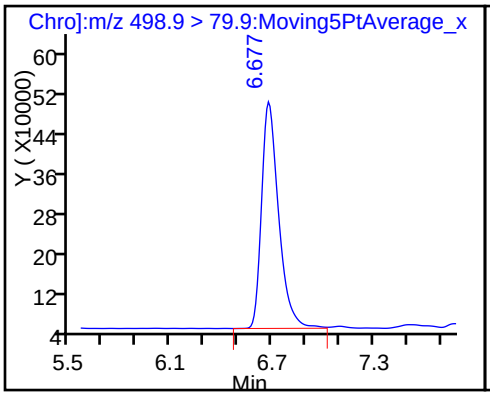
$ 18 13C8 PFOS



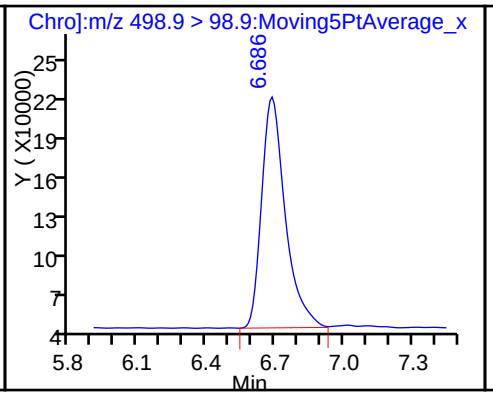
* 17 13C4 PFOS (IS)



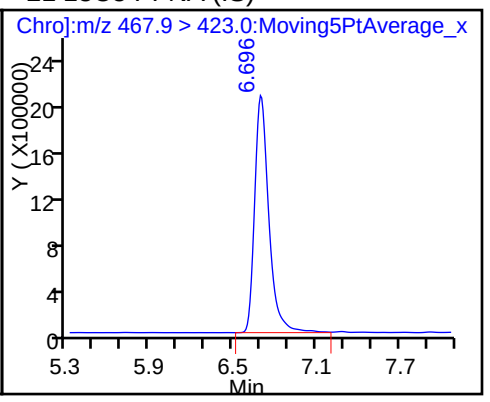
19 Perfluorooctane sulfonic acid



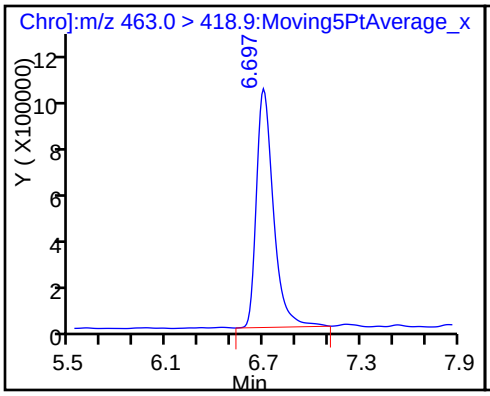
19 Perfluorooctane sulfonic acid



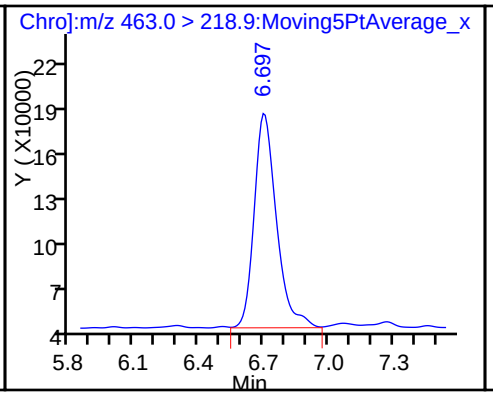
* 21 13C5 PFNA (IS)



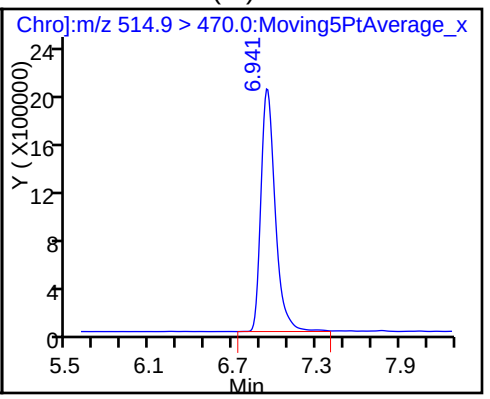
20 Perfluorononanoic acid



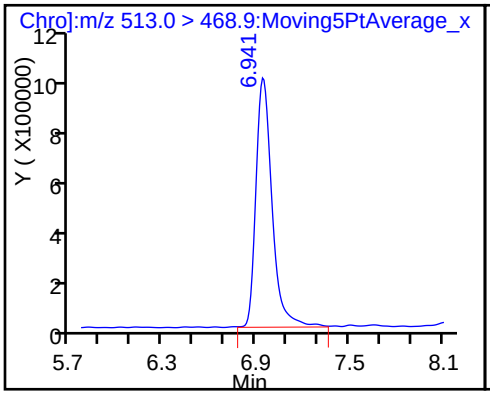
20 Perfluorononanoic acid



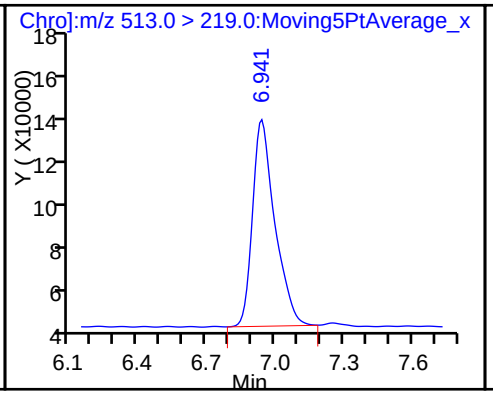
* 22 13C2 PFDA (IS)



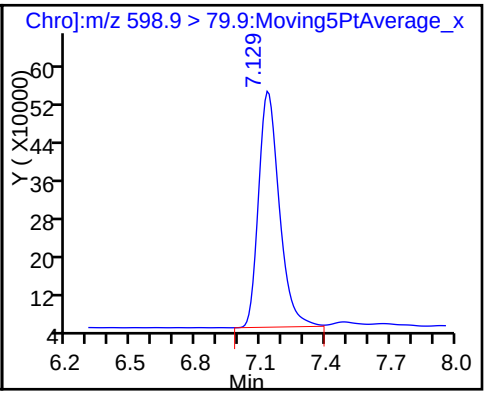
23 Perfluorodecanoic acid



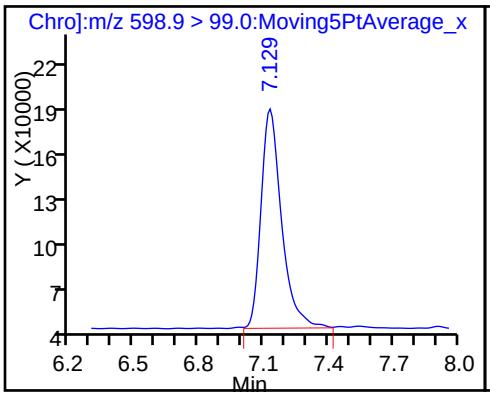
23 Perfluorodecanoic acid



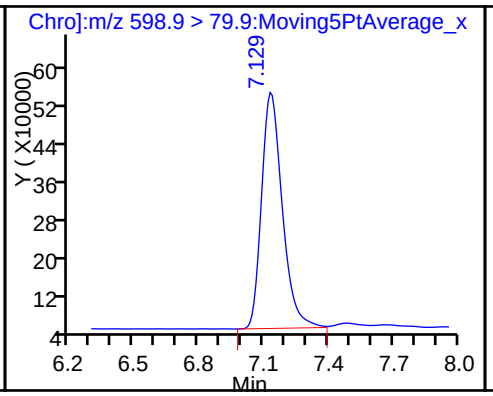
24 Perfluorodecane Sulfonic acid



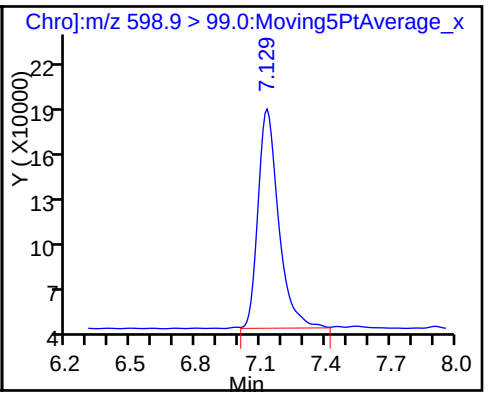
24 Perfluorodecane Sulfonic acid



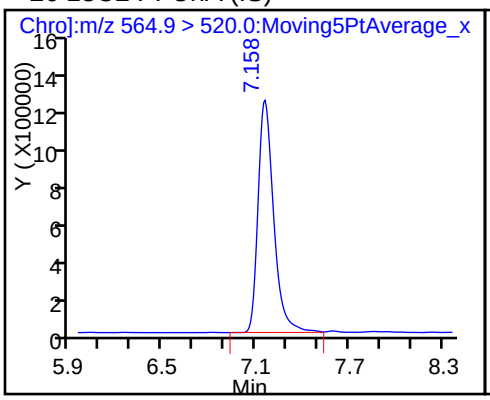
25 Perfluorodecane Sulfonate



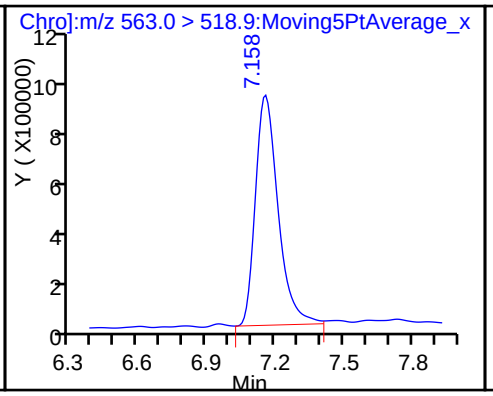
25 Perfluorodecane Sulfonate



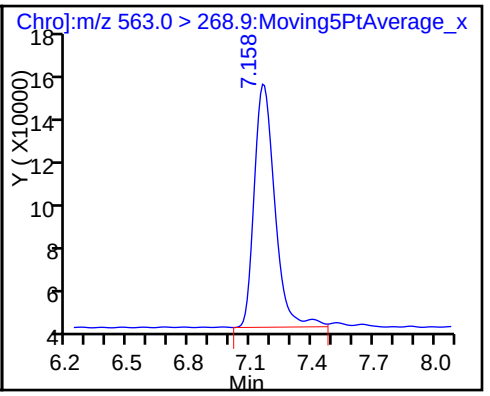
* 26 13C2 PFUnA (IS)



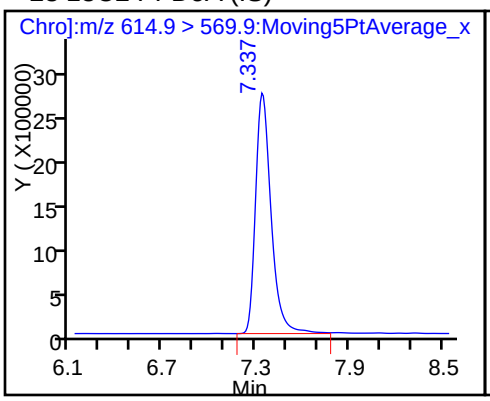
27 Perfluoroundecanoic acid



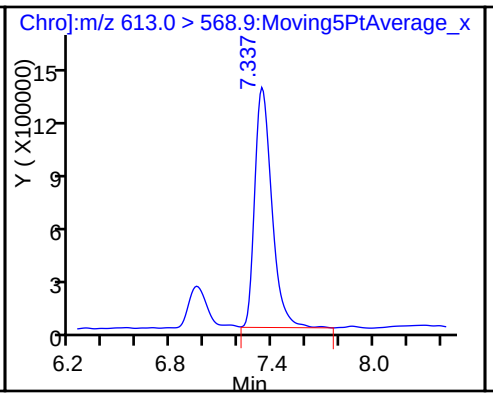
27 Perfluoroundecanoic acid



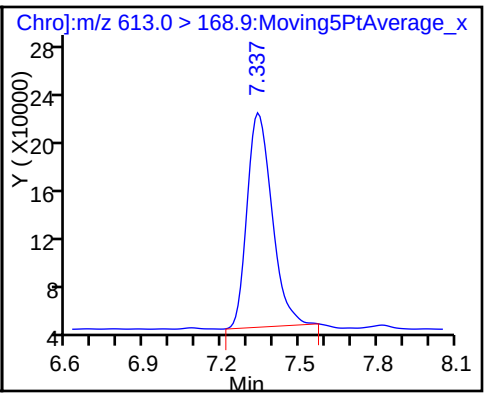
* 28 13C2 PFDoA (IS)



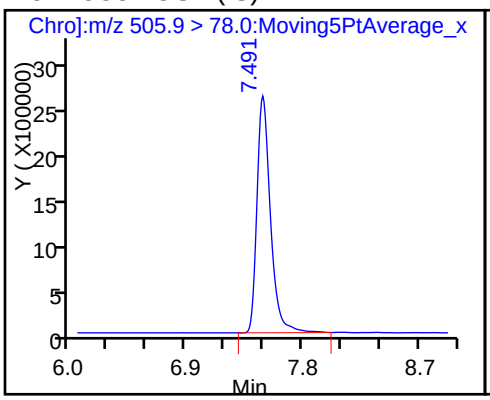
29 Perfluorododecanoic acid



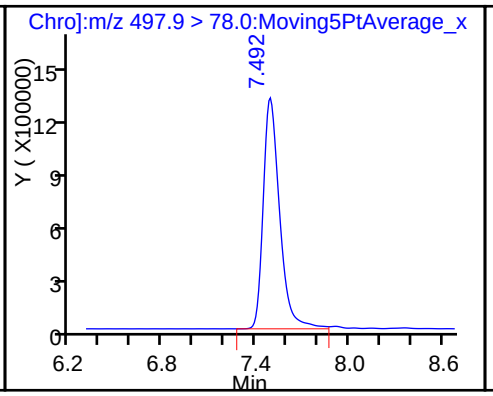
29 Perfluorododecanoic acid



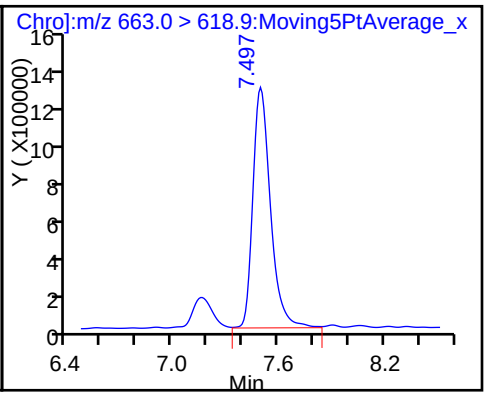
* 31 13C8 FOSA (IS)



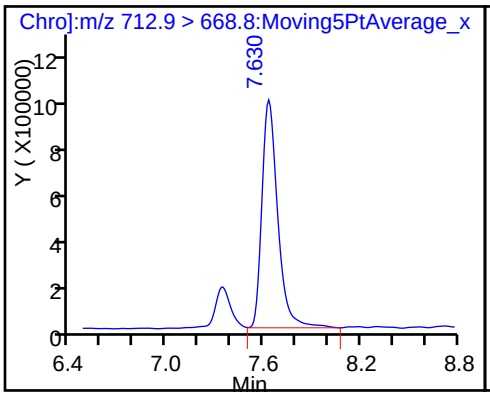
32 Perfluorooctane Sulfonamide



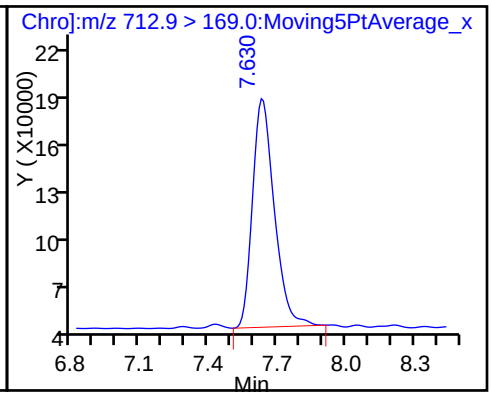
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-341622/3 Calibration Date: 09/10/2016 01:55

Instrument ID: LC_LCMS5 Calib Start Date: 09/07/2016 13:06

GC Column: Gemini-NX ID: Calib End Date: 09/07/2016 14:44

Lab File ID: PC516I09104.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin1		0.8338		8.53	10.0	-14.7	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.167		10.3	10.0	2.7	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		3.644		7.93	8.85	-10.4	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		3.644		7.93	8.85	-10.4	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9070		10.2	10.0	1.7	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8350		10.4	10.0	3.7	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.944		10.1	9.45	6.8	30.0
Perfluorohexanesulfonic acid	Lin2		3.944		10.1	9.45	6.8	30.0
Perfluoroheptane Sulfonate	Lin2		0.9032		8.36	9.52	-12.2	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		0.9032		8.36	9.52	-12.2	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.097		11.1	10.0	11.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		0.9339		8.63	9.55	-9.6	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.067		10.2	10.0	2.4	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9014		9.33	10.0	-6.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		0.9548		8.48	9.65	-12.1	30.0
Perfluorodecane Sulfonic acid	Lin2		0.9548		8.48	9.65	-12.1	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.259		9.49	10.0	-5.1	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9673		9.77	10.0	-2.3	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9252		8.96	10.0	-10.4	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.060		10.4	10.0	4.3	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7488		9.40	10.0	-6.0	30.0
13C8 PFOA	Lin2		0.7950		9.87	10.0	-1.3	30.0
13C8 PFOS	Lin1		0.5811		11.1	9.56	16.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09104.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 10-Sep-2016 01:55:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 12-Sep-2016 08:31:32 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK018

First Level Reviewer: fiedlerh Date: 12-Sep-2016 08:31:32

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.868	3.868	0.0		17540729	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.869	3.869	0.0	1.000	14626011	8.53			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.014	5.014	0.0	0.897	11935507	10.3			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.128	5.128	0.0	0.850	6097066	7.93			
298.9 > 98.9	5.137	5.128	0.009	0.851	1824610		3.34(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.128	5.128	0.0	0.850	6097066	7.93			
298.9 > 98.9	5.137	5.128	0.009	0.851	1824610		3.34(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.591	5.591	0.0		10231616	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.591	5.591	0.0	1.000	9280030	10.2			
313.0 > 118.6	5.591	5.591	0.0	1.000	282479		32.85(34.05-63.23)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.026	6.026	0.0	0.998	7047210	10.1			
398.9 > 98.9	6.035	6.026	0.009	1.000	2137536		3.30(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.026	6.026	0.0	0.998	7047210	10.1			R
398.9 > 98.9	6.035	6.026	0.009	1.000	2137536		3.30(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.026	6.026	0.0	0.945	14797352	10.4			
363.0 > 168.9	6.026	6.026	0.0	0.945	3648942		4.06(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.035	6.035	0.0		1788591	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.365	6.365	0.0	0.957	6288509	8.36			
449.0 > 98.9	6.356	6.365	-0.009	0.956	1715252		3.67(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.365	6.365	0.0	0.957	6288509	8.36			
449.0 > 98.9	6.356	6.365	-0.009	0.956	1715252		3.67(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.375	6.375	0.0	1.000	14088935	9.87			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.376	6.376	0.0		17721363	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.376	6.376	0.0	1.000	19439546	11.1			
413.0 > 169.0	6.376	6.376	0.0	1.000	6620818		2.94(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.638	6.638	0.0	0.999	4062993	11.1			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.639	6.639	0.0	0.999	6522470	8.63			R
498.9 > 98.9	6.648	6.639	0.009	1.000	2531607		2.58(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.648	6.648	0.0		6991760	9.56			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.658	6.658	0.0		14541305	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.659	6.659	0.0	1.000	15520473	10.2			
463.0 > 218.9	6.659	6.659	0.0	1.000	1913076		8.11(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.903	6.903	0.0		14546422	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.903	6.903	0.0	1.000	13112120	9.33			R
513.0 > 219.0	6.903	6.903	0.0	1.000	1616825		8.11(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.091	7.091	0.0	1.067	6738682	8.48			
598.9 > 99.0	7.091	7.091	0.0	1.067	2447658		2.75(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.091	7.091	0.0	1.067	6738682	8.48			
598.9 > 99.0	7.091	7.091	0.0	1.067	2447658		2.75(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.110	7.110	0.0		9044377	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.111	7.111	0.0	1.000	11384930	9.49			R
563.0 > 268.9	7.111	7.111	0.0	1.000	1605794		7.09(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.289	7.289	0.0		18993623	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.289	7.289	0.0	1.000	18371496	9.77			
613.0 > 168.9	7.289	7.289	0.0	1.000	2408251		7.63(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.450	7.450	0.0	1.022	17572813	8.96			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.462	7.462	0.0		20361835	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.463	7.463	0.0	1.000	21580426	10.4			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.582	7.582	0.0	1.040	14222195	9.40			
712.9 > 169.0	7.592	7.582	0.010	1.041	2538131		5.60(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00084	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

Report Date: 12-Sep-2016 08:31:33 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09104.d

Injection Date: 10-Sep-2016 01:55:00 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

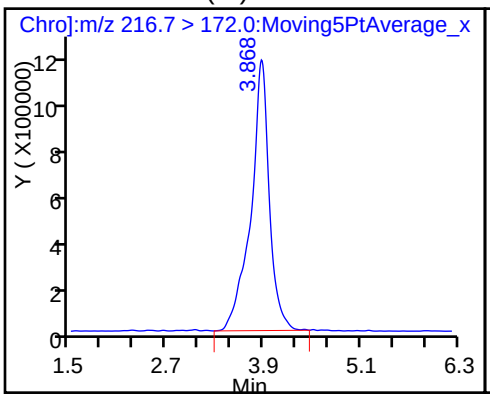
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

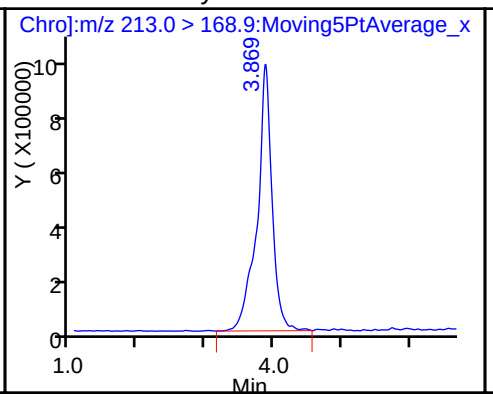
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

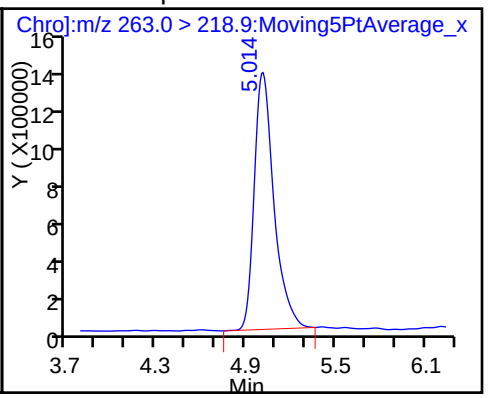
* 1 13C4 PFBA (IS)



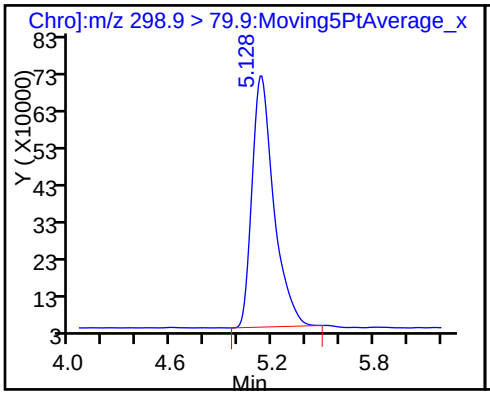
2 Perfluorobutyric acid



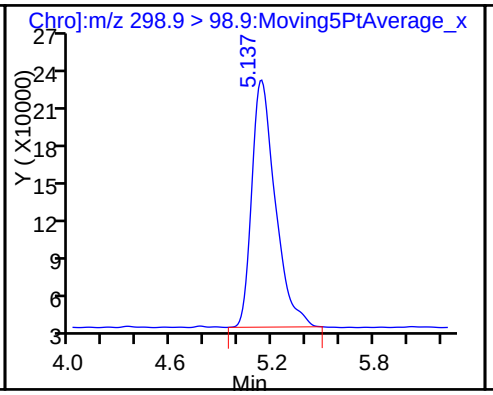
3 Perfluoropentanoic acid



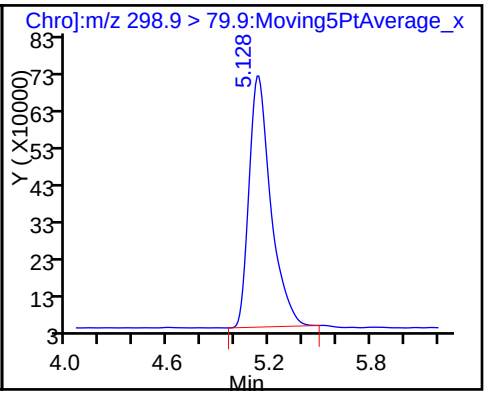
4 Perfluorobutane Sulfonate



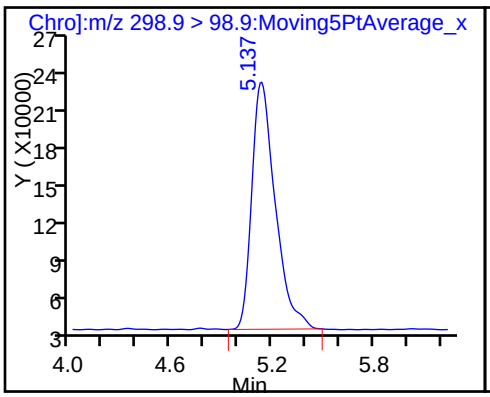
4 Perfluorobutane Sulfonate



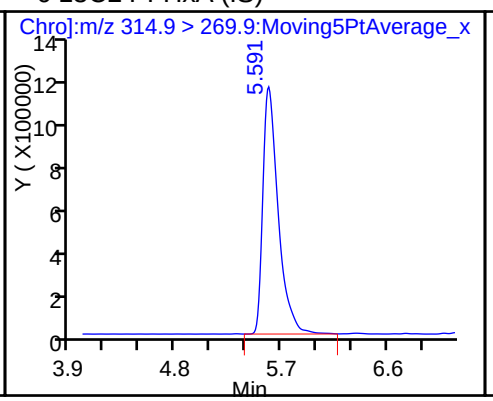
5 Perfluorobutanesulfonic acid



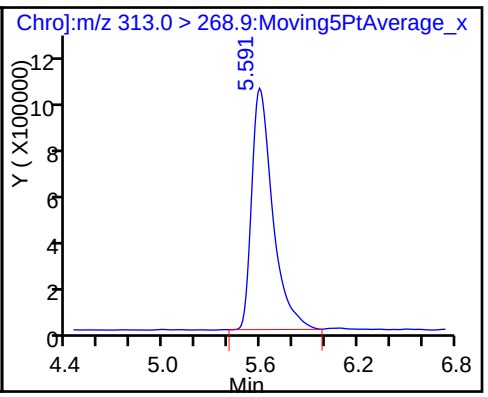
5 Perfluorobutanesulfonic acid



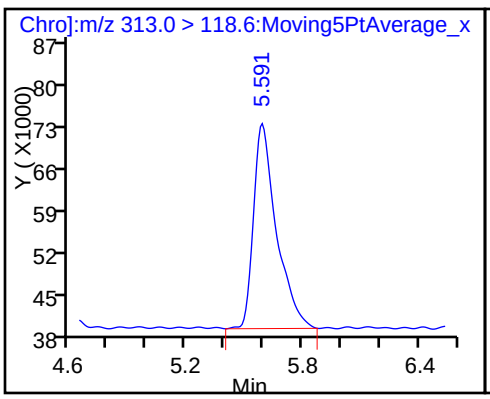
* 6 13C2 PFHxA (IS)



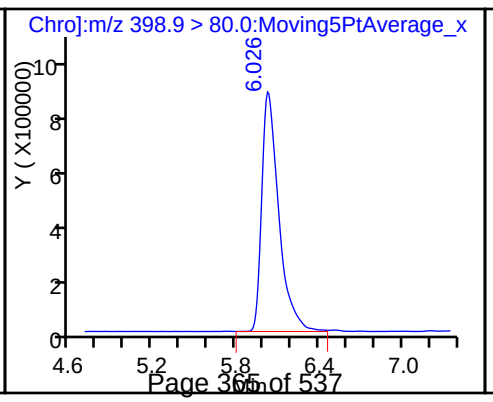
7 Perfluorohexanoic acid



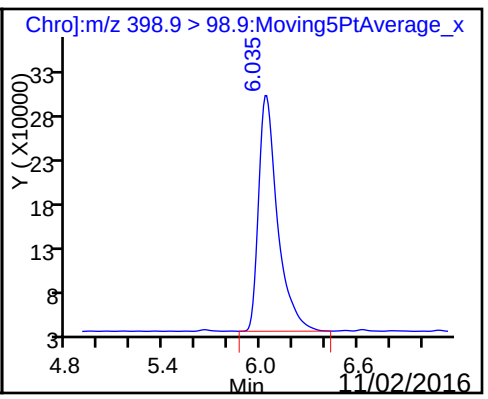
7 Perfluorohexanoic acid



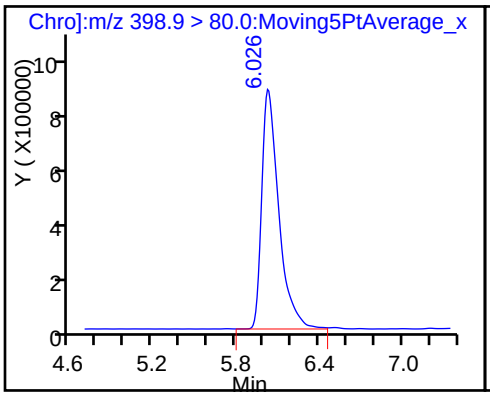
11 Perfluorohexanesulfonic acid



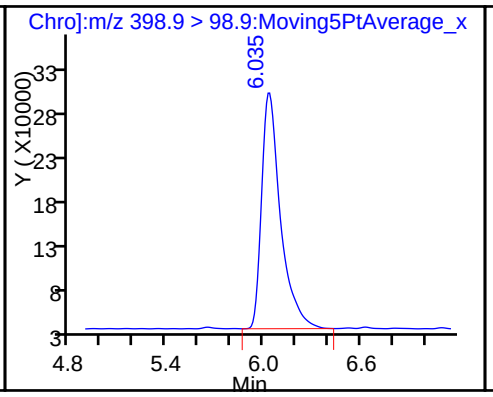
11 Perfluorohexanesulfonic acid



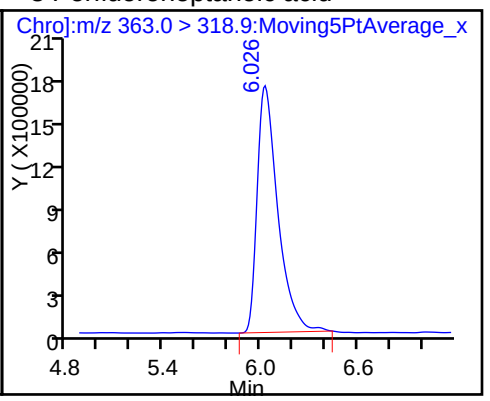
10 Perfluorohexane Sulfonate



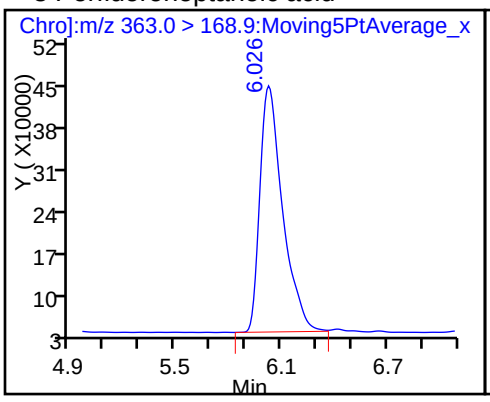
10 Perfluorohexane Sulfonate



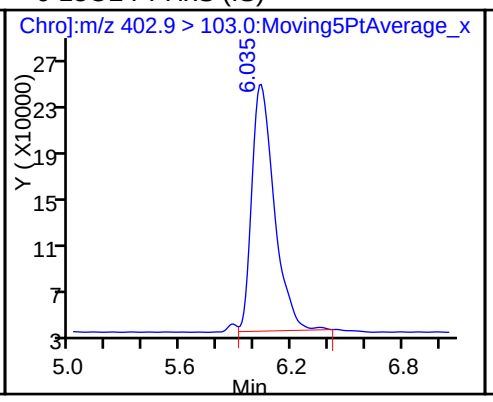
8 Perfluoroheptanoic acid



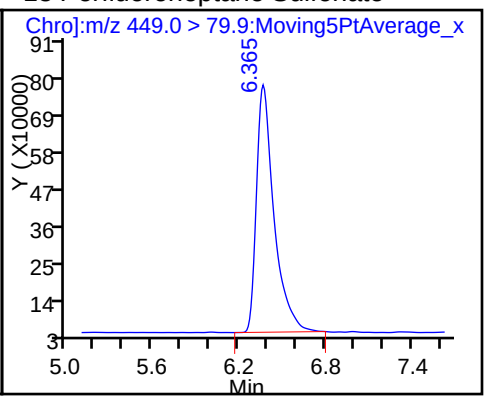
8 Perfluoroheptanoic acid



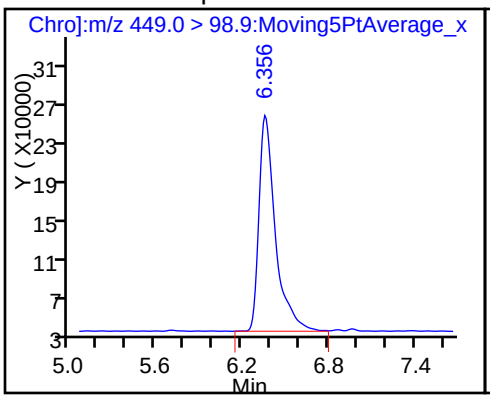
* 9 18O2 PFHxS (IS)



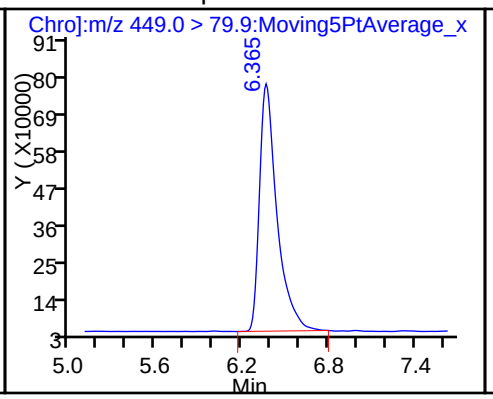
13 Perfluoroheptane Sulfonate



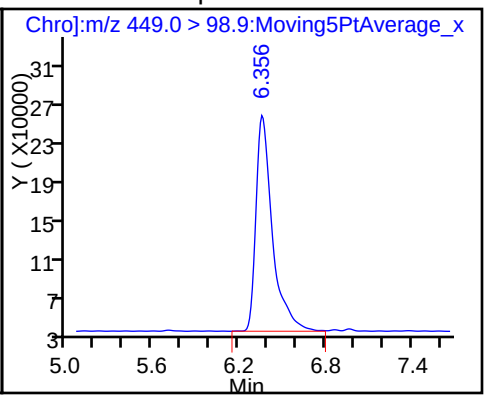
13 Perfluoroheptane Sulfonate



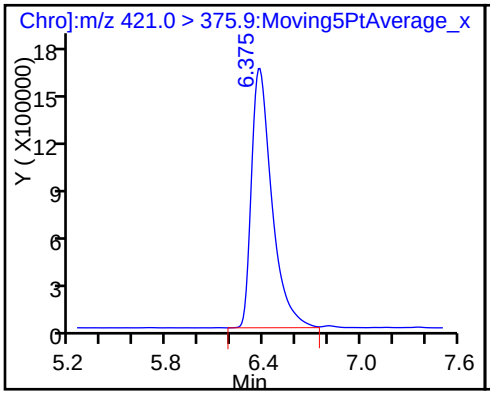
12 Perfluoroheptanesulfonic Acid



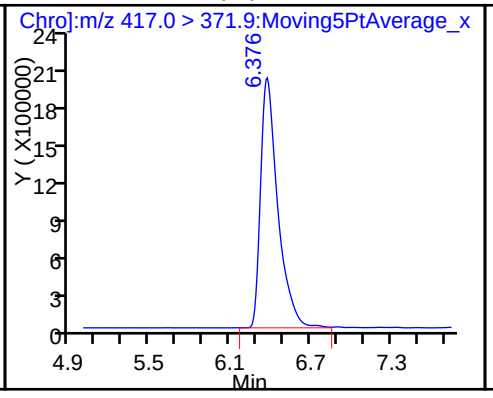
12 Perfluoroheptanesulfonic Acid



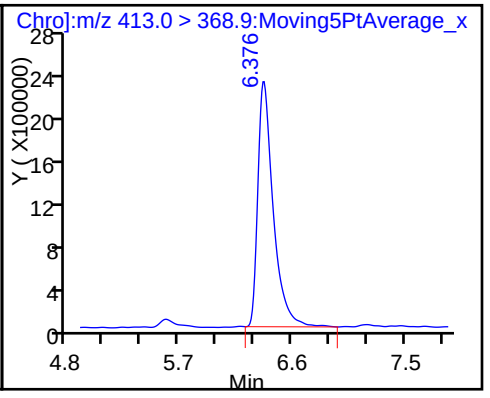
$ 14 13C8 PFOA



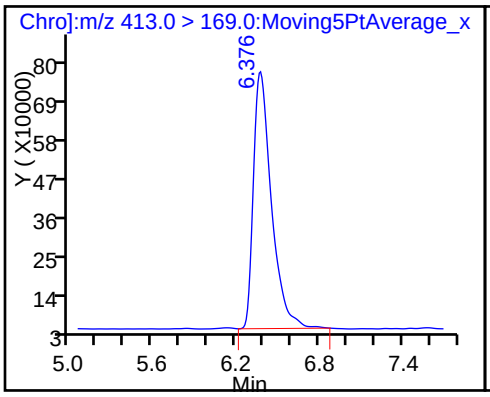
* 15 13C4 PFOA (IS)



16 Perfluorooctanoic acid



16 Perfluorooctanoic acid



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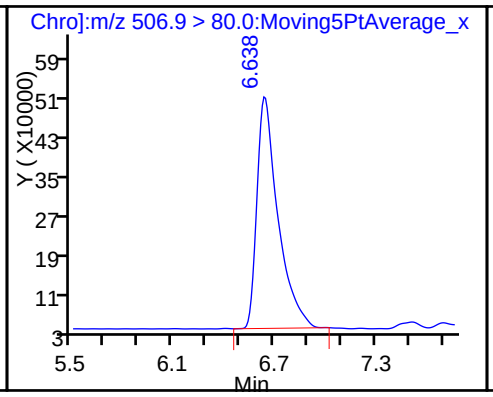
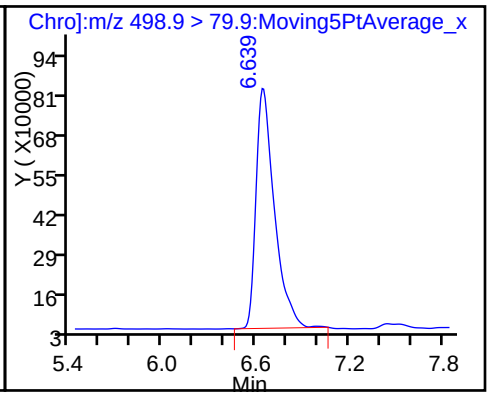
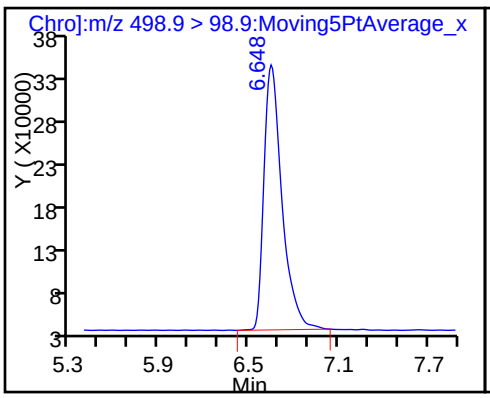


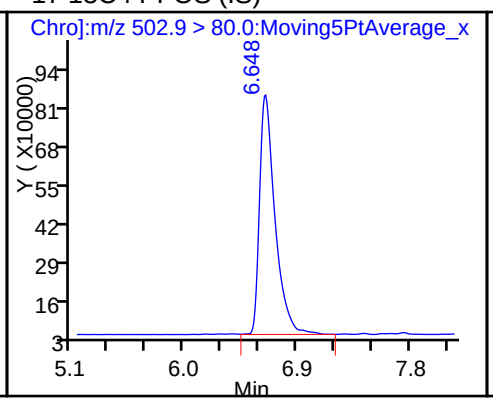
19 Perfluorooctane sulfonic acid



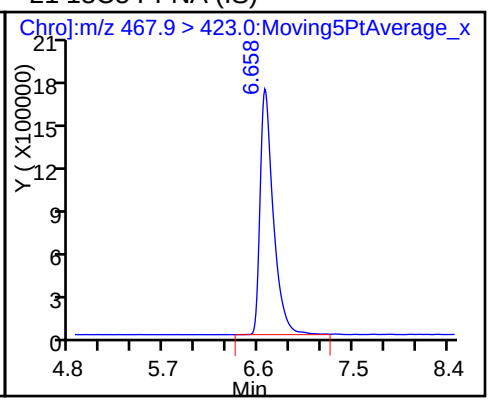
19 Perfluorooctane sulfonic acid



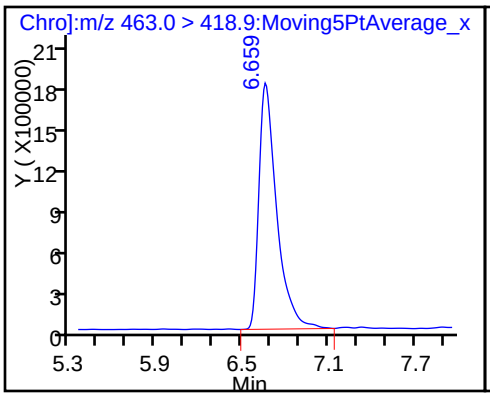
* 17 13C4 PFOS (IS)



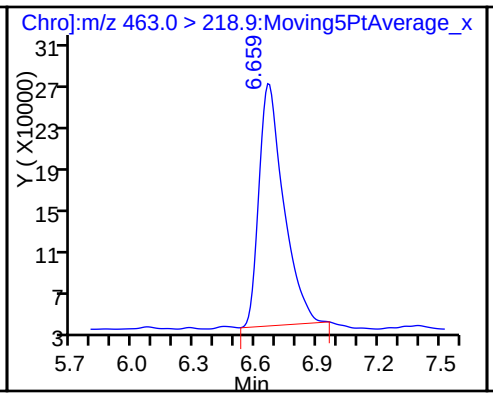
* 21 13C5 PFNA (IS)



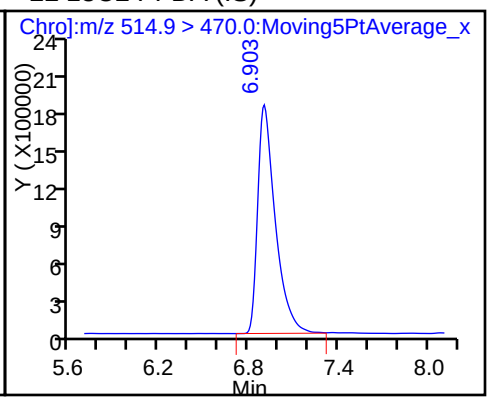
20 Perfluorononanoic acid



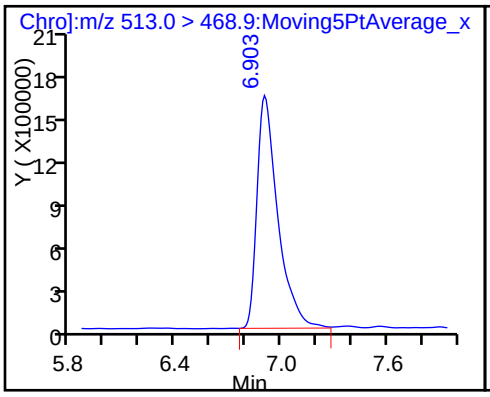
20 Perfluorononanoic acid



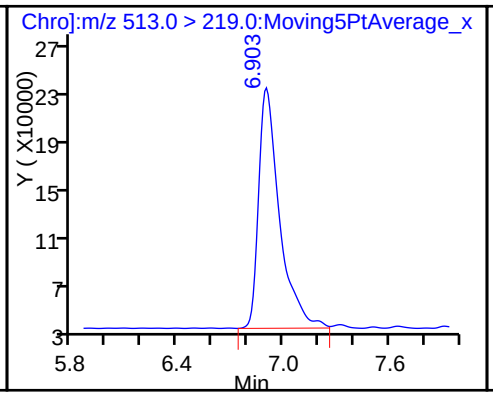
* 22 13C2 PFDA (IS)



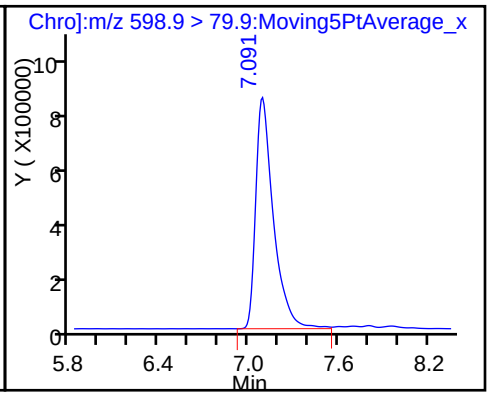
23 Perfluorodecanoic acid



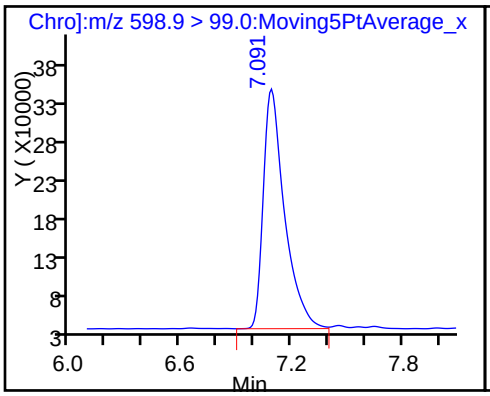
23 Perfluorodecanoic acid



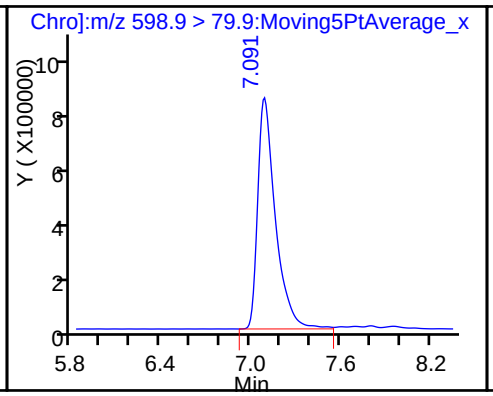
24 Perfluorodecane Sulfonic acid



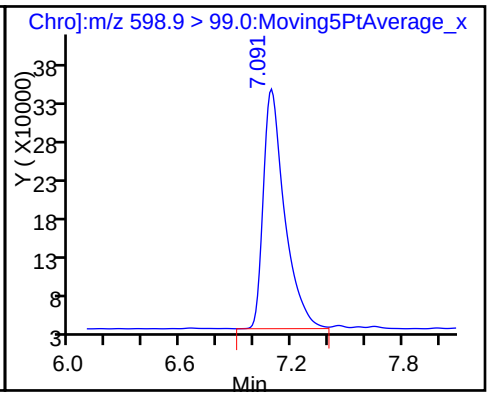
24 Perfluorodecane Sulfonic acid



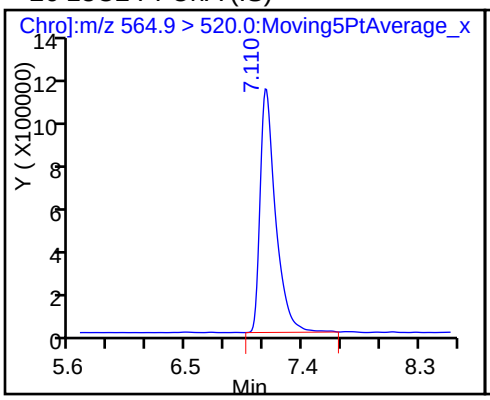
25 Perfluorodecane Sulfonate



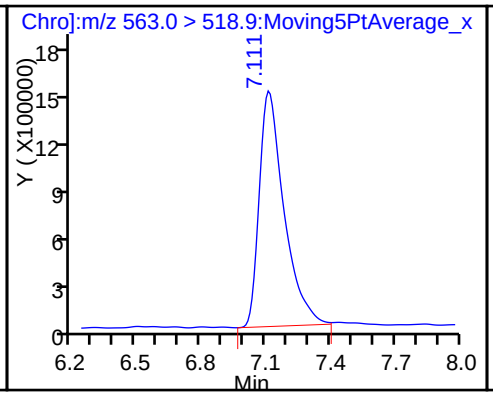
25 Perfluorodecane Sulfonate



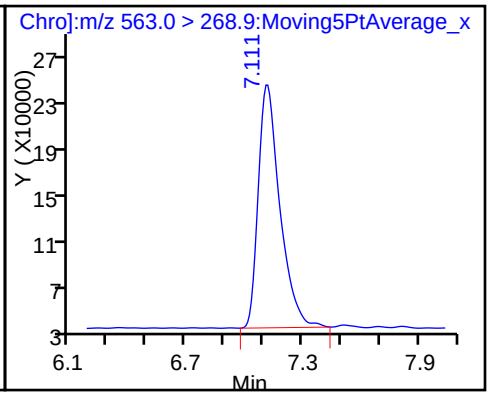
* 26 13C2 PFUnA (IS)



27 Perfluoroundecanoic acid



27 Perfluoroundecanoic acid



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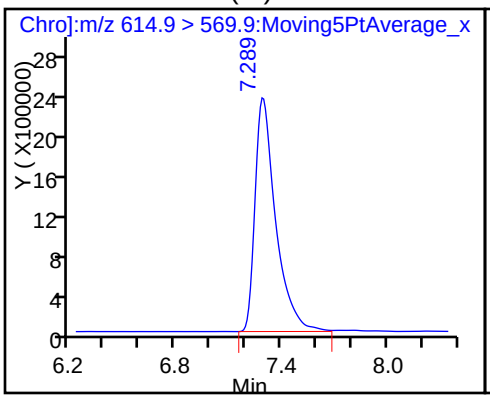
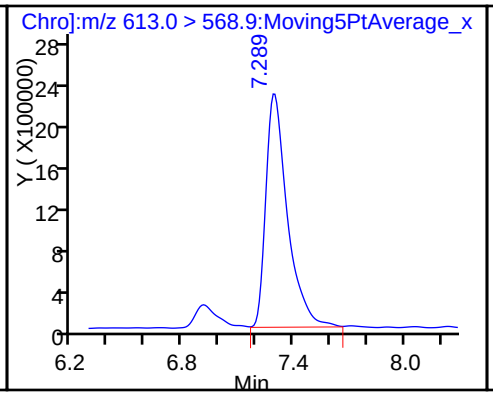
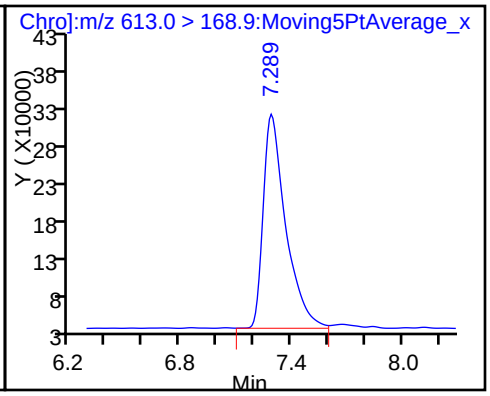


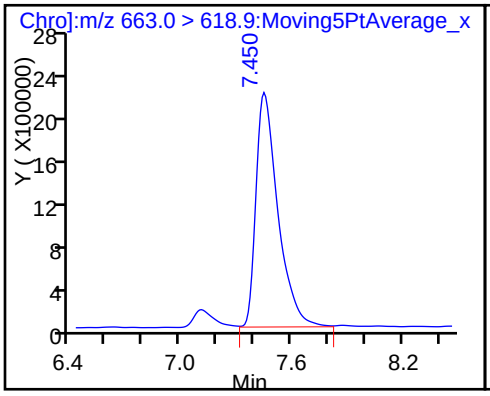
29 Perfluorododecanoic acid



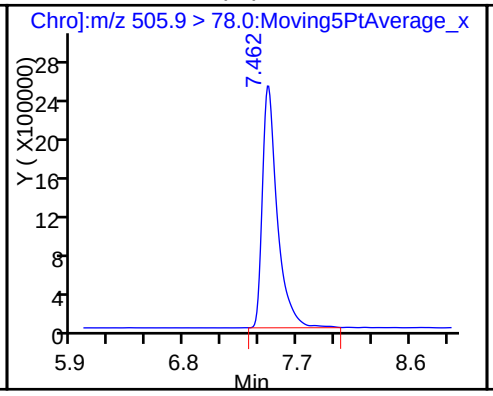
29 Perfluorododecanoic acid



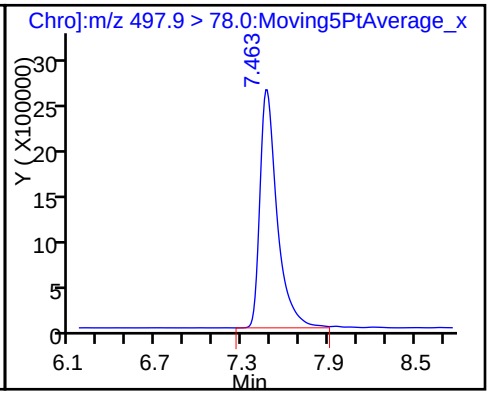
30 Perfluorotridecanoic acid



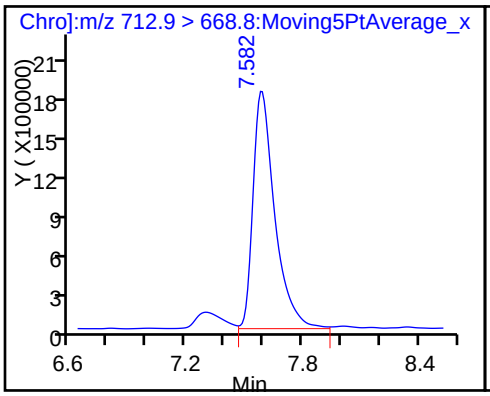
* 31 13C8 FOSA (IS)



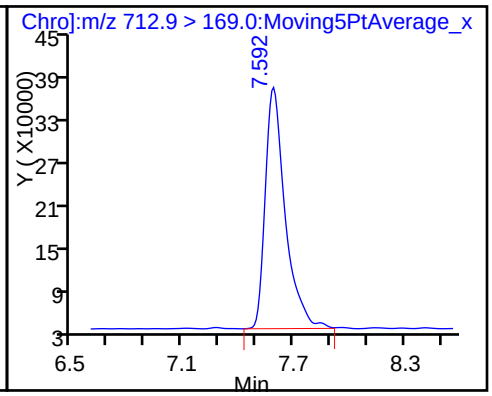
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Lab Sample ID: CCV 280-341622/12 Calibration Date: 09/10/2016 03:45

Instrument ID: LC_LCMS5 Calib Start Date: 09/07/2016 13:06

GC Column: Gemini-NX ID: Calib End Date: 09/07/2016 14:44

Lab File ID: PC516I09113.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin1		0.8382		4.24	5.00	-15.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.030		4.50	5.00	-10.0	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		3.725		4.05	4.43	-8.5	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		3.725		4.05	4.43	-8.5	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8452		4.68	5.00	-6.3	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.7899		4.87	5.00	-2.5	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.827		4.85	4.73	2.7	30.0
Perfluorohexanesulfonic acid	Lin2		3.827		4.85	4.73	2.7	30.0
Perfluoroheptane Sulfonate	Lin2		0.9040		4.17	4.76	-12.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		0.9040		4.17	4.76	-12.3	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.999		5.02	5.00	0.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		0.9131		4.20	4.78	-12.0	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.009		4.82	5.00	-3.6	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9086		4.69	5.00	-6.2	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		0.9298		4.13	4.83	-14.5	30.0
Perfluorodecane Sulfonic acid	Lin2		0.9298		4.13	4.83	-14.5	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.137		4.21	5.00	-15.7	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.8844		4.44	5.00	-11.2	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9220		4.46	5.00	-10.8	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.005		4.94	5.00	-1.3	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7144		4.48	5.00	-10.4	30.0
13C8 PFOA	Lin2		0.8609		5.33	5.00	6.5	30.0
13C8 PFOS	Lin1		0.6406		6.07	4.78	27.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09113.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 10-Sep-2016 03:45:53 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 12-Sep-2016 08:06:40 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK018

First Level Reviewer: fiedlerh Date: 12-Sep-2016 08:01:09

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.821	3.821	0.0		19033308	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.821	3.821	0.0	1.000	7976397	4.24			
3 Perfluoropentanoic acid									
263.0 > 218.9	4.967	4.967	0.0	0.896	5995922	4.50			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.090	5.090	0.0	0.850	3182863	4.05			
298.9 > 98.9	5.099	5.090	0.009	0.852	967805		3.29(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.090	5.090	0.0	0.850	3182863	4.05			
298.9 > 98.9	5.099	5.090	0.009	0.852	967805		3.29(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.544	5.544	0.0		11642952	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.553	5.553	0.0	1.002	4920379	4.68			
313.0 > 118.6	5.553	5.553	0.0	1.002	147614		33.33(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.988	5.988	0.0		1826901	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	5.989	5.989	0.0	0.945	8075156	4.87			
363.0 > 168.9	5.989	5.989	0.0	0.945	1999075		4.04(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	5.998	5.998	0.0	1.002	3492372	4.85			R
398.9 > 98.9	5.988	5.998	-0.010	1.000	1026708		3.40(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	5.998	5.998	0.0	1.002	3492372	4.85			
398.9 > 98.9	5.988	5.998	-0.010	1.000	1026708		3.40(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.328	6.328	0.0	0.957	3135634	4.17			
449.0 > 98.9	6.337	6.328	0.009	0.959	904652		3.47(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.328	6.328	0.0	0.957	3135634	4.17			
449.0 > 98.9	6.337	6.328	0.009	0.959	904652		3.47(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.328	6.328	0.0	0.998	8801457	5.33			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.338	6.338	0.0		20447288	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.338	6.338	0.0	1.000	10210602	5.02			
413.0 > 169.0	6.338	6.338	0.0	1.000	3560811		2.87(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.610	6.610	0.0		6966707	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.610	6.610	0.0	1.000	3177330	4.20			
498.9 > 98.9	6.610	6.610	0.0	1.000	1530476		2.08(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.619	6.619	0.0	1.001	2231360	6.07			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.630	6.630	0.0		16471444	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.630	6.630	0.0	1.000	8308481	4.82			
463.0 > 218.9	6.621	6.630	-0.009	0.999	1013517		8.20(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.874	6.874	0.0		16106123	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.874	6.874	0.0	1.000	7317059	4.69			R
513.0 > 219.0	6.874	6.874	0.0	1.000	738444		9.91(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.063	7.063	0.0	1.068	3269432	4.13			
598.9 > 99.0	7.053	7.063	-0.010	1.067	1195428		2.73(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.063	7.063	0.0	1.068	3269432	4.13			
598.9 > 99.0	7.053	7.063	-0.010	1.067	1195428		2.73(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.082	7.082	0.0		10249471	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.082	7.082	0.0	1.000	5826934	4.21			R
563.0 > 268.9	7.073	7.082	-0.009	0.999	776768		7.50(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.261	7.261	0.0		20925617	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.261	7.261	0.0	1.000	9253246	4.44			
613.0 > 168.9	7.261	7.261	0.0	1.000	1174529		7.88(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.422	7.422	0.0	1.022	9647119	4.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.444	7.444	0.0		21673677	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.444	7.444	0.0	1.000	10889131	4.94			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.554	7.554	0.0	1.040	7474778	4.48			
712.9 > 169.0	7.554	7.554	0.0	1.040	1470726		5.08(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00084	Amount Added:	10.00	Units: uL

Report Date: 12-Sep-2016 08:06:42 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09113.d

Injection Date: 10-Sep-2016 03:45:53 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

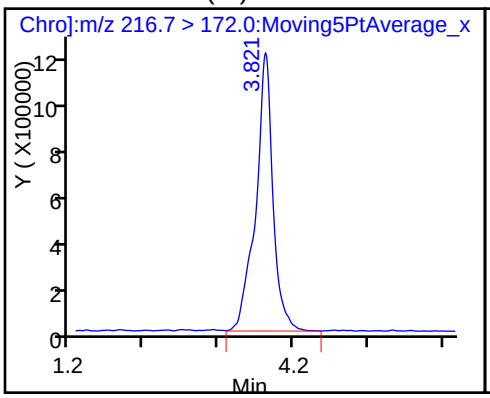
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 12

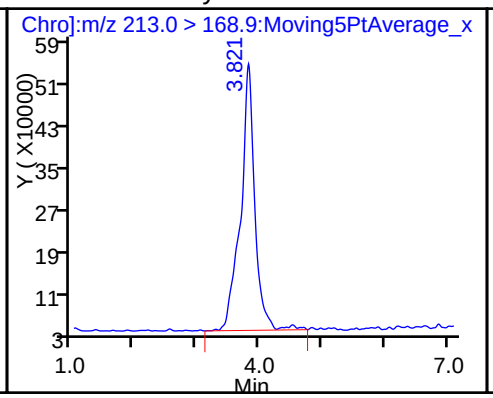
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

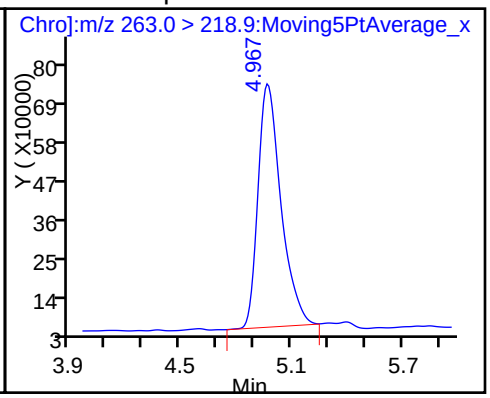
* 1 13C4 PFBA (IS)



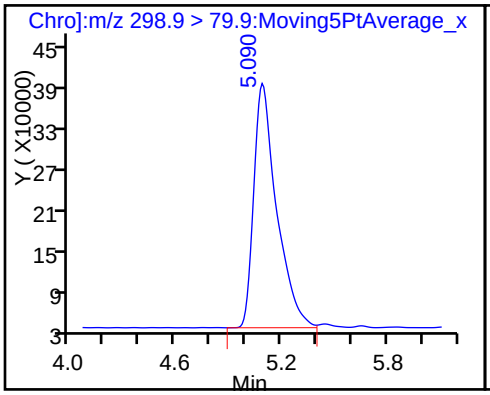
2 Perfluorobutyric acid



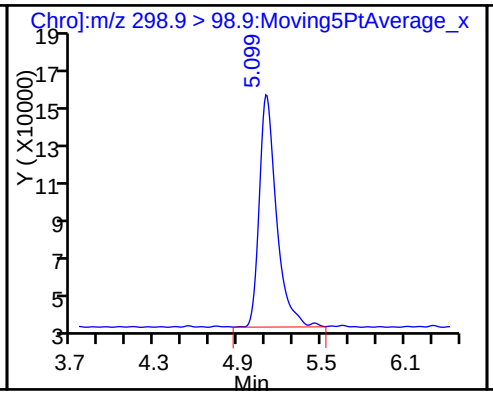
3 Perfluoropentanoic acid



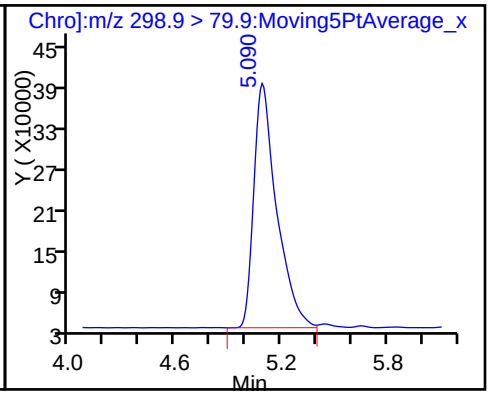
4 Perfluorobutane Sulfonate



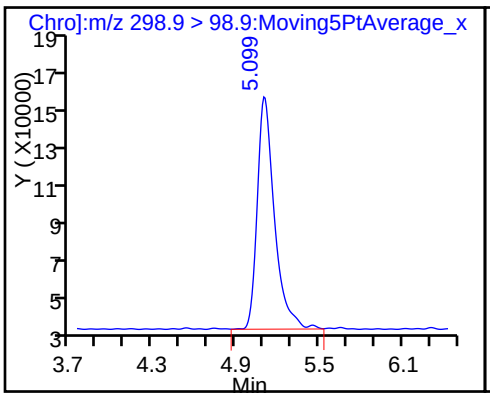
4 Perfluorobutane Sulfonate



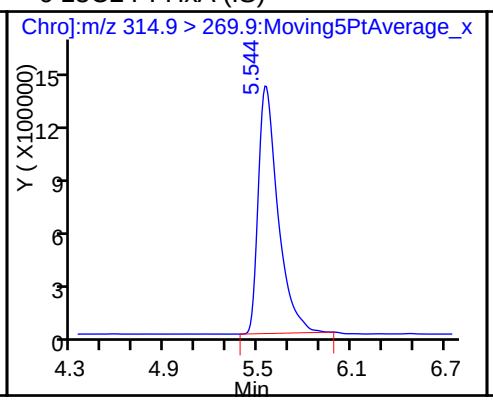
5 Perfluorobutanesulfonic acid



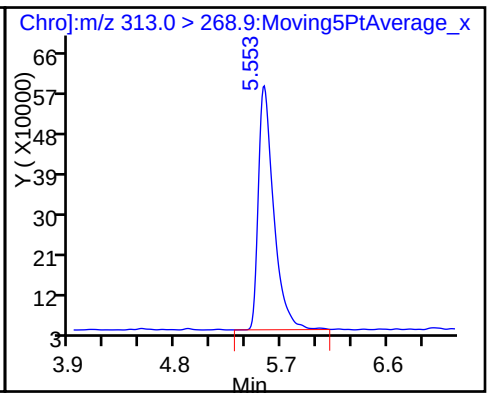
5 Perfluorobutanesulfonic acid



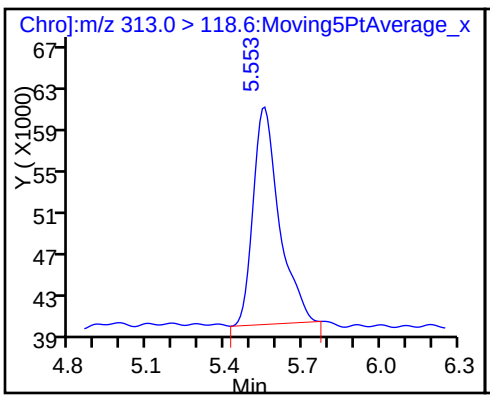
* 6 13C2 PFHxA (IS)



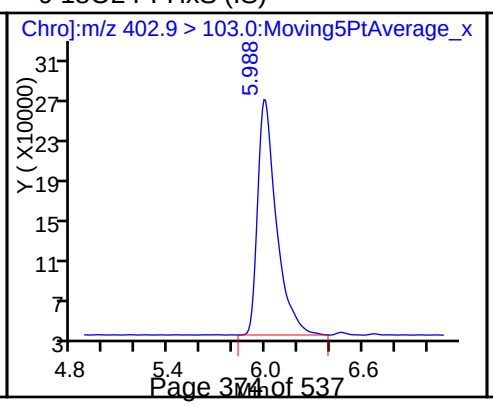
7 Perfluorohexanoic acid



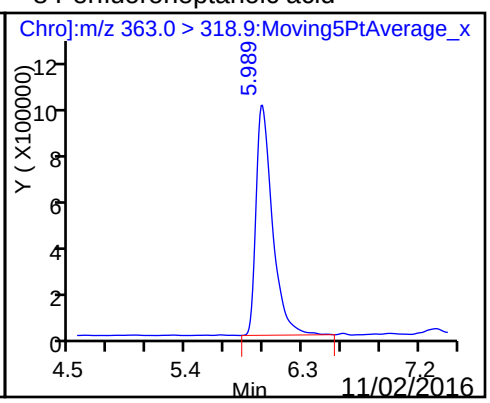
7 Perfluorohexanoic acid



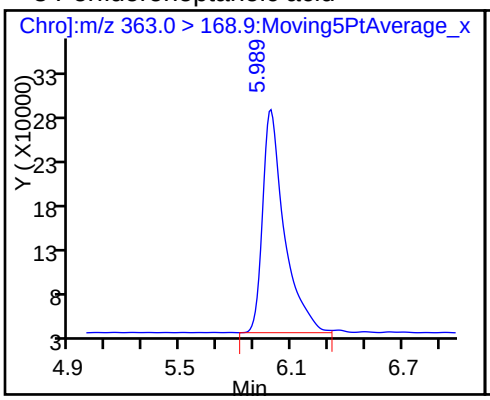
* 9 18O2 PFHxS (IS)



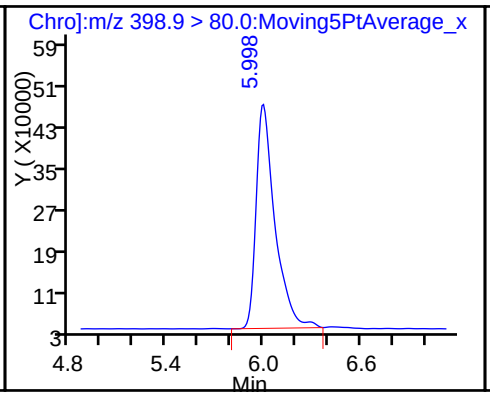
8 Perfluoroheptanoic acid



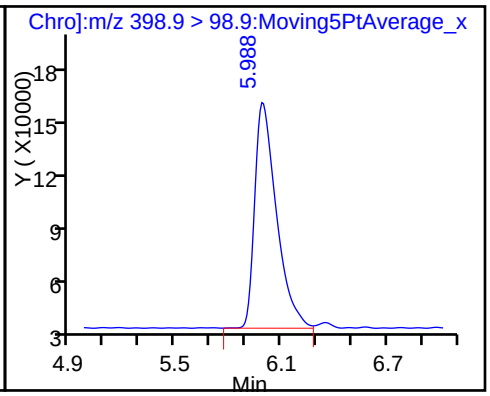
8 Perfluoroheptanoic acid



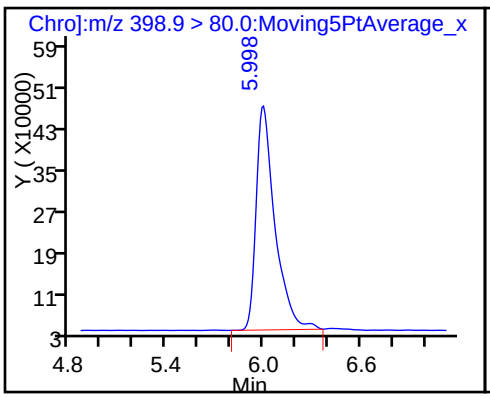
10 Perfluorohexane Sulfonate



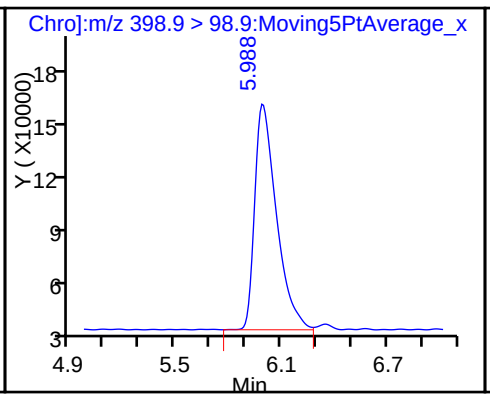
10 Perfluorohexane Sulfonate



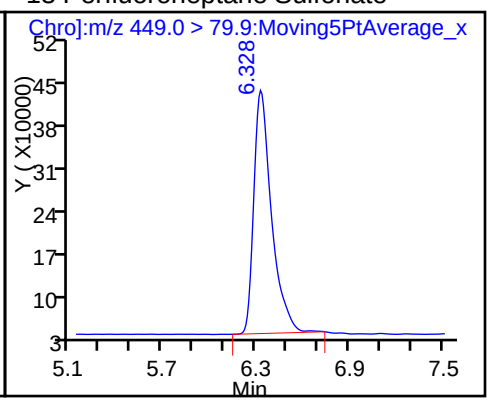
11 Perfluorohexanesulfonic acid



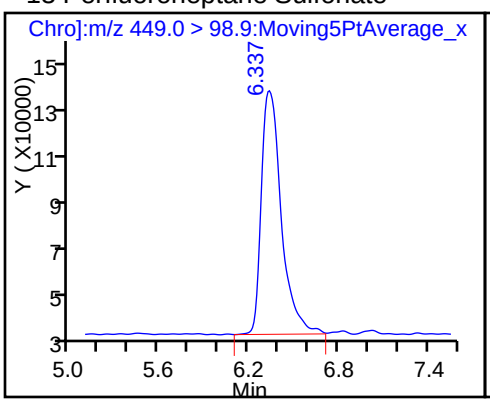
11 Perfluorohexanesulfonic acid



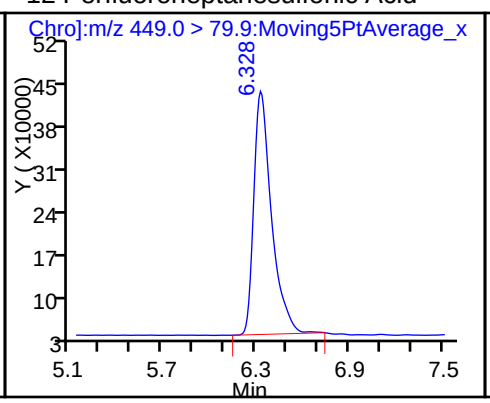
13 Perfluoroheptane Sulfonate



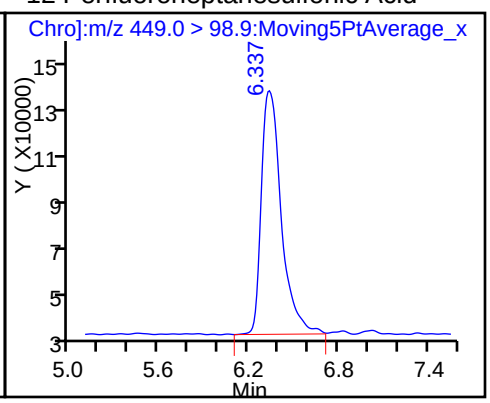
13 Perfluoroheptane Sulfonate



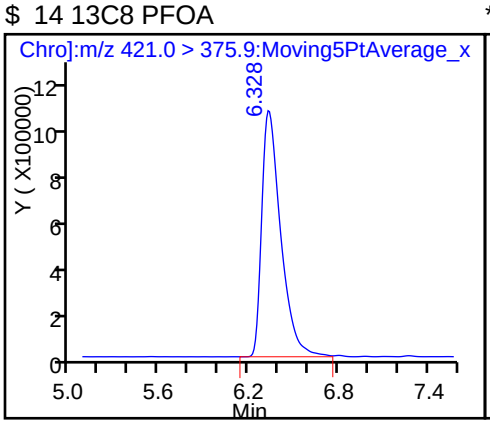
12 Perfluoroheptanesulfonic Acid



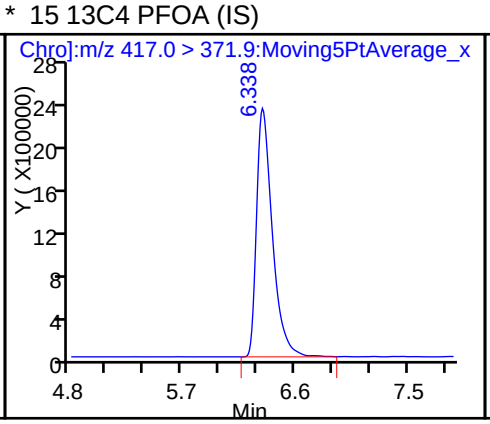
12 Perfluoroheptanesulfonic Acid



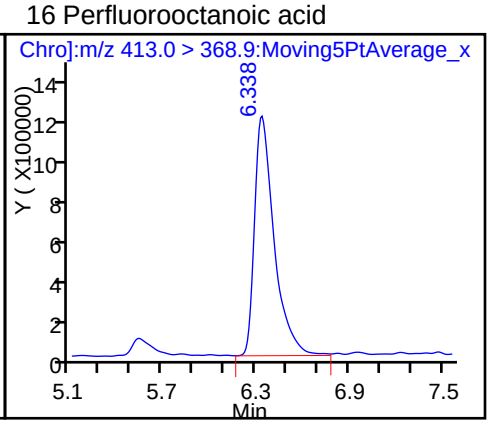
$ 14 13C8 PFOA



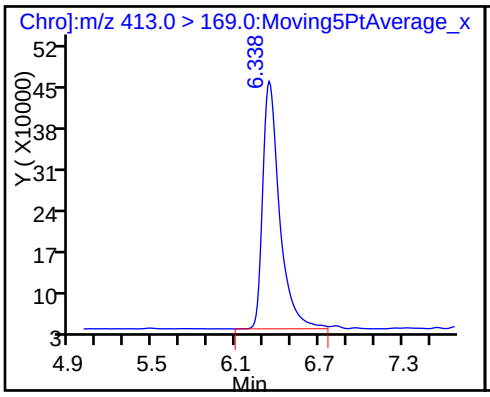
* 15 13C4 PFOA (IS)



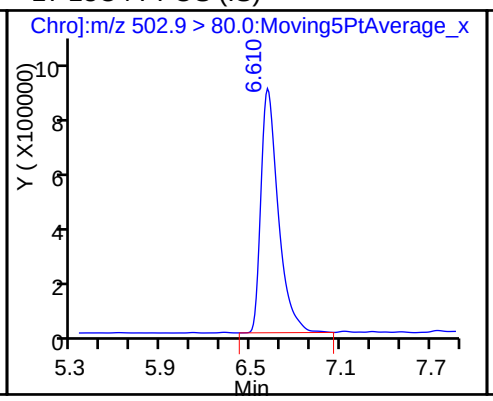
16 Perfluorooctanoic acid



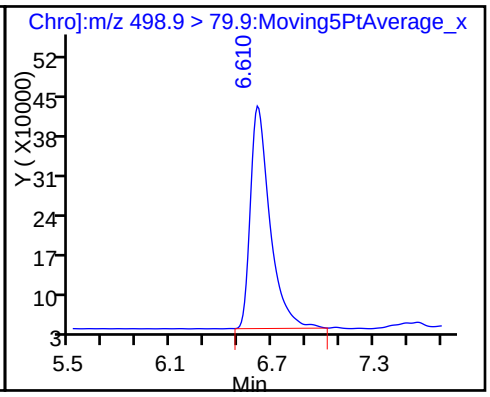
16 Perfluorooctanoic acid



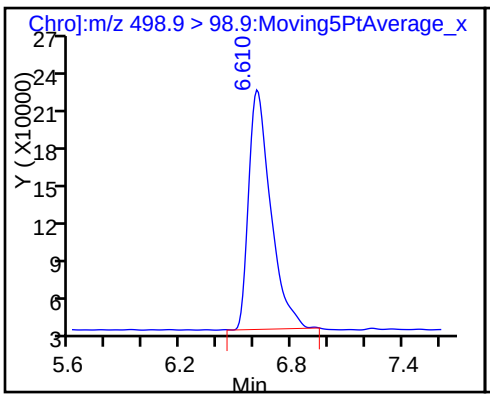
* 17 13C4 PFOS (IS)



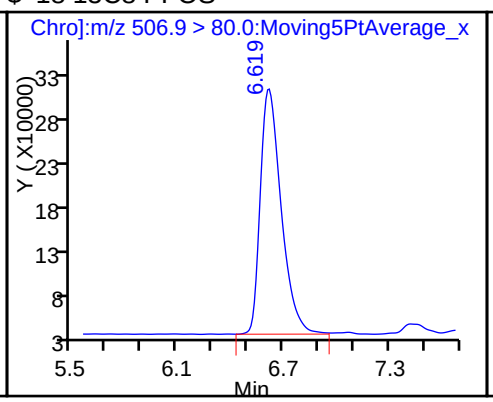
19 Perfluorooctane sulfonic acid



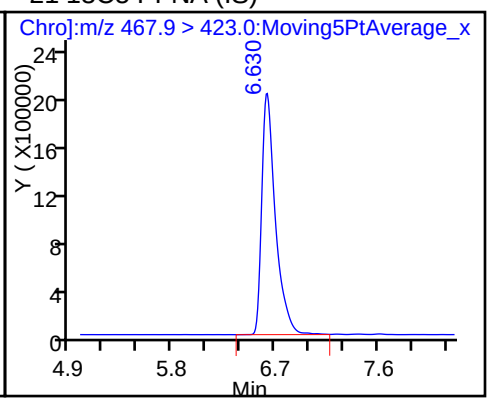
19 Perfluorooctane sulfonic acid



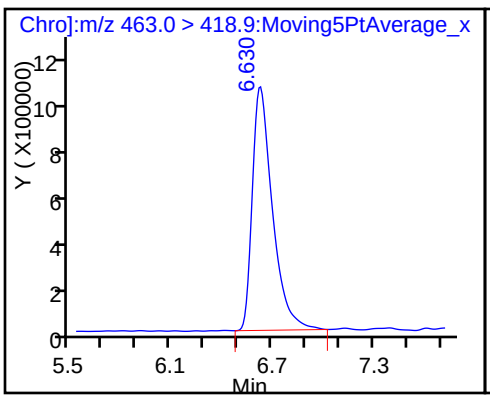
$ 18 13C8 PFOS



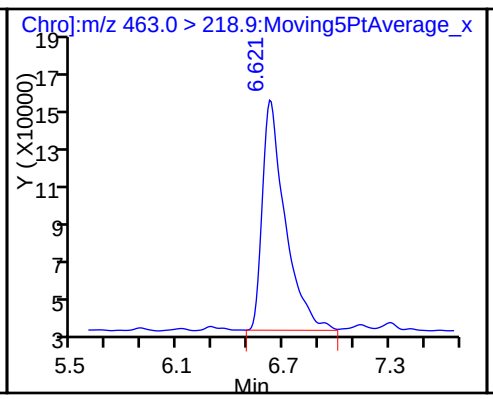
* 21 13C5 PFNA (IS)



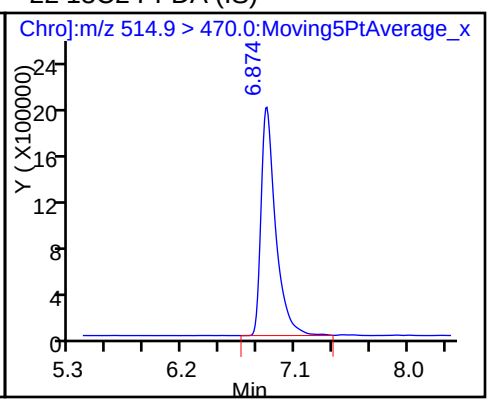
20 Perfluorononanoic acid



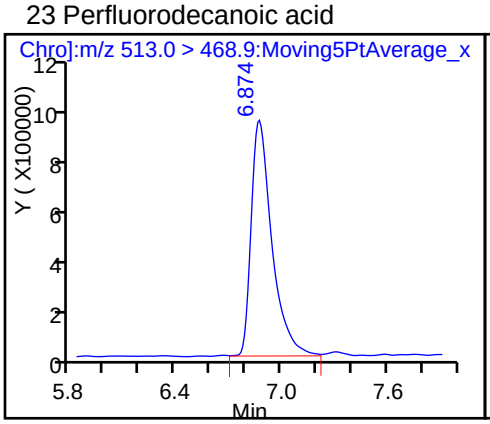
20 Perfluorononanoic acid



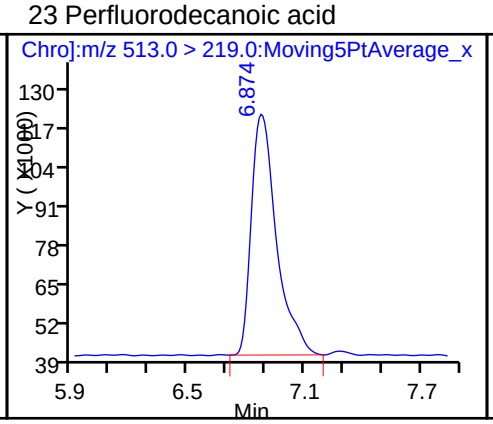
* 22 13C2 PFDA (IS)



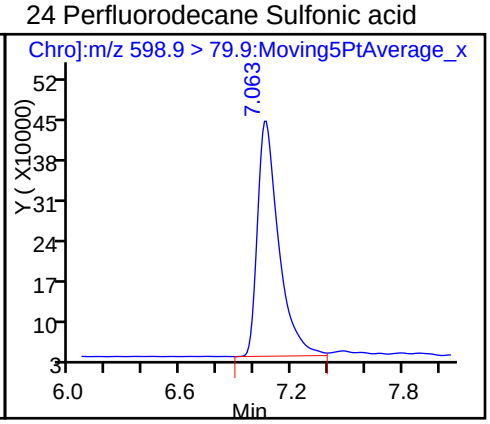
23 Perfluorodecanoic acid



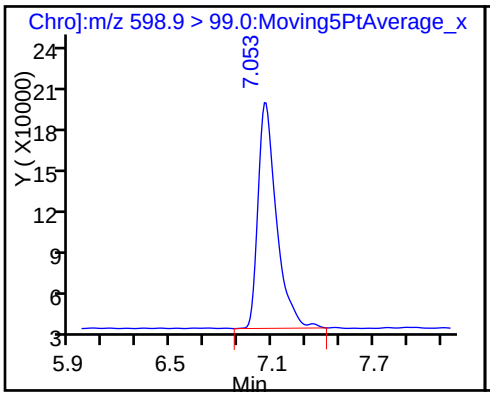
23 Perfluorodecanoic acid



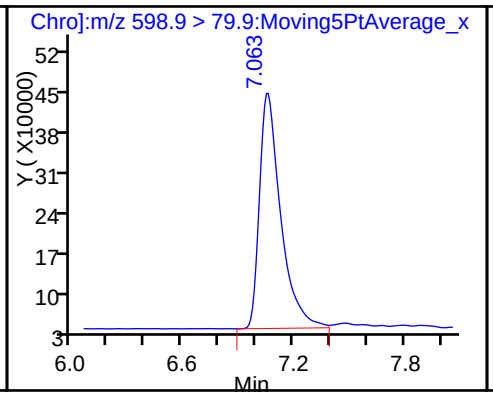
24 Perfluorodecane Sulfonic acid



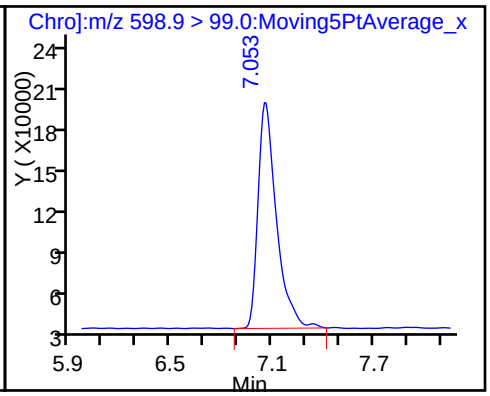
24 Perfluorodecane Sulfonic acid



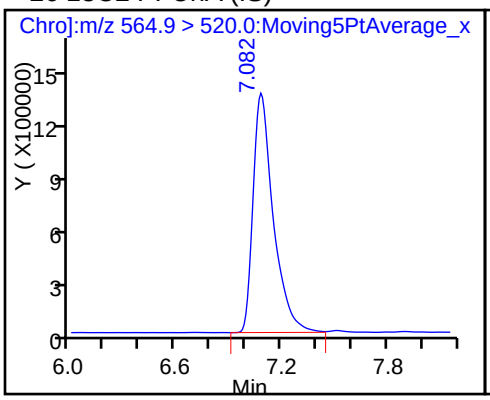
25 Perfluorodecane Sulfonate



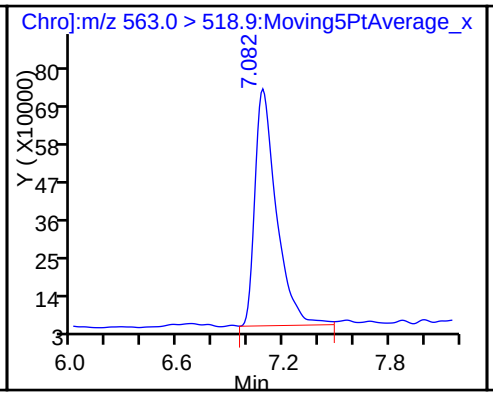
25 Perfluorodecane Sulfonate



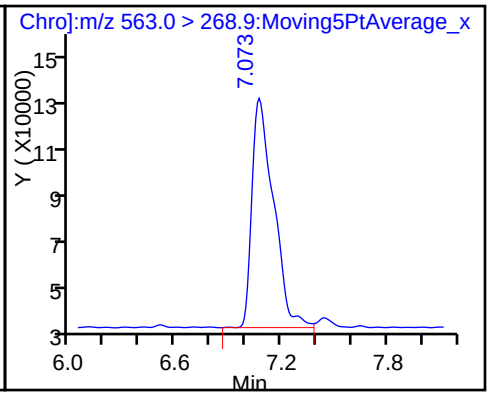
* 26 13C2 PFUnA (IS)



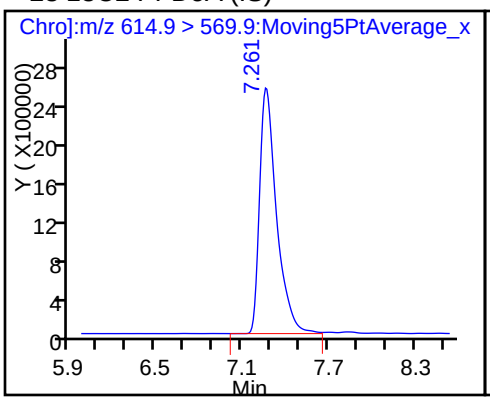
27 Perfluoroundecanoic acid



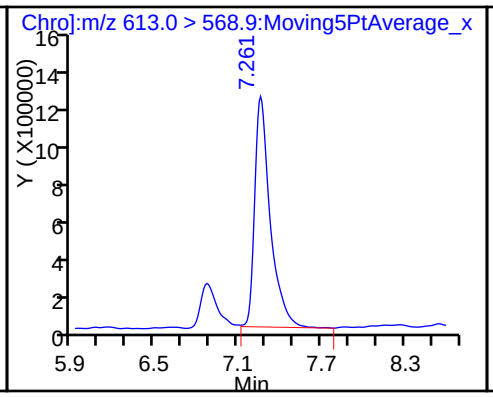
27 Perfluoroundecanoic acid



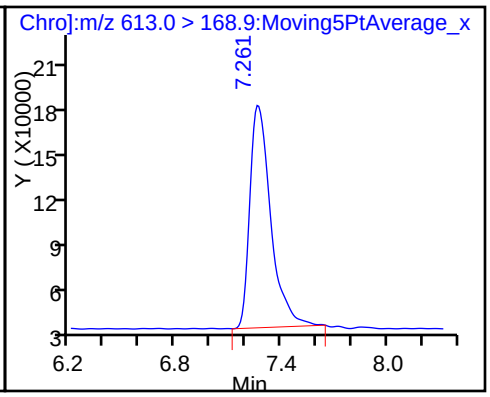
* 28 13C2 PFDoA (IS)



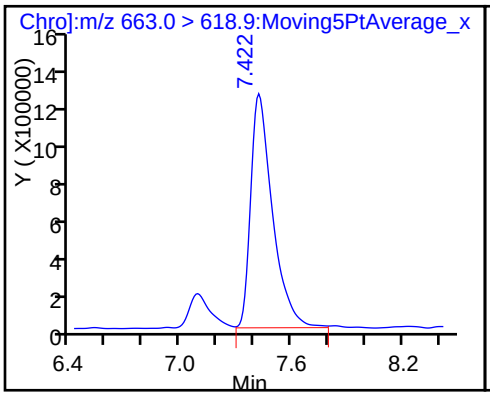
29 Perfluorododecanoic acid



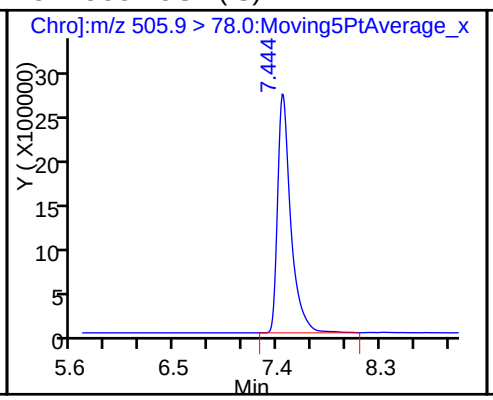
29 Perfluorododecanoic acid



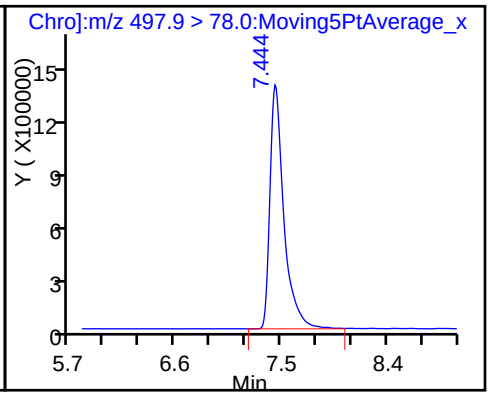
30 Perfluorotridecanoic acid



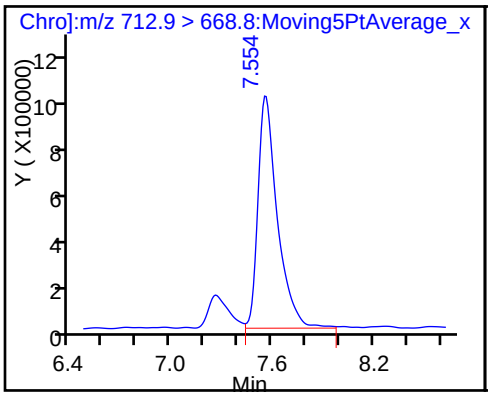
* 31 13C8 FOSA (IS)



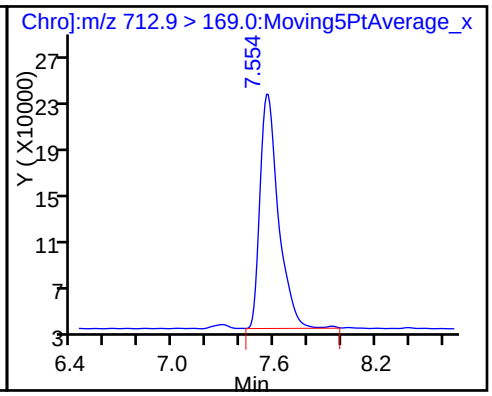
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-339949/1-A

Matrix: Solid | Lab File ID: PC516I02059.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.05(g) | Date Analyzed: 09/02/2016 22:11

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.14	U	0.80	0.14
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.12	U	0.80	0.12
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.28	U	0.80	0.28
375-95-1	Perfluorononanoic acid (PFNA)	0.22	U	0.80	0.22
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.14	U	0.80	0.14
335-67-1	Perfluorooctanoic acid (PFOA)	0.23	U	0.80	0.23

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	122		57-153
STL01054	13C8 PFOS	103		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02059.d
Lims ID: MB 280-339949/1-A
Client ID:
Sample Type: MB
Inject. Date: 02-Sep-2016 22:11:55 ALS Bottle#: 0 Worklist Smp#: 47
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-339949/1-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:33:54 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:58:12

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
2 Perfluorobutyric acid									
213.0 > 168.9		4.030				ND			
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.067	4.029	0.038		15474350	10.0			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.128				ND			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.241				ND			
298.9 > 98.9		5.241							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.241				ND			
298.9 > 98.9		5.241							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.743	5.705	0.038		10890670	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.705				ND			
313.0 > 118.6		5.705							
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.140				ND			
398.9 > 98.9		6.140							
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.140				ND			
398.9 > 98.9		6.140							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.140				ND			
363.0 > 168.9		6.140							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.168	6.149	0.019		1600134	9.46			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.479				ND			
449.0 > 98.9		6.479							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.479				ND			
449.0 > 98.9		6.479							
$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.489	0.019	1.001	13756387	12.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.489	0.010		16758877	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.489				ND			
413.0 > 169.0		6.489							
$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.752	0.019	1.000	3195679	9.54			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.752				ND			
498.9 > 98.9		6.752							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.771	6.752	0.019		5570191	9.56			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.772	0.019		13408538	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.772				ND			
463.0 > 218.9		6.772							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.016	0.010		12567482	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.007				ND			
513.0 > 219.0		7.007							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.195				ND			
598.9 > 99.0		7.195							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.195				ND			
598.9 > 99.0		7.195							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.215	0.009		7487816	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.215				ND			
563.0 > 268.9		7.215							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.412	7.393	0.019		16269602	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.394				ND			
613.0 > 168.9		7.394							
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.567	7.567	0.0		18499369	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.568				ND			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.545				ND			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.668				ND			
712.9 > 169.0		7.668							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Report Date: 06-Sep-2016 08:34:00 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02059.d

Injection Date: 02-Sep-2016 22:11:55 Instrument ID: LC_LCMS5

Lims ID: MB 280-339949/1-A

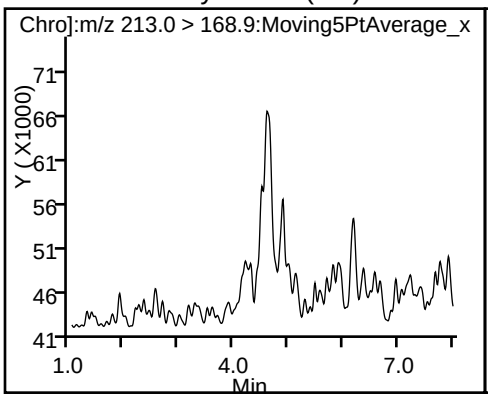
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 47

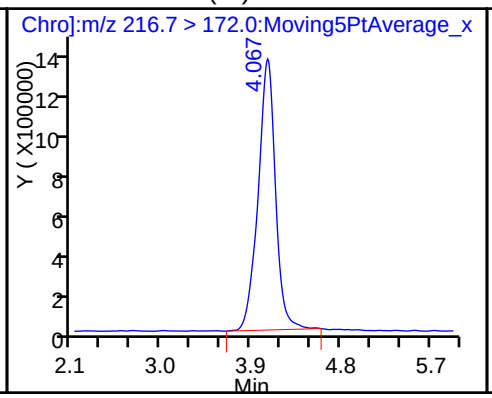
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

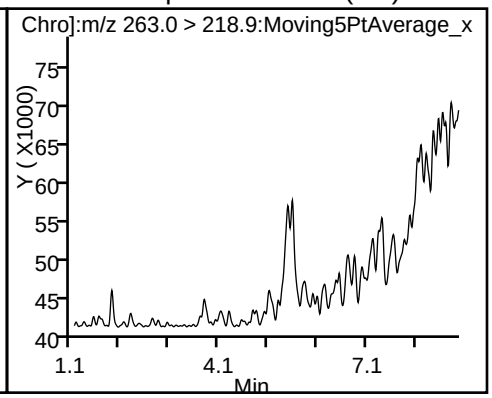
2 Perfluorobutyric acid (ND)



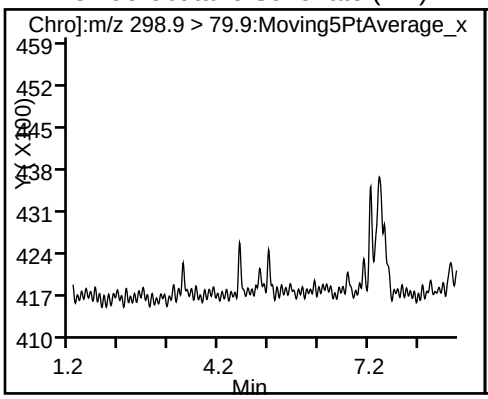
* 1 13C4 PFBA (IS)



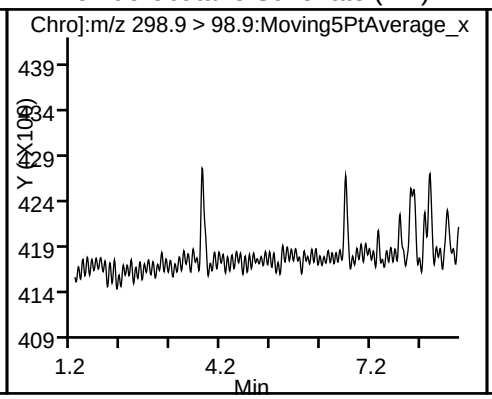
3 Perfluoropentanoic acid (ND)



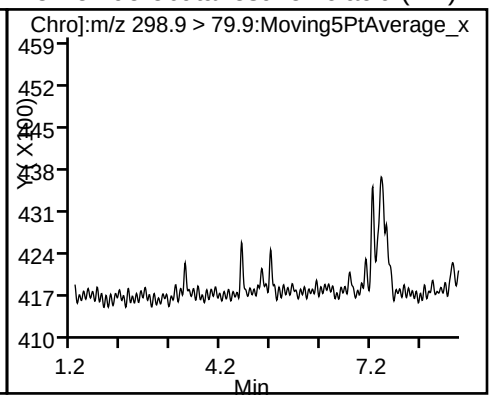
4 Perfluorobutane Sulfonate (ND)



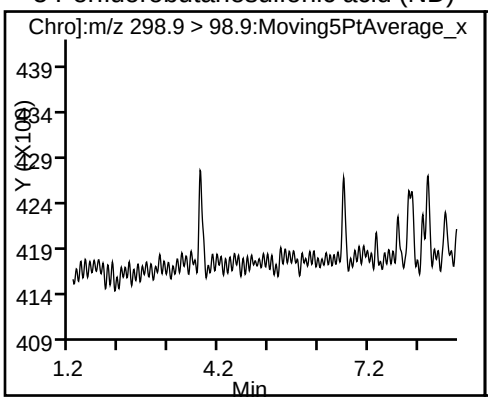
4 Perfluorobutane Sulfonate (ND)



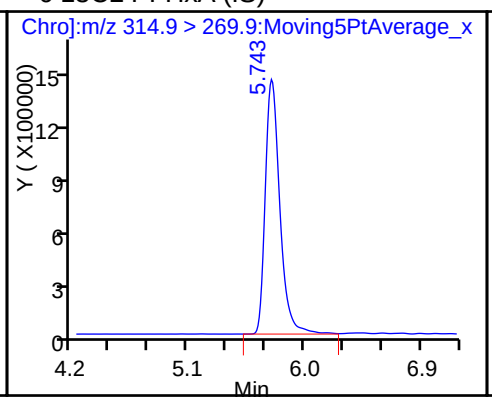
5 Perfluorobutanesulfonic acid (ND)



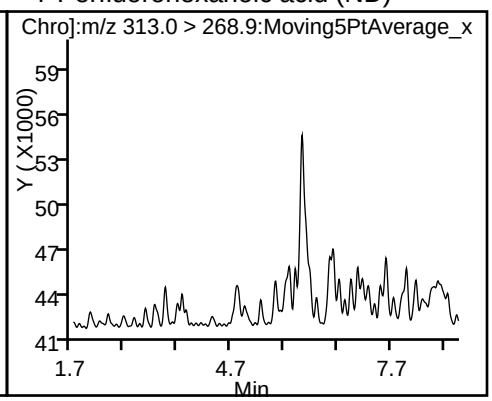
5 Perfluorobutanesulfonic acid (ND)



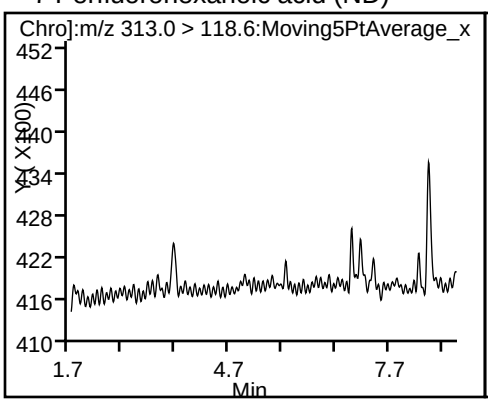
* 6 13C2 PFHxA (IS)



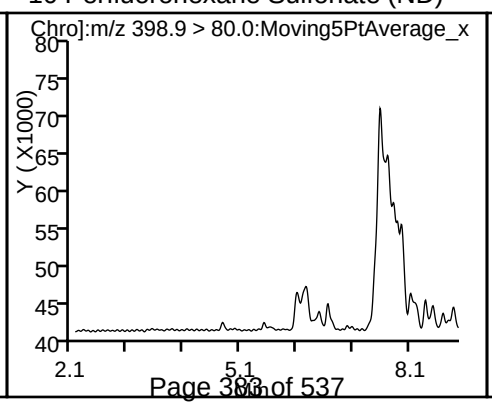
7 Perfluorohexanoic acid (ND)



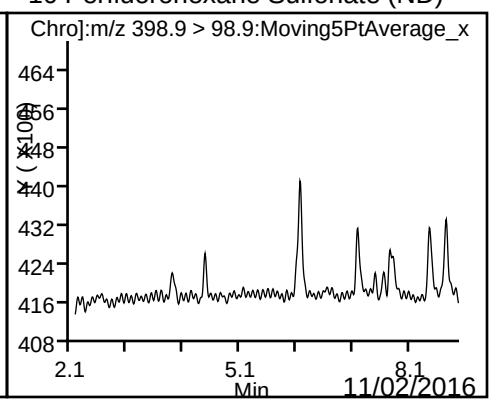
7 Perfluorohexanoic acid (ND)



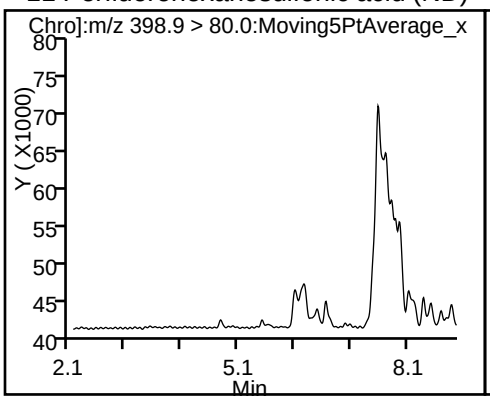
10 Perfluorohexane Sulfonate (ND)



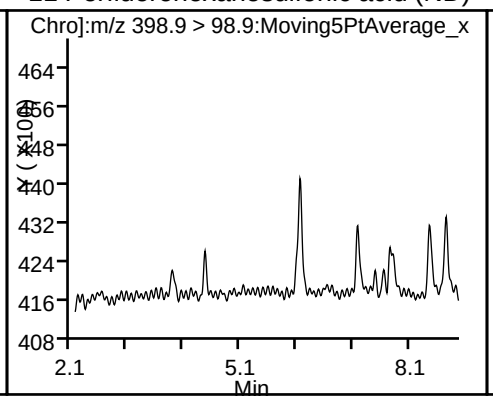
10 Perfluorohexane Sulfonate (ND)



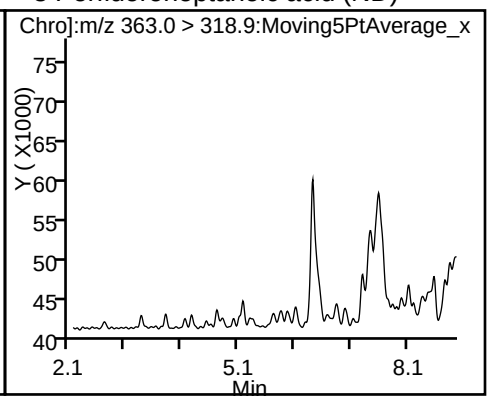
11 Perfluorohexanesulfonic acid (ND)



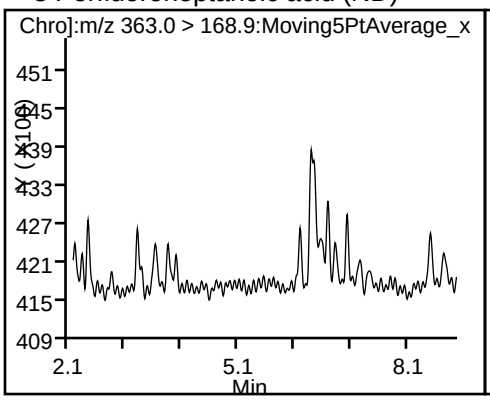
11 Perfluorohexanesulfonic acid (ND)



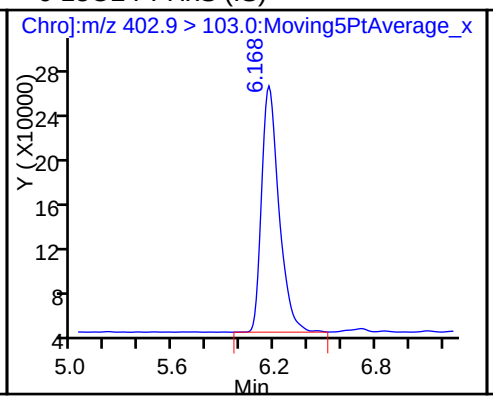
8 Perfluoroheptanoic acid (ND)



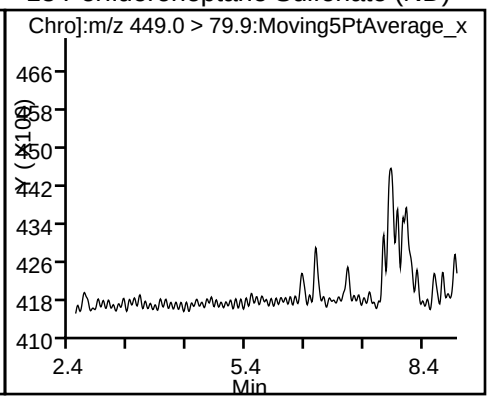
8 Perfluoroheptanoic acid (ND)



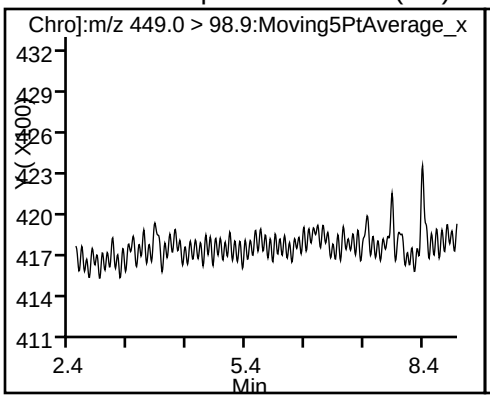
* 9 18O2 PFHxS (IS)



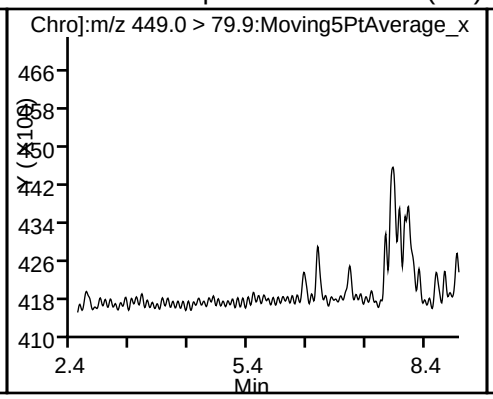
13 Perfluoroheptane Sulfonate (ND)



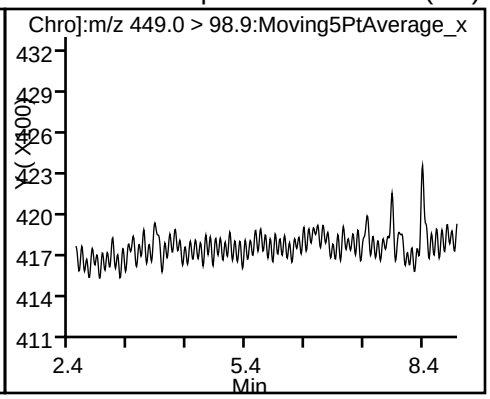
13 Perfluoroheptane Sulfonate (ND)



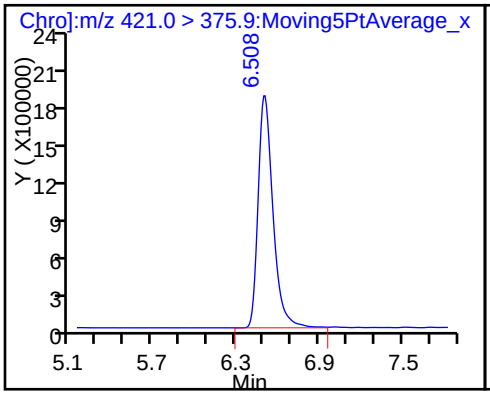
12 Perfluoroheptanesulfonic Acid (ND)



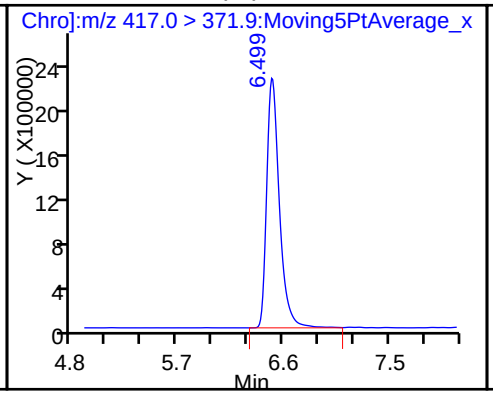
12 Perfluoroheptanesulfonic Acid (ND)



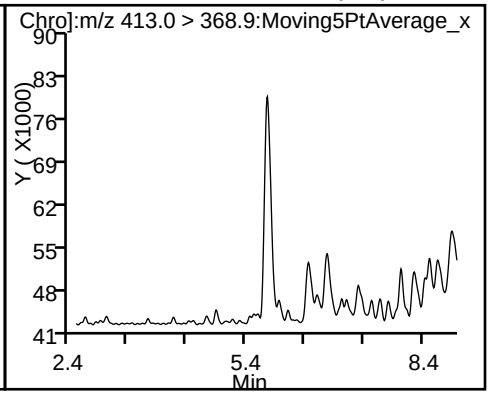
$ 14 13C8 PFOA



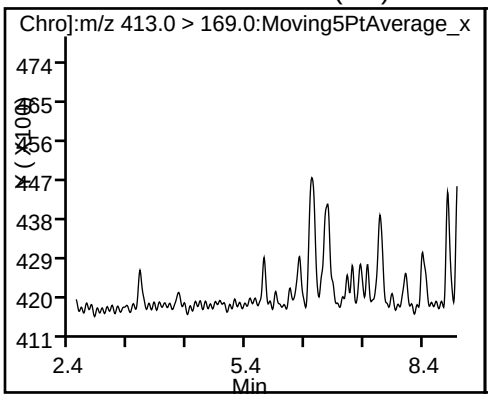
* 15 13C4 PFOA (IS)



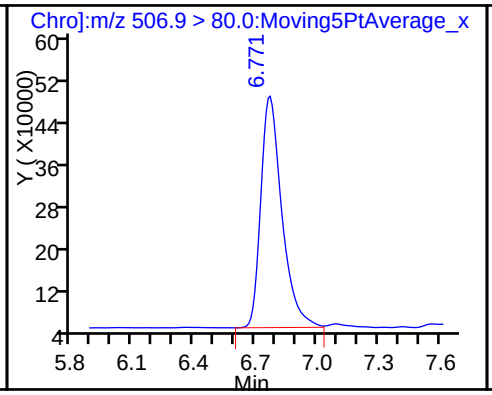
16 Perfluorooctanoic acid (ND)



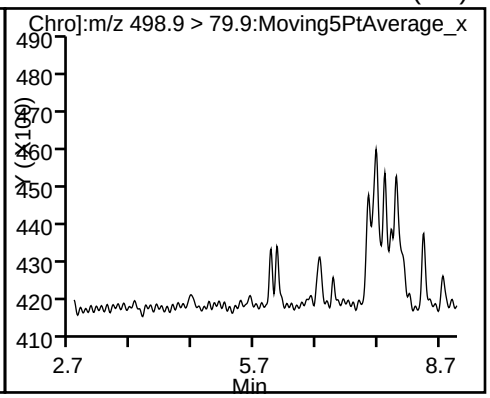
16 Perfluorooctanoic acid (ND)



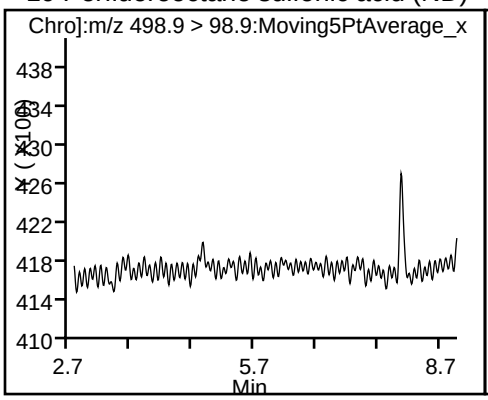
$ 18 13C8 PFOS



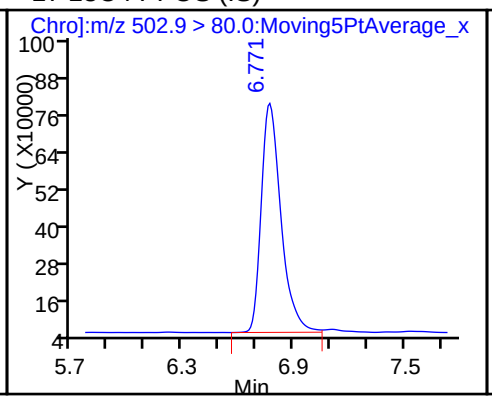
19 Perfluorooctane sulfonic acid (ND)



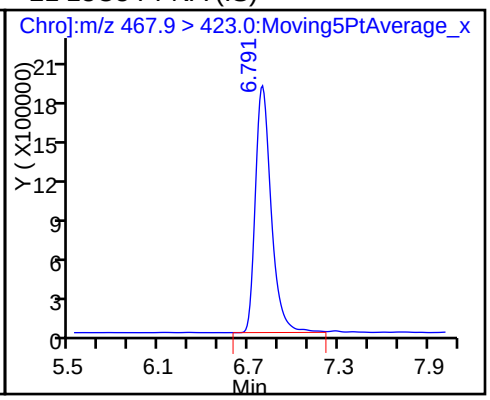
19 Perfluorooctane sulfonic acid (ND)



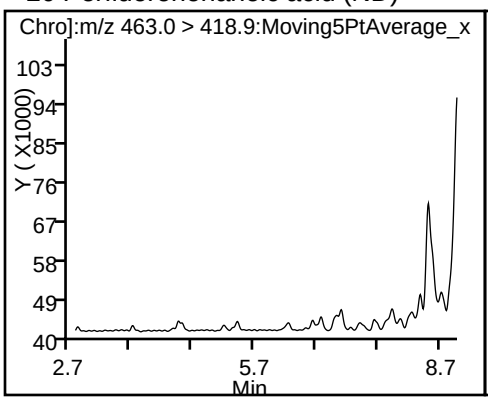
* 17 13C4 PFOS (IS)



* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)



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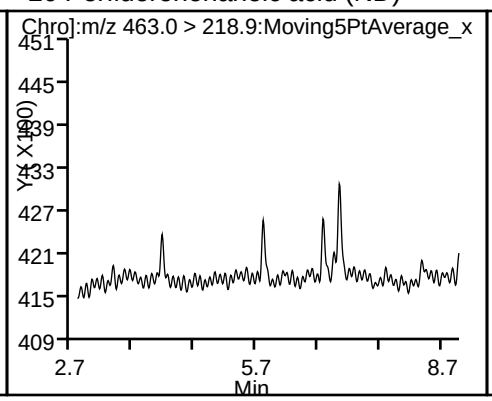
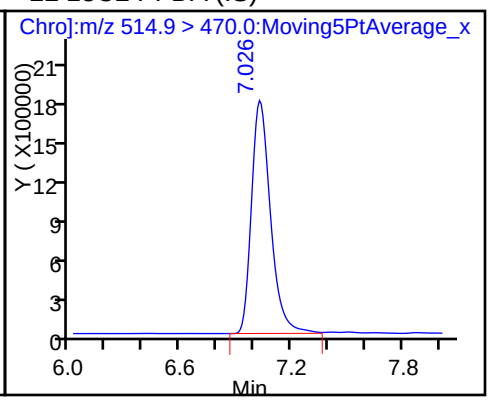
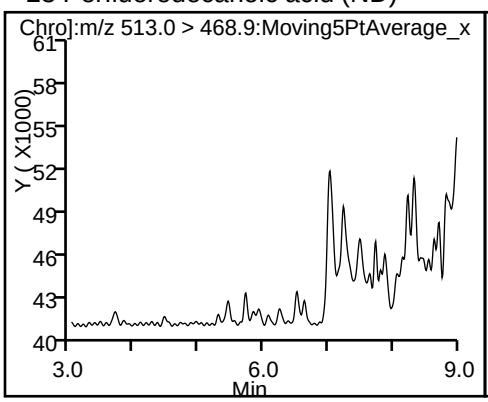


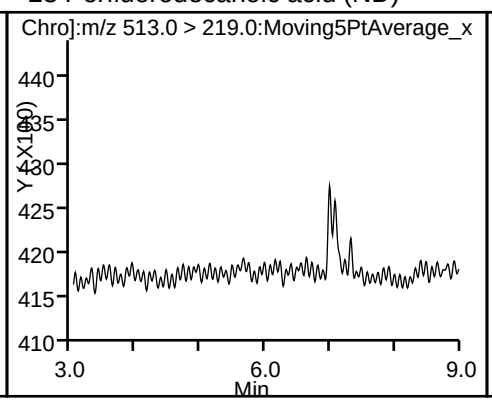
* 22 13C2 PFDA (IS)



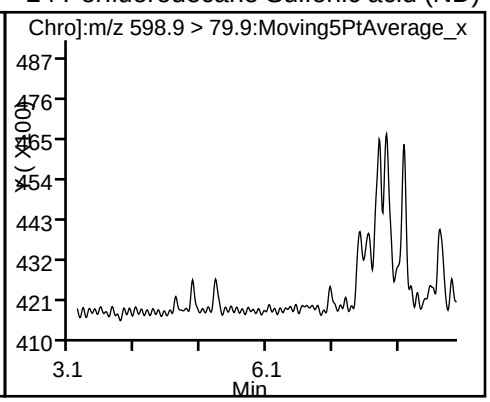
23 Perfluorodecanoic acid (ND)



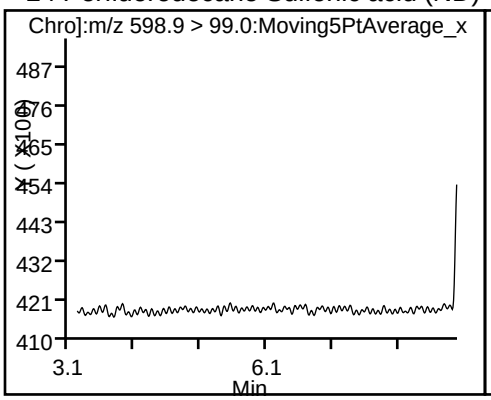
23 Perfluorodecanoic acid (ND)



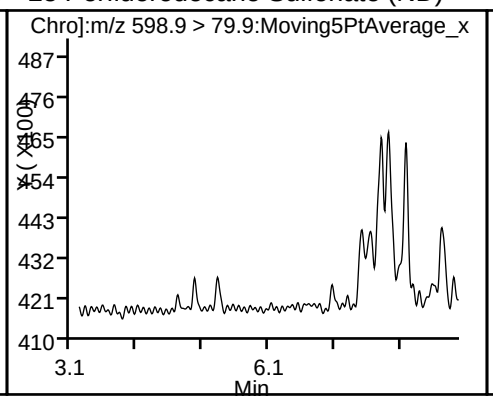
24 Perfluorodecane Sulfonic acid (ND)



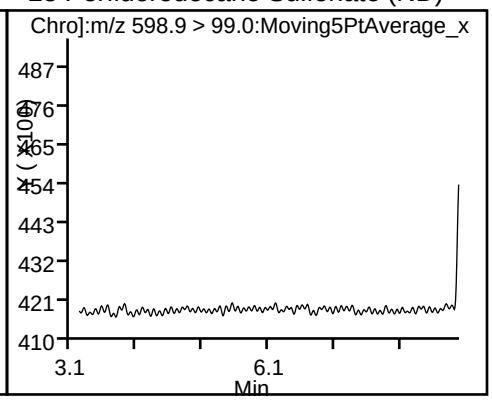
24 Perfluorodecane Sulfonic acid (ND)



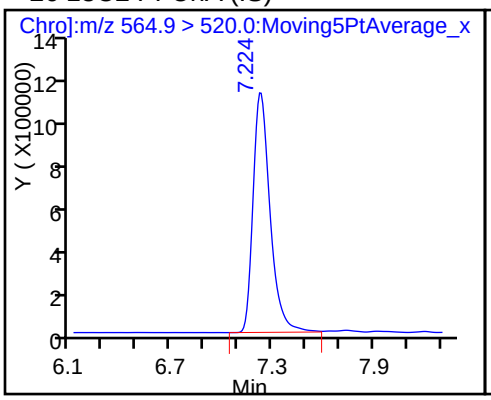
25 Perfluorodecane Sulfonate (ND)



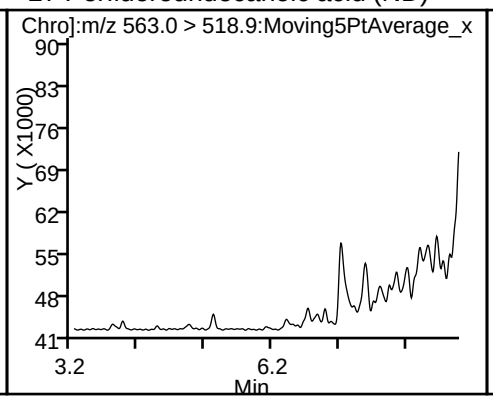
25 Perfluorodecane Sulfonate (ND)



* 26 13C2 PFUnA (IS)



27 Perfluoroundecanoic acid (ND)



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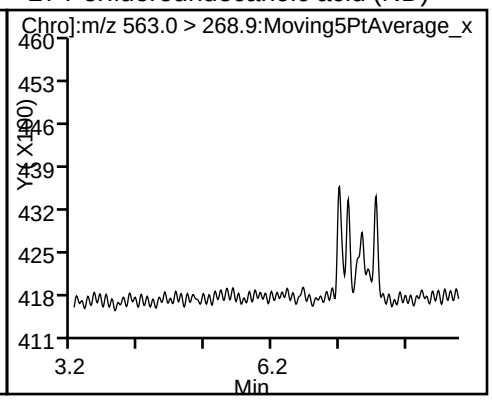
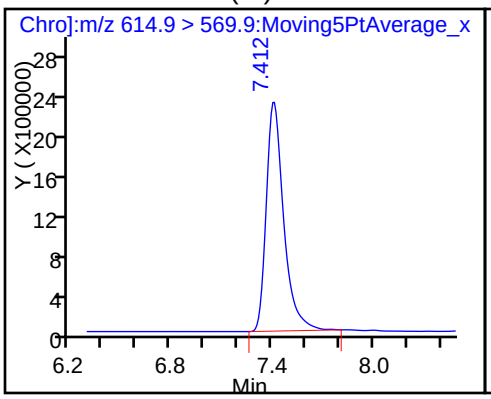
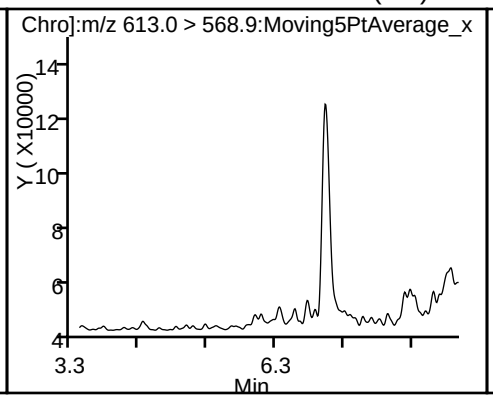


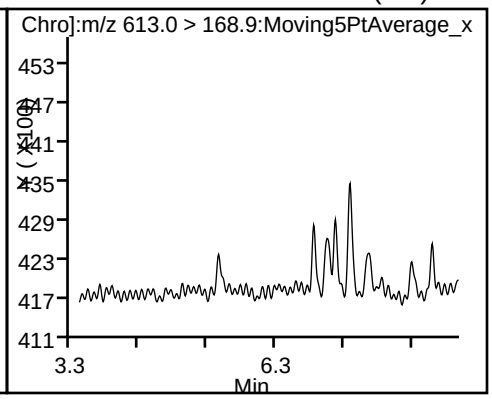
* 28 13C2 PFDoA (IS)



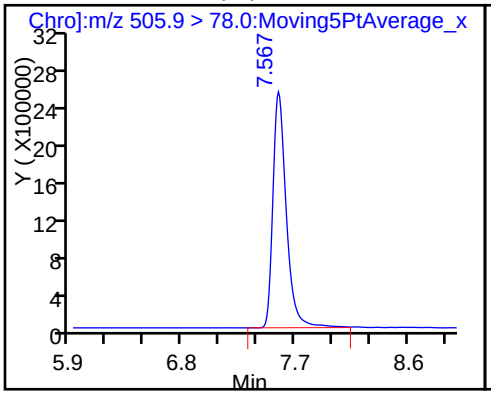
29 Perfluorododecanoic acid (ND)



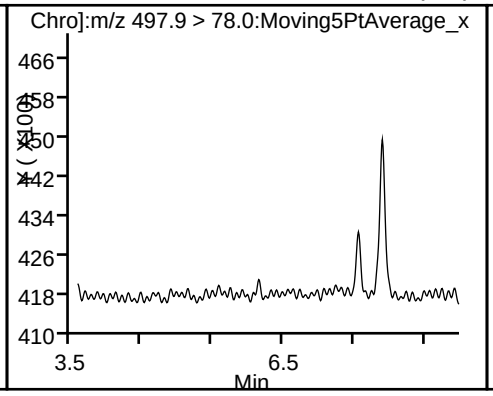
29 Perfluorododecanoic acid (ND)



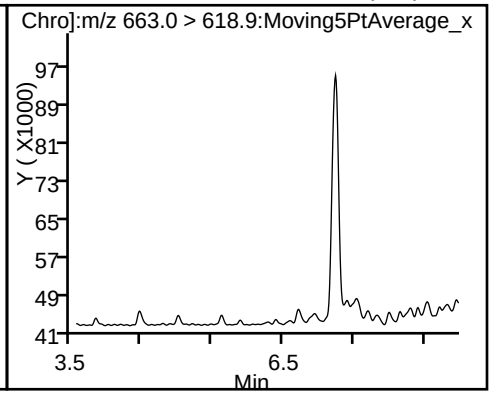
* 31 13C8 FOSA (IS)



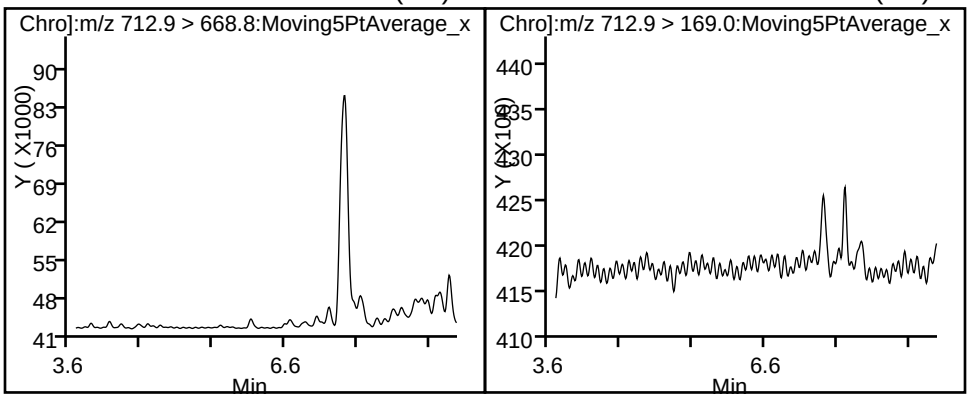
32 Perfluorooctane Sulfonamide (ND)



30 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-340544/1-A

Matrix: Water | Lab File ID: PC516I02016.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/01/2016 19:29

Sample wt/vol: 250(mL) | Date Analyzed: 09/02/2016 13:22

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340829 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	103		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02016.d
Lims ID: MB 280-340544/1-A
Client ID:
Sample Type: MB
Inject. Date: 02-Sep-2016 13:22:03 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-340544/1-A, Sample
Misc. Info.: pfc
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:24 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:25:02

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.276	4.314	-0.038		21165070	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		4.314				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.346				ND			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.459				ND			
298.9 > 98.9		5.459							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.459				ND			
298.9 > 98.9		5.459							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.894	5.923	-0.029		12358775	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.923				ND			
313.0 > 118.6		5.923							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.310	6.348	-0.038		1939551	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.348				ND			
398.9 > 98.9		6.348							
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.348				ND			
398.9 > 98.9		6.348							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.349				ND			
363.0 > 168.9		6.349							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.678				ND			
449.0 > 98.9		6.678							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.678				ND			
449.0 > 98.9		6.678							
$ 14 13C8 PFOA									
421.0 > 375.9	6.641	6.688	-0.047	1.000	14389224	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.641	6.688	-0.047		18877147	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.688				ND			
413.0 > 169.0		6.688							
$ 18 13C8 PFOS									
506.9 > 80.0	6.903	6.960	-0.057	1.000	3559695	9.60			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.904	6.961	-0.057		6169209	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.951				ND			
498.9 > 98.9		6.951							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.924	6.971	-0.047		14488475	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.971				ND			
463.0 > 218.9		6.971							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.168	7.206	-0.038		13609317	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.206				ND			
513.0 > 219.0		7.206							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.385				ND			
598.9 > 99.0		7.385							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.385				ND			
598.9 > 99.0		7.385							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.366	7.404	-0.038		7308110	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.404				ND			
563.0 > 268.9		7.404							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.526	7.573	-0.047		13947110	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.574				ND			
613.0 > 168.9		7.574							
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.680	7.718	-0.038		888206	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.719				ND			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.715				ND			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.847				ND			
712.9 > 169.0		7.847							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

Report Date: 06-Sep-2016 08:22:29 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02016.d

Injection Date: 02-Sep-2016 13:22:03 Instrument ID: LC_LCMS5

Lims ID: MB 280-340544/1-A

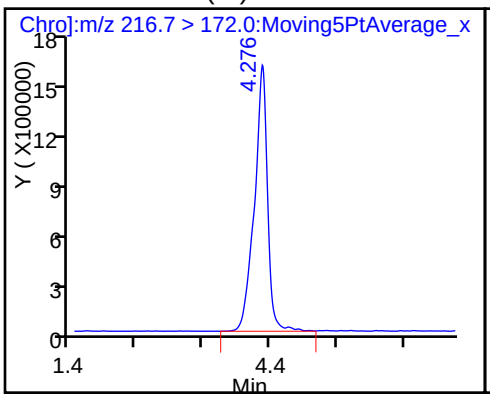
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4

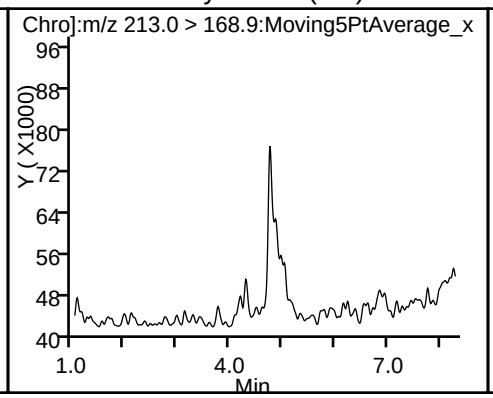
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

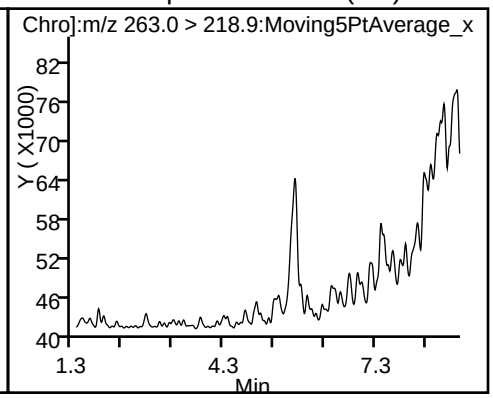
* 1 13C4 PFBA (IS)



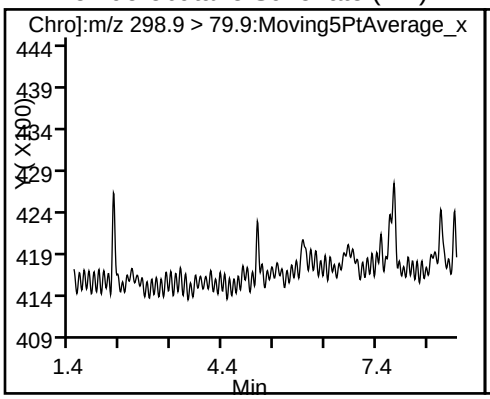
2 Perfluorobutyric acid (ND)



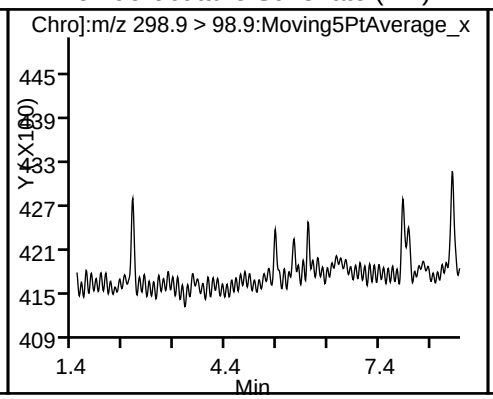
3 Perfluoropentanoic acid (ND)



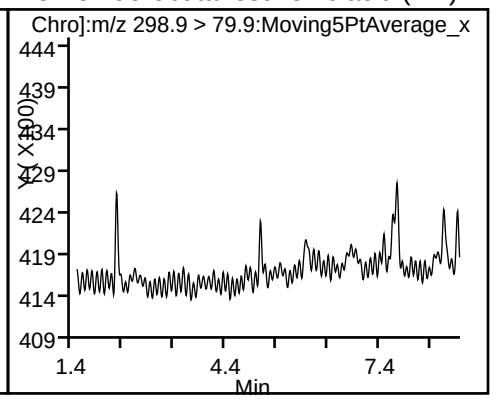
4 Perfluorobutane Sulfonate (ND)



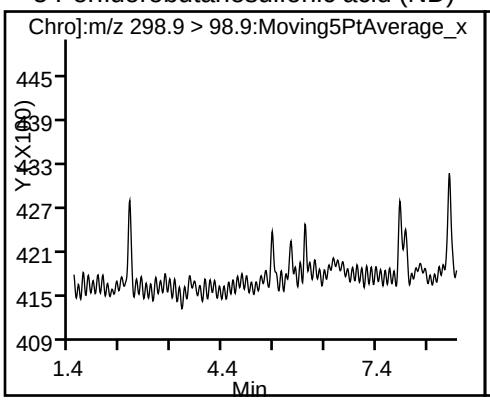
4 Perfluorobutane Sulfonate (ND)



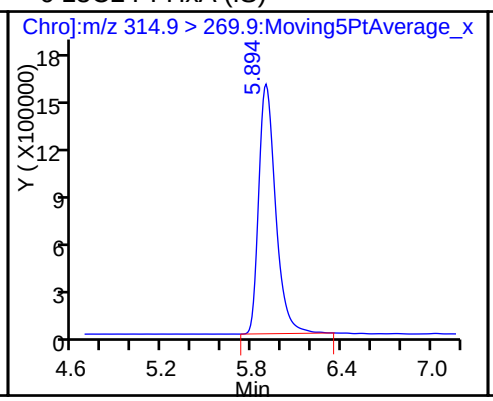
5 Perfluorobutanesulfonic acid (ND)



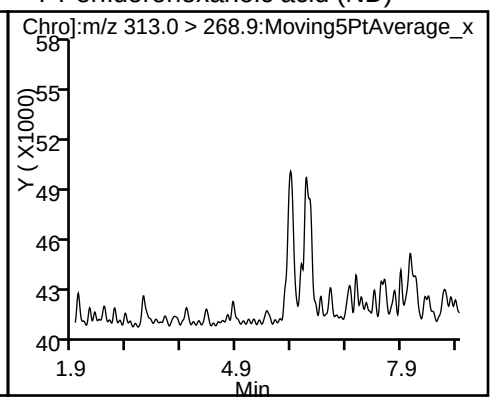
5 Perfluorobutanesulfonic acid (ND)



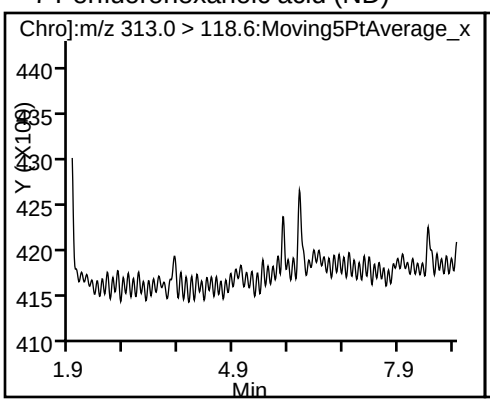
* 6 13C2 PFHxA (IS)



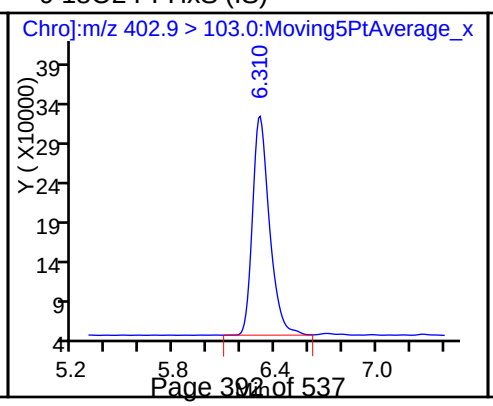
7 Perfluorohexanoic acid (ND)



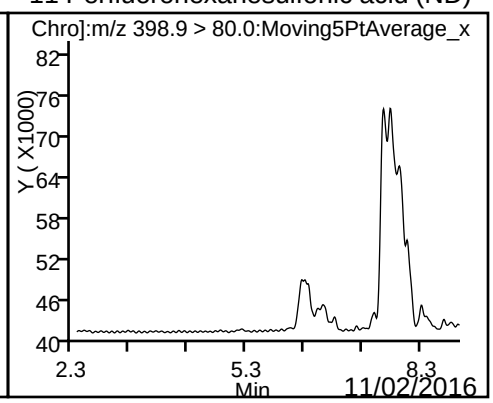
7 Perfluorohexanoic acid (ND)



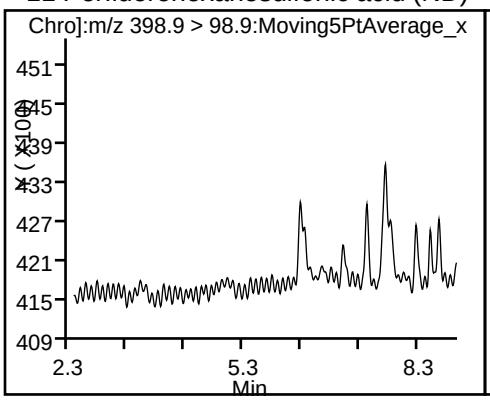
* 9 18O2 PFHxS (IS)



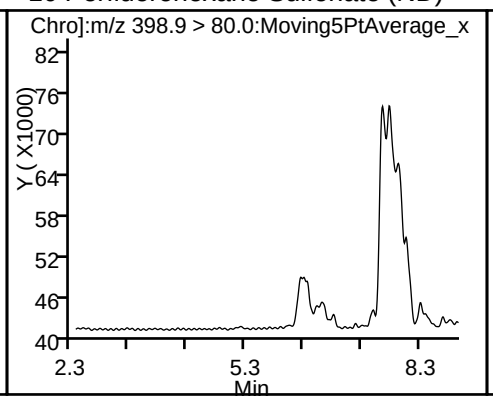
11 Perfluorohexanesulfonic acid (ND)



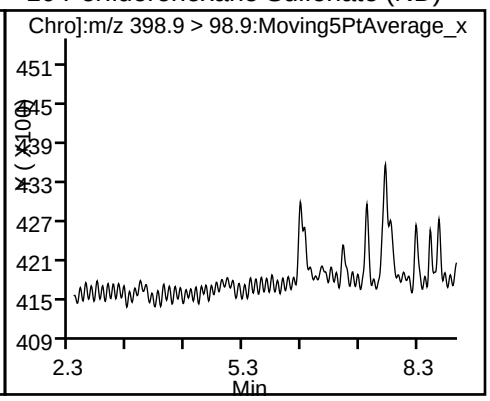
11 Perfluorohexanesulfonic acid (ND)



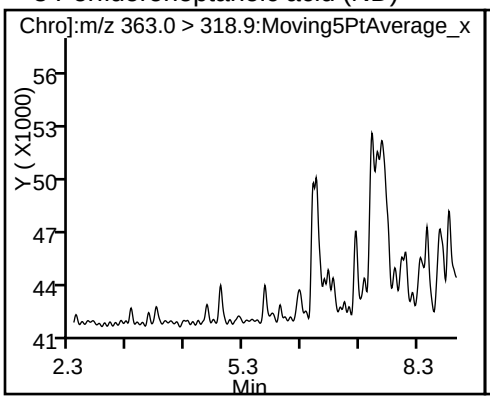
10 Perfluorohexane Sulfonate (ND)



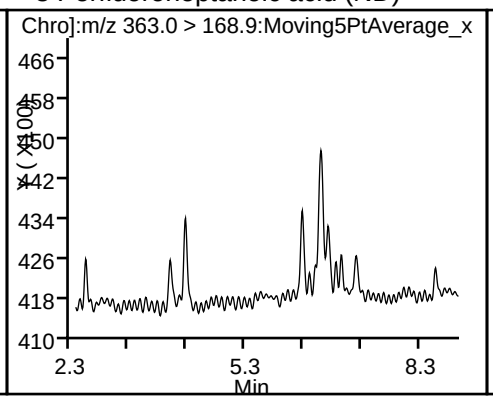
10 Perfluorohexane Sulfonate (ND)



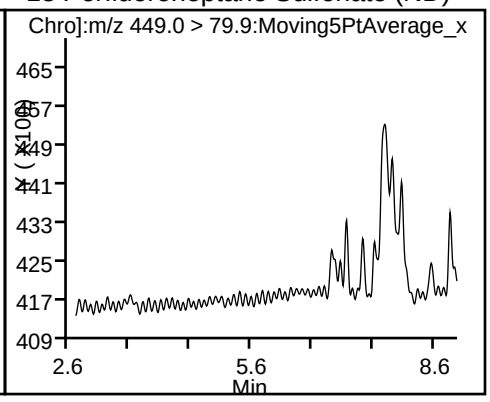
8 Perfluoroheptanoic acid (ND)



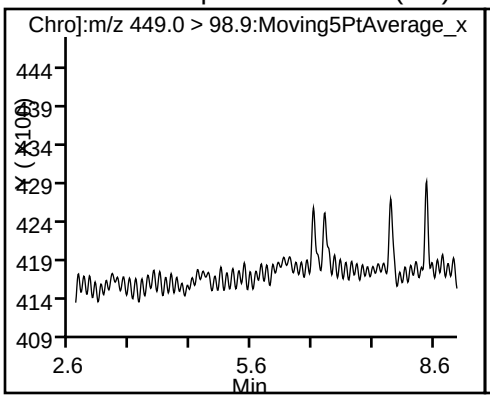
8 Perfluoroheptanoic acid (ND)



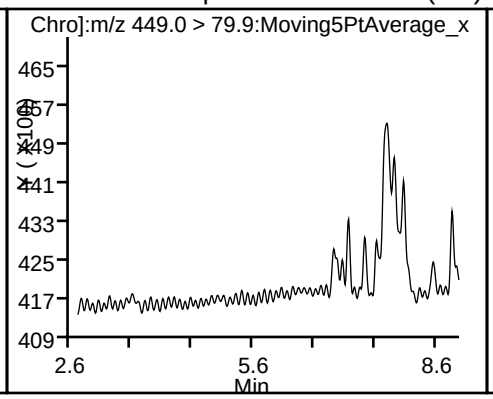
13 Perfluoroheptane Sulfonate (ND)



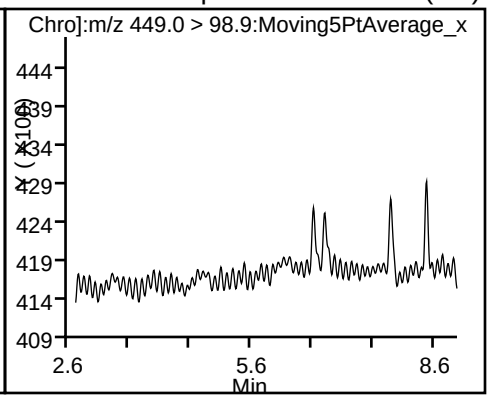
13 Perfluoroheptane Sulfonate (ND)



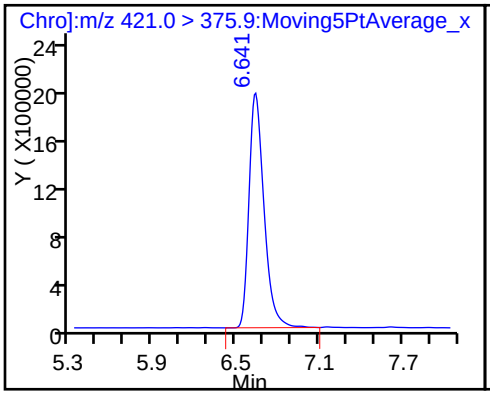
12 Perfluoroheptanesulfonic Acid (ND)



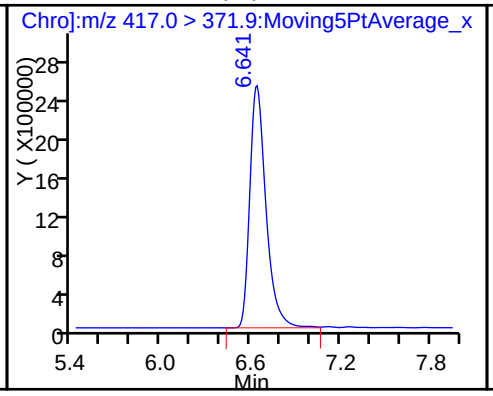
12 Perfluoroheptanesulfonic Acid (ND)



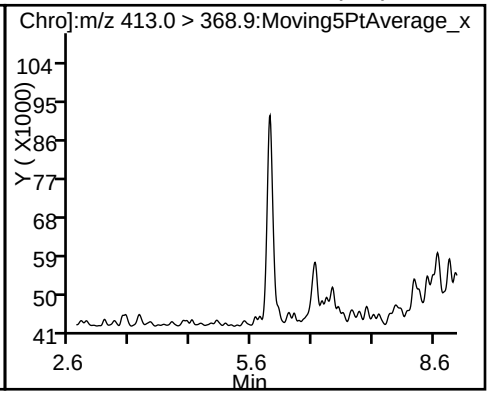
$ 14 13C8 PFOA



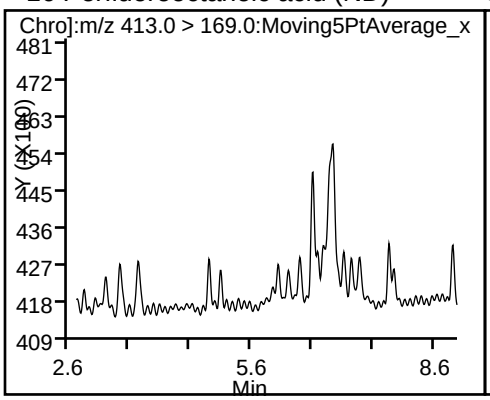
* 15 13C4 PFOA (IS)



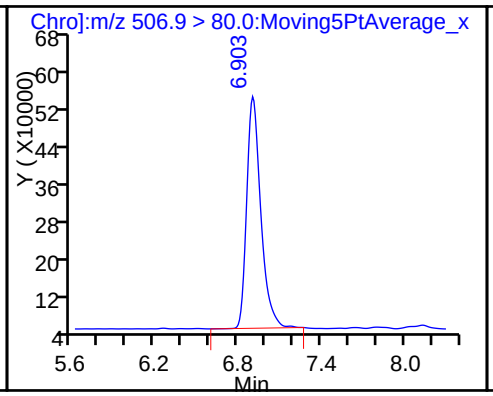
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)



$ 18 13C8 PFOS



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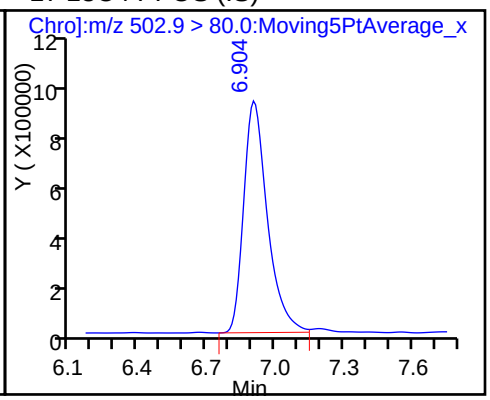
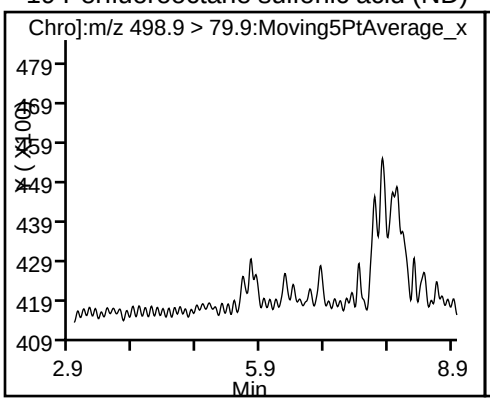
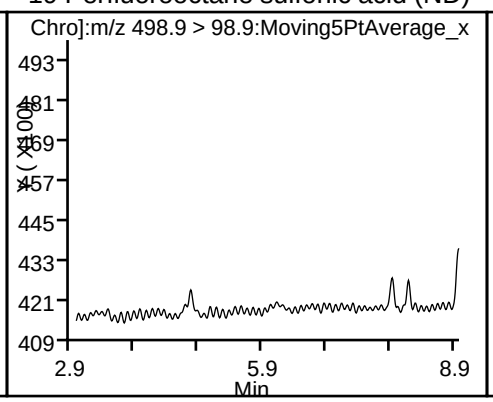


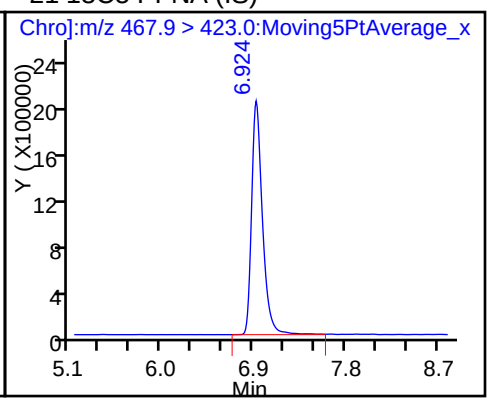
19 Perfluorooctane sulfonic acid (ND)



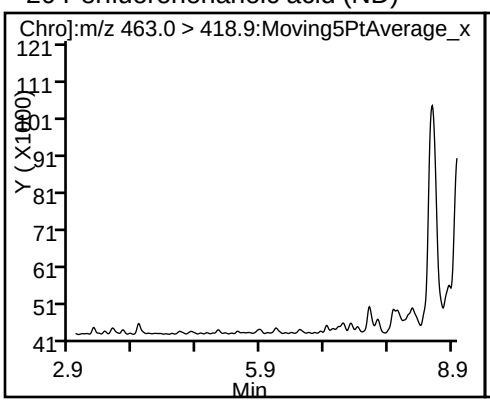
19 Perfluorooctane sulfonic acid (ND)



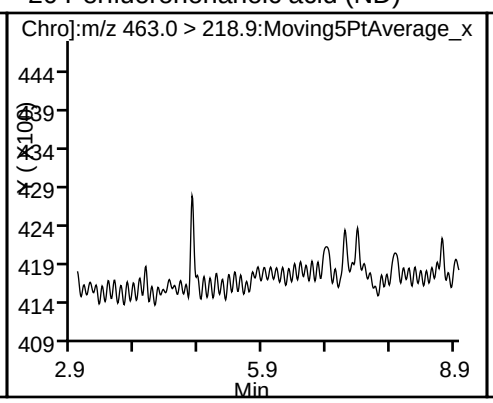
* 21 13C5 PFNA (IS)



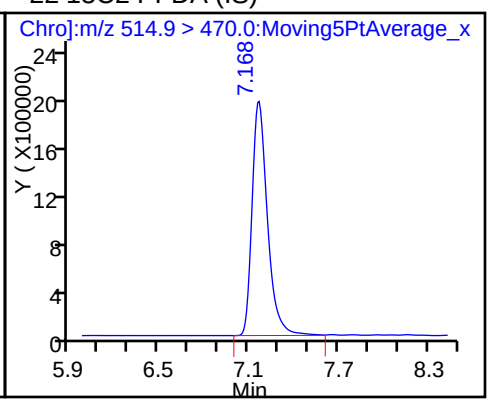
20 Perfluorononanoic acid (ND)



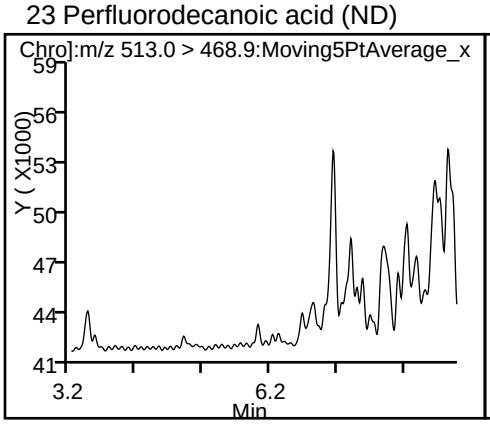
20 Perfluorononanoic acid (ND)



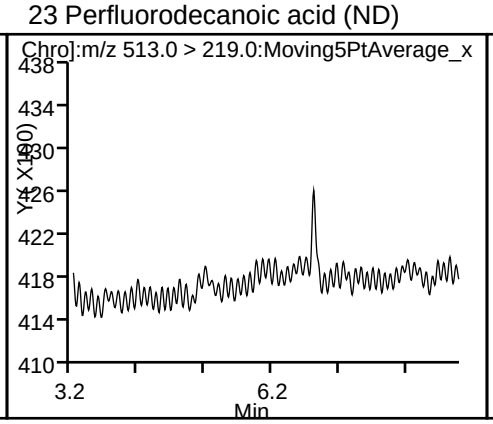
* 22 13C2 PFDA (IS)



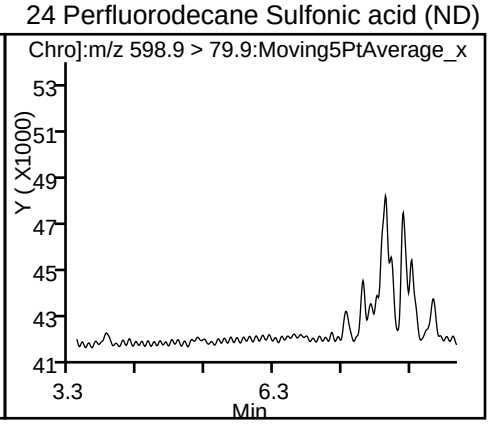
23 Perfluorodecanoic acid (ND)



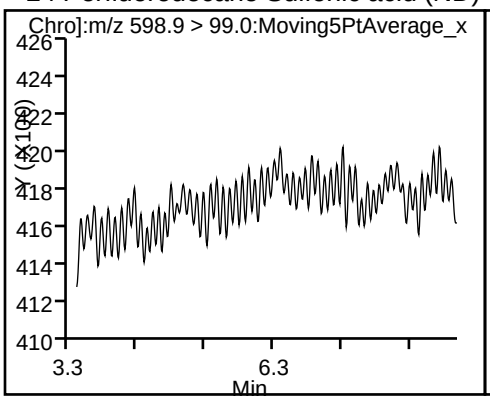
23 Perfluorodecanoic acid (ND)



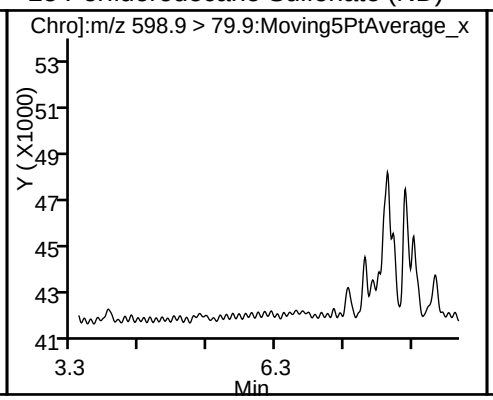
24 Perfluorodecane Sulfonic acid (ND)



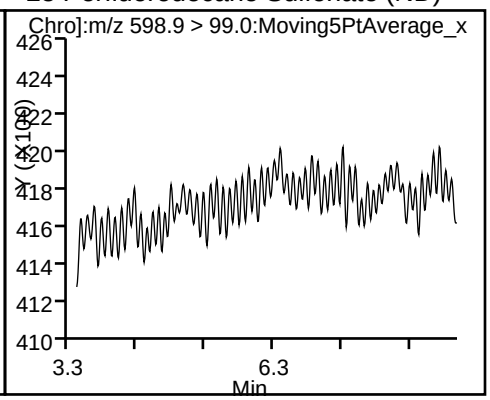
24 Perfluorodecane Sulfonic acid (ND)



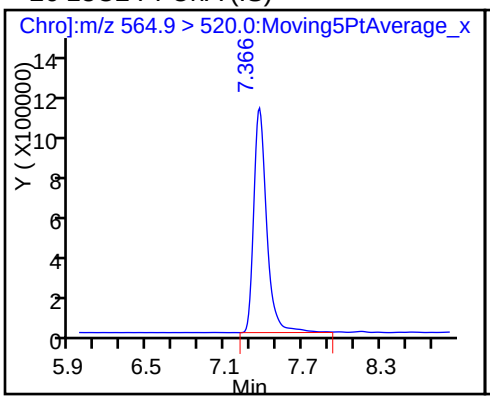
25 Perfluorodecane Sulfonate (ND)



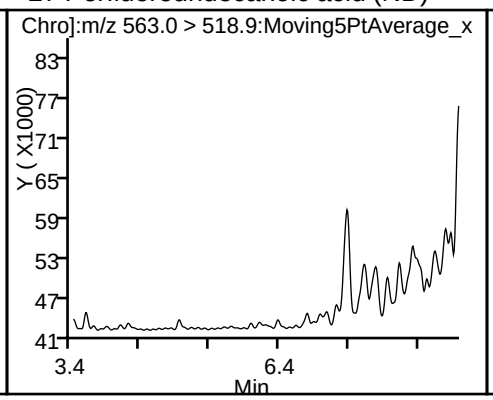
25 Perfluorodecane Sulfonate (ND)



* 26 13C2 PFUnA (IS)



27 Perfluoroundecanoic acid (ND)



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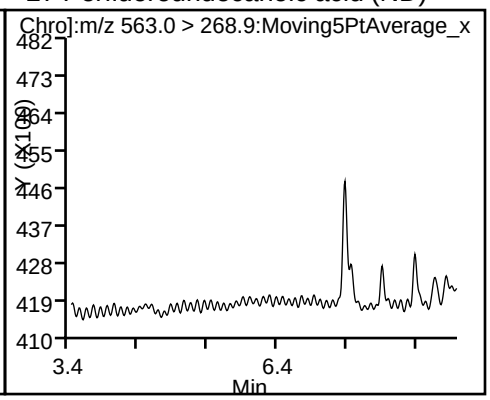
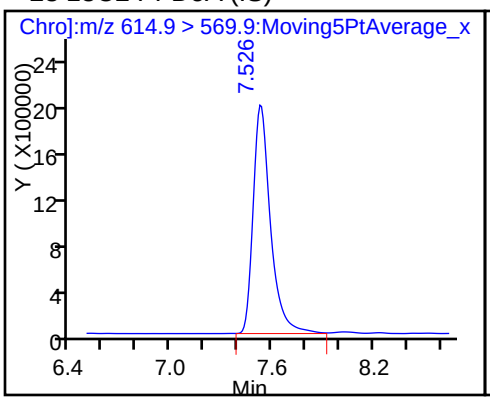
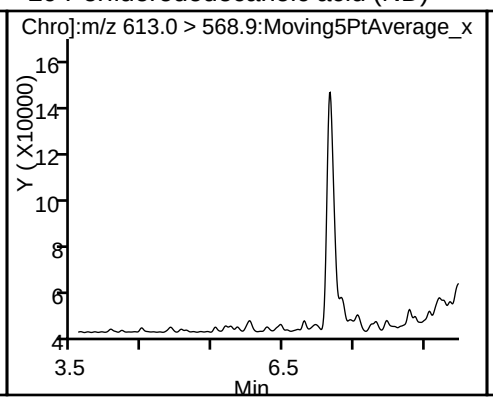


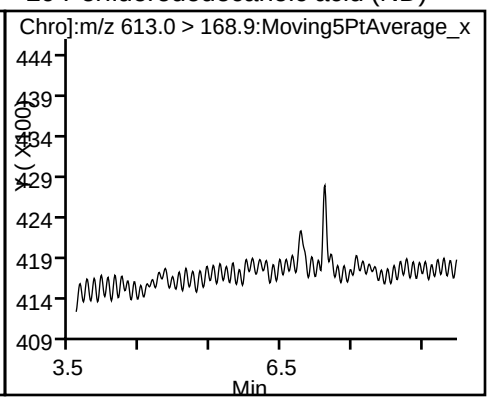
* 28 13C2 PFDoA (IS)



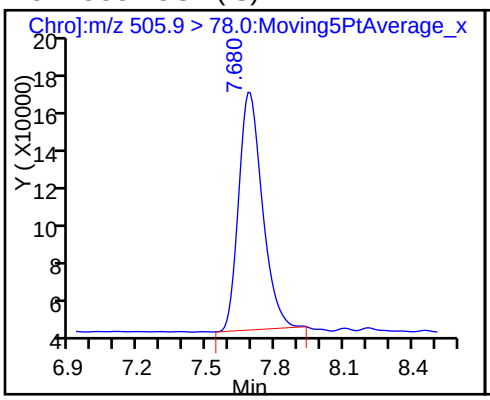
29 Perfluorododecanoic acid (ND)



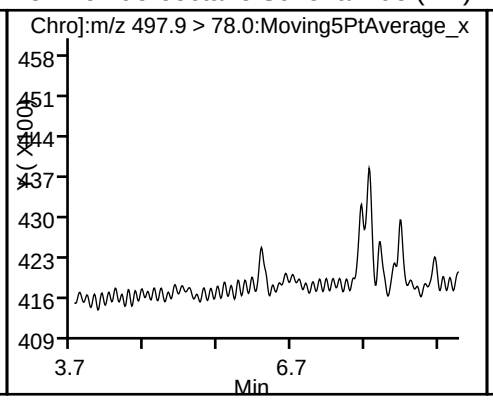
29 Perfluorododecanoic acid (ND)



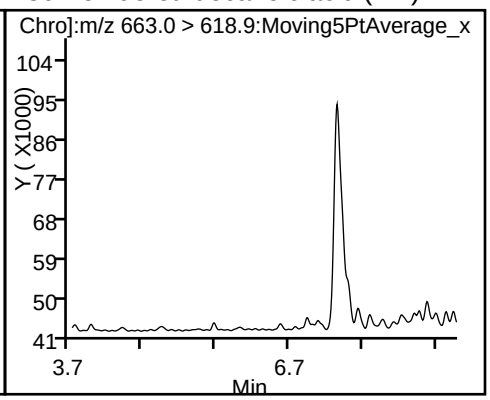
* 31 13C8 FOSA (IS)



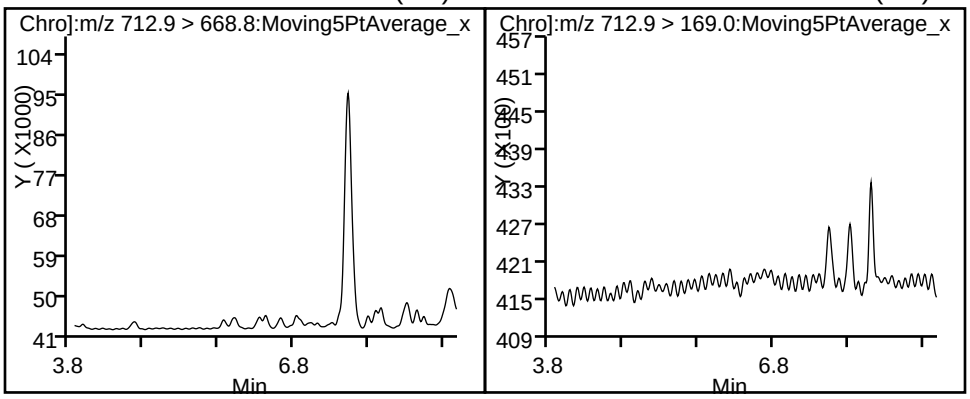
32 Perfluorooctane Sulfonamide (ND)



30 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-340982/1-A

Matrix: Water | Lab File ID: PC516I08007.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/07/2016 17:42

Sample wt/vol: 250(mL) | Date Analyzed: 09/08/2016 11:13

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 341350 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	100		60-155
STL01054	13C8 PFOS	119		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08007.d
Lims ID: MB 280-340982/1-A
Client ID:
Sample Type: MB
Inject. Date: 08-Sep-2016 11:13:06 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-340982/1-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 20:38:36 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK012

First Level Reviewer: fiedlerh Date: 08-Sep-2016 20:33:08

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.897	4.048	-0.151		19081537	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.897	4.049	-0.152	1.000	383088	0.1046			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.052	5.138	-0.086	0.895	405759	0.2231			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.251				ND			
298.9 > 98.9		5.251							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.251				ND			
298.9 > 98.9		5.251							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.648	5.724	-0.076		12834476	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.724				ND			
313.0 > 118.6		5.724							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.159				ND			
363.0 > 168.9		6.159							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.092	6.168	-0.076		1715193	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.168				ND			
398.9 > 98.9		6.168							
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.168				ND			
398.9 > 98.9		6.168							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.508				ND			
449.0 > 98.9		6.508							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.508				ND			
449.0 > 98.9		6.508							
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.508	-0.066	1.000	14970048	9.76			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.518	-0.076		19036766	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.508				ND			
413.0 > 169.0		6.508							
$ 18 13C8 PFOS									
506.9 > 80.0	6.714	6.790	-0.076	1.000	3953139	11.0			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.790	-0.076		6846115	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.790				ND			
498.9 > 98.9		6.790							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.810	-0.076		15410564	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.810				ND			
463.0 > 218.9		6.810							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	7.054	-0.076		15516774	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.054				ND			
513.0 > 219.0		7.054							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.243				ND			
598.9 > 99.0		7.243							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.243				ND			
598.9 > 99.0		7.243							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.196	7.271	-0.075		8768845	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.272				ND			
563.0 > 268.9		7.272							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.450	-0.066		15045296	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.451				ND			
613.0 > 168.9		7.451							
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.481	7.510	-0.029		551473	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511					ND			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602					ND			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734					ND			
712.9 > 169.0	7.734								

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

Report Date: 08-Sep-2016 20:38:40 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08007.d

Injection Date: 08-Sep-2016 11:13:06 Instrument ID: LC_LCMS5

Lims ID: MB 280-340982/1-A

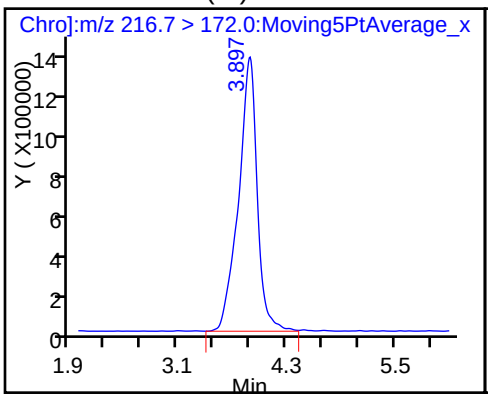
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4

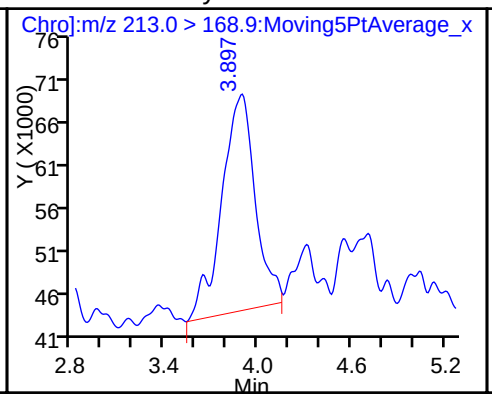
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

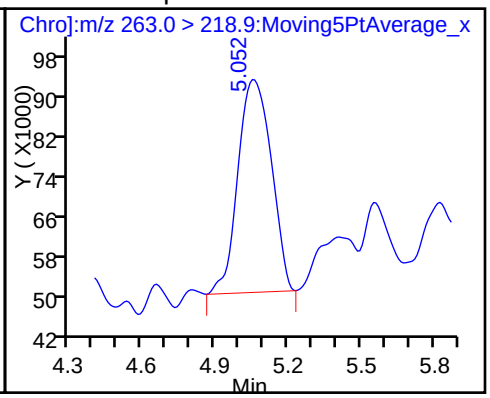
* 1 13C4 PFBA (IS)



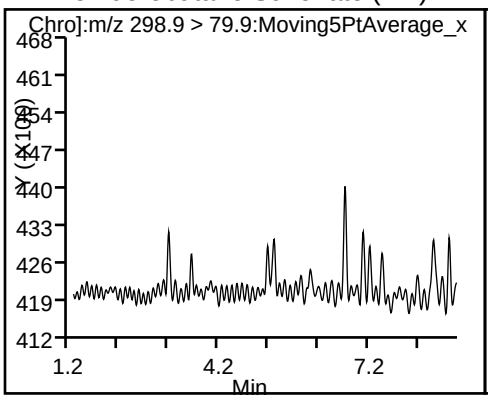
2 Perfluorobutyric acid



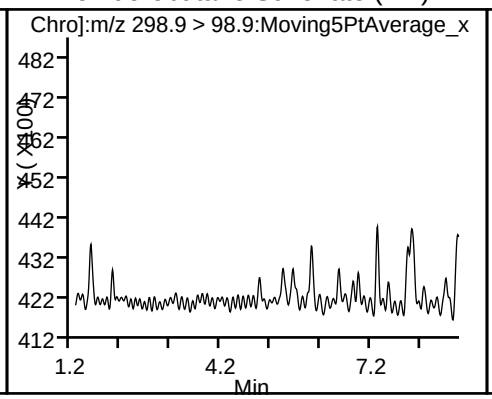
3 Perfluoropentanoic acid



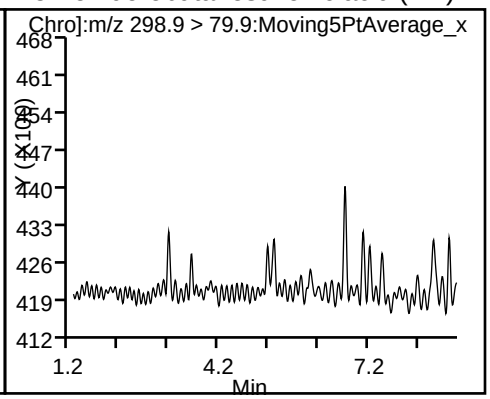
4 Perfluorobutane Sulfonate (ND)



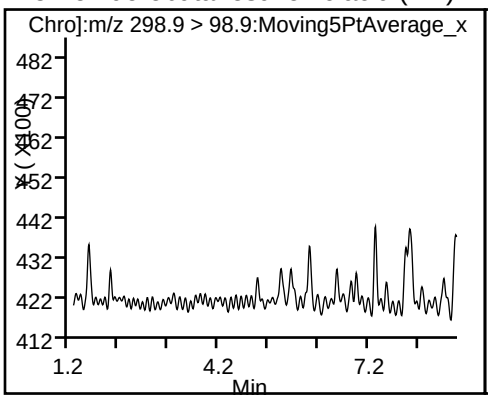
4 Perfluorobutane Sulfonate (ND)



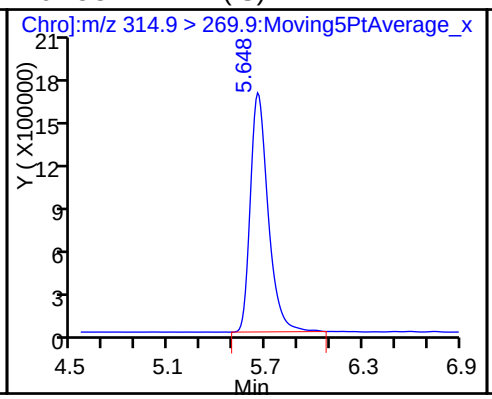
5 Perfluorobutanesulfonic acid (ND)



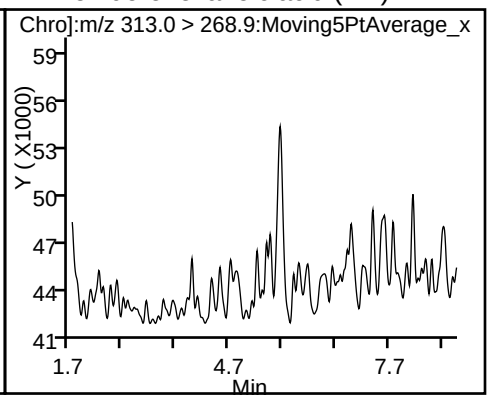
5 Perfluorobutanesulfonic acid (ND)



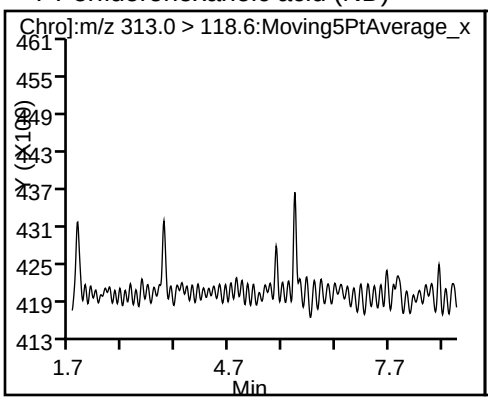
* 6 13C2 PFHxA (IS)



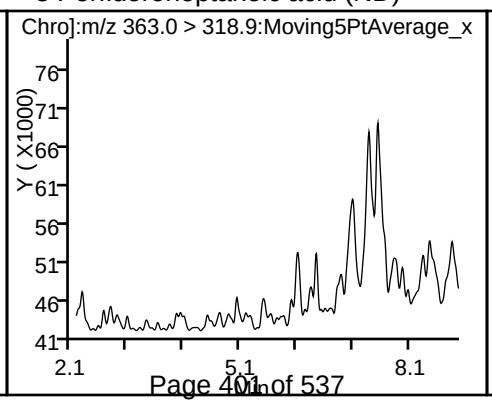
7 Perfluorohexanoic acid (ND)



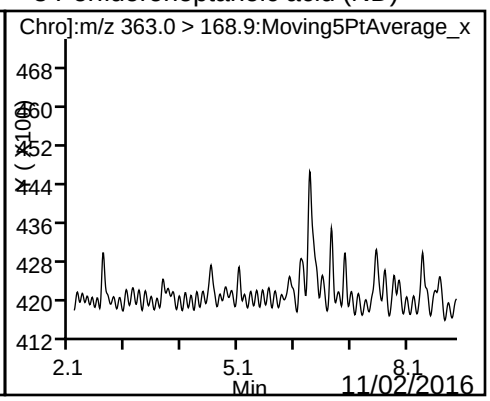
7 Perfluorohexanoic acid (ND)



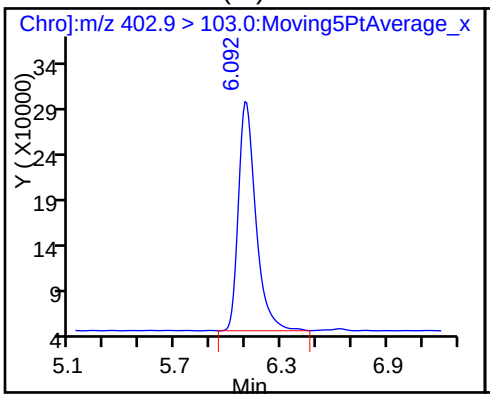
8 Perfluoroheptanoic acid (ND)



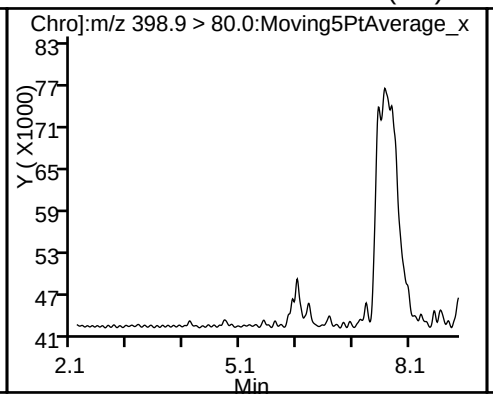
8 Perfluoroheptanoic acid (ND)



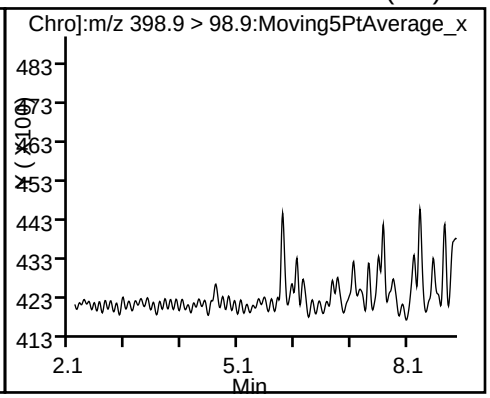
* 9 18O2 PFHxS (IS)



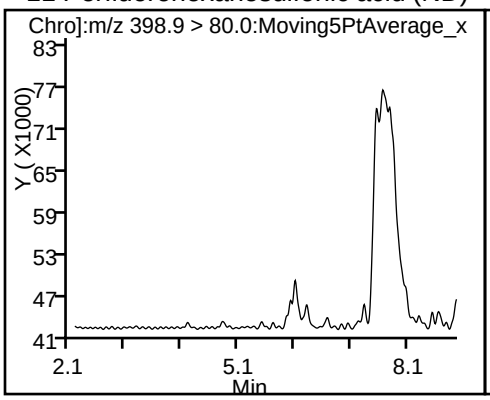
10 Perfluorohexane Sulfonate (ND)



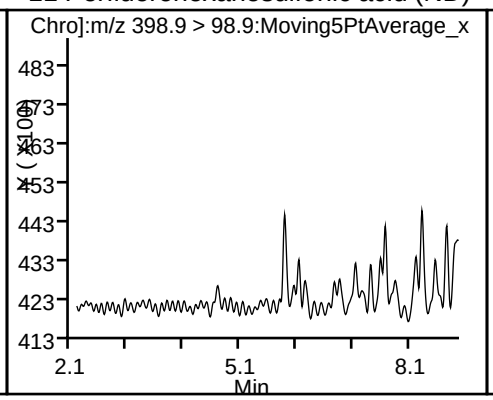
10 Perfluorohexane Sulfonate (ND)



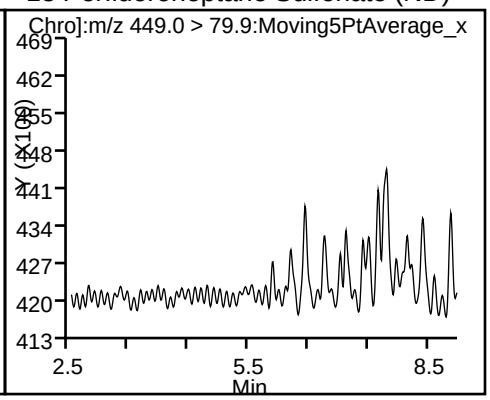
11 Perfluorohexanesulfonic acid (ND)



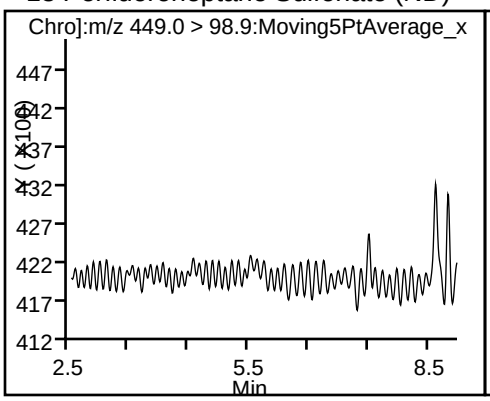
11 Perfluorohexanesulfonic acid (ND)



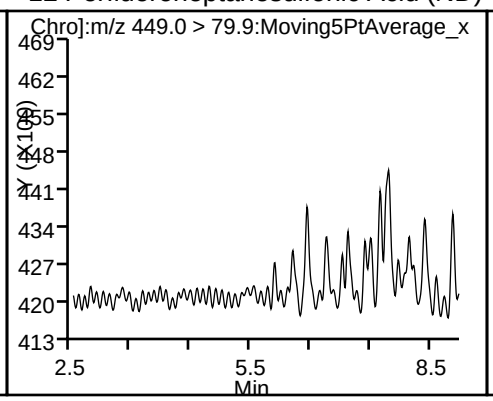
13 Perfluoroheptane Sulfonate (ND)



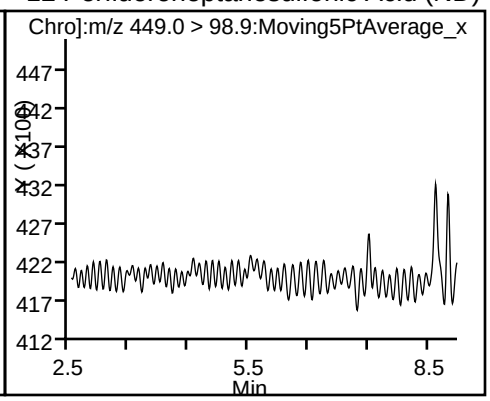
13 Perfluoroheptane Sulfonate (ND)



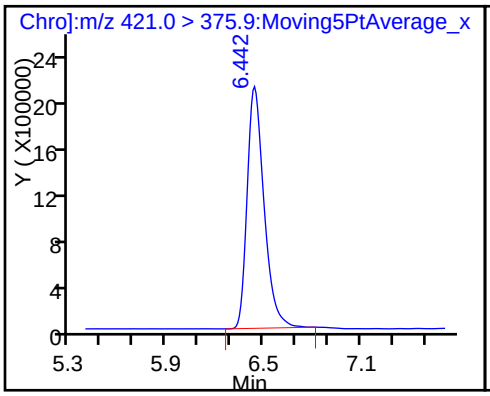
12 Perfluoroheptanesulfonic Acid (ND)



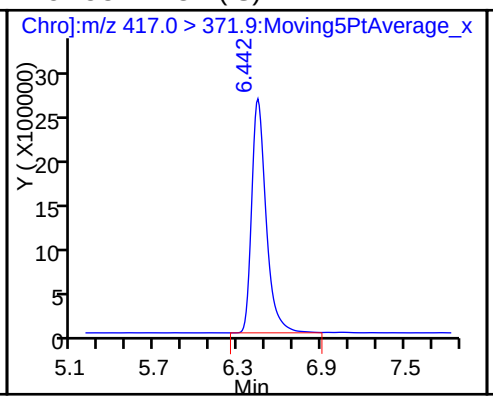
12 Perfluoroheptanesulfonic Acid (ND)



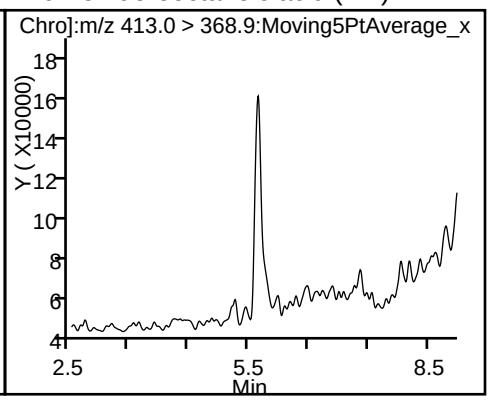
$ 14 13C8 PFOA



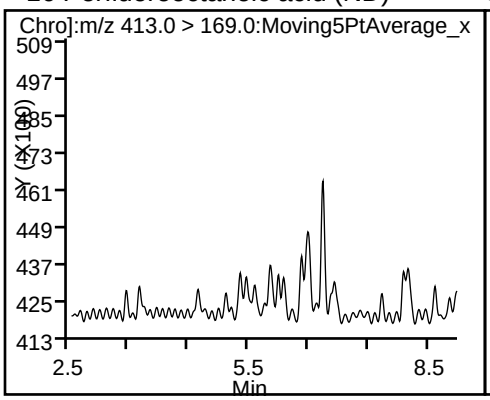
* 15 13C4 PFOA (IS)



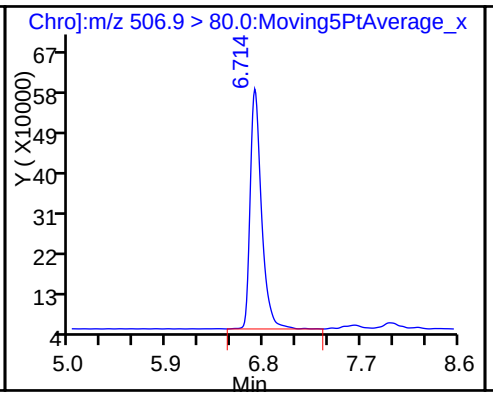
16 Perfluorooctanoic acid (ND)



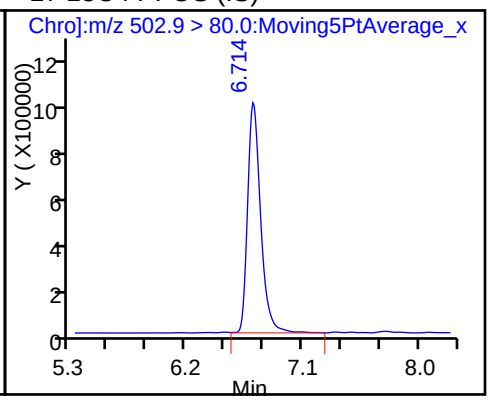
16 Perfluorooctanoic acid (ND)



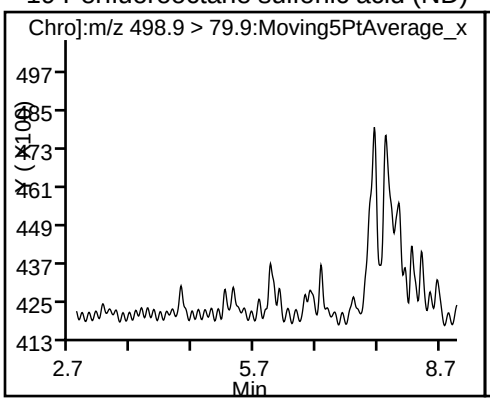
$ 18 13C8 PFOS



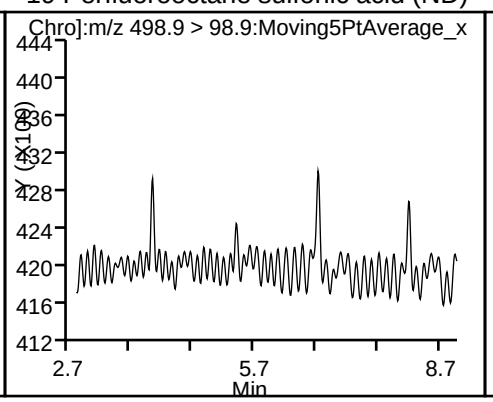
* 17 13C4 PFOS (IS)



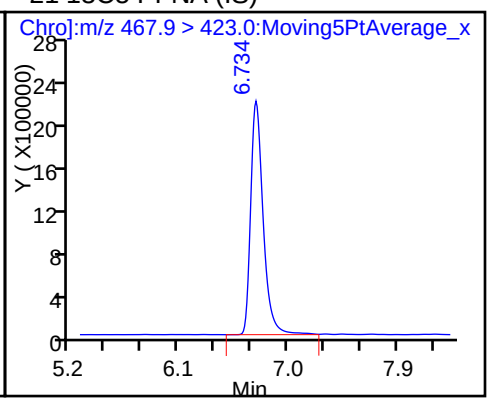
19 Perfluorooctane sulfonic acid (ND)



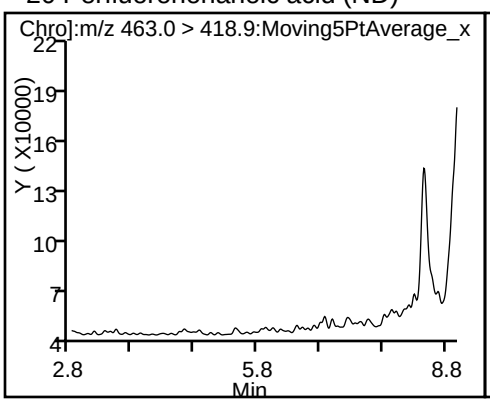
19 Perfluorooctane sulfonic acid (ND)



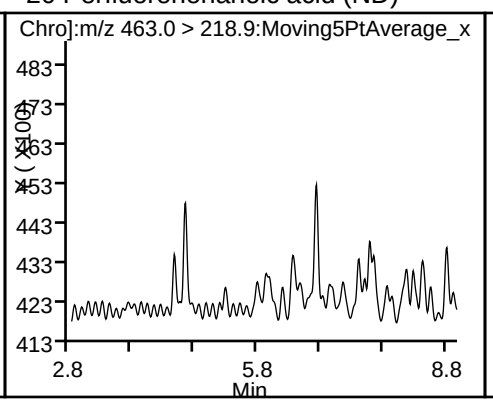
* 21 13C5 PFNA (IS)



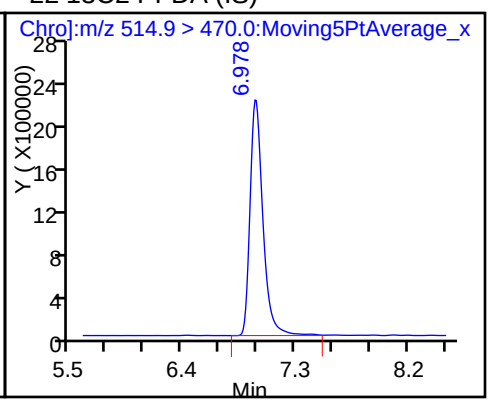
20 Perfluorononanoic acid (ND)



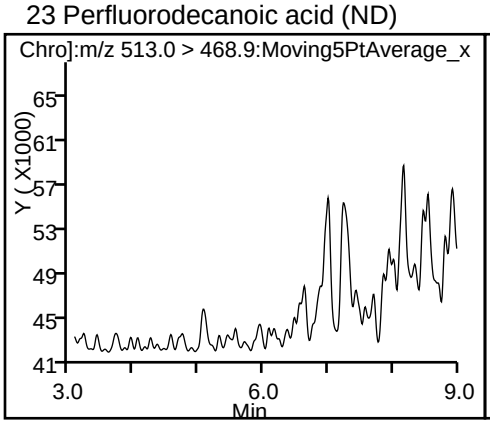
20 Perfluorononanoic acid (ND)



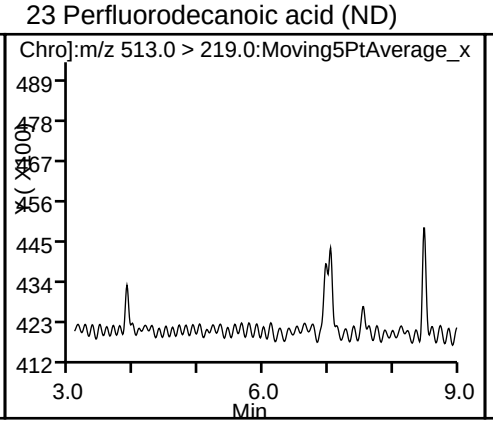
* 22 13C2 PFDA (IS)



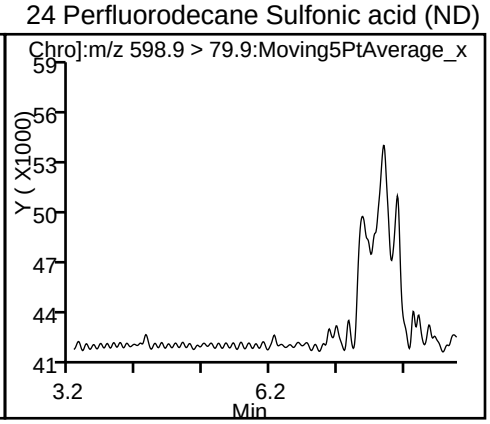
23 Perfluorodecanoic acid (ND)



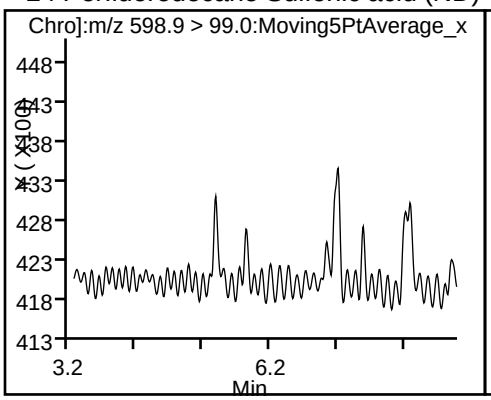
23 Perfluorodecanoic acid (ND)



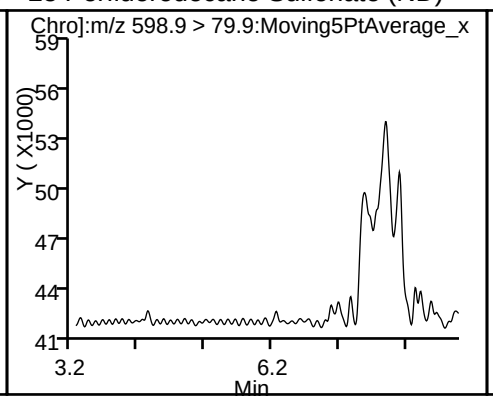
24 Perfluorodecane Sulfonic acid (ND)



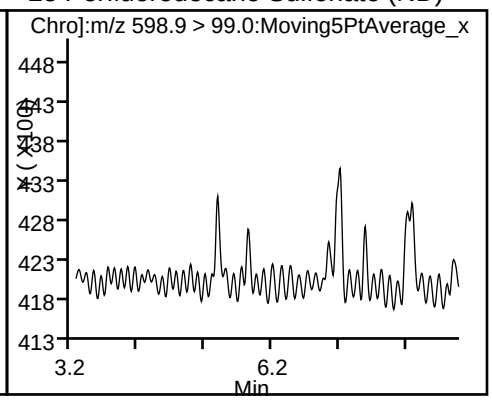
24 Perfluorodecane Sulfonic acid (ND)



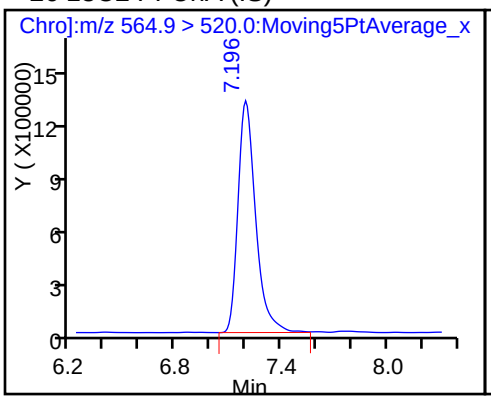
25 Perfluorodecane Sulfonate (ND)



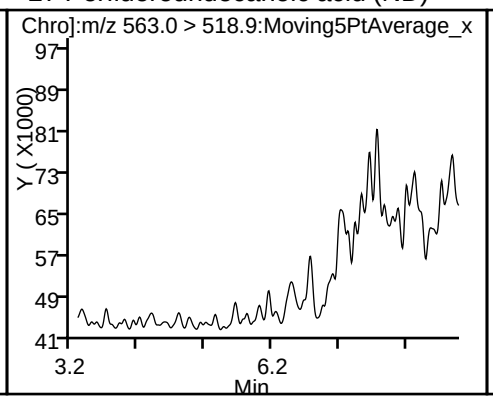
25 Perfluorodecane Sulfonate (ND)



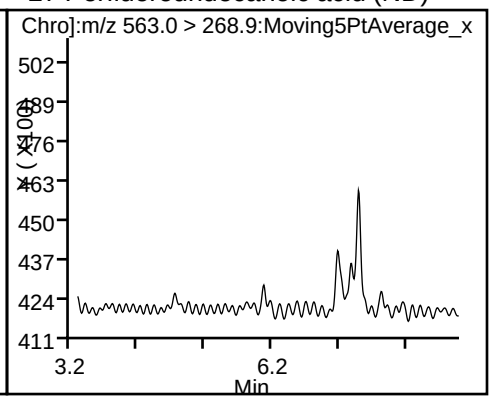
* 26 13C2 PFUnA (IS)



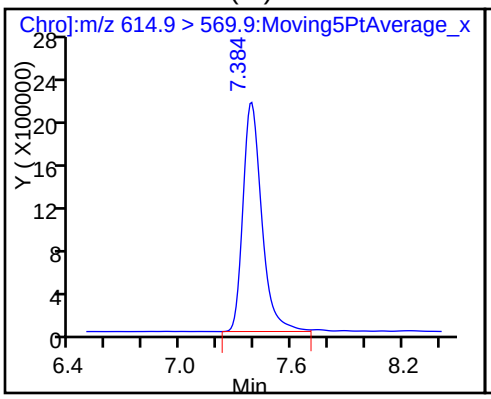
27 Perfluoroundecanoic acid (ND)



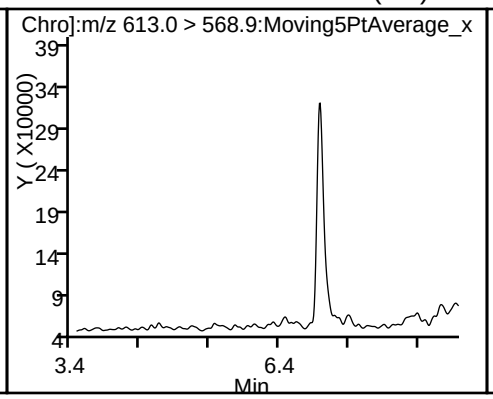
27 Perfluoroundecanoic acid (ND)



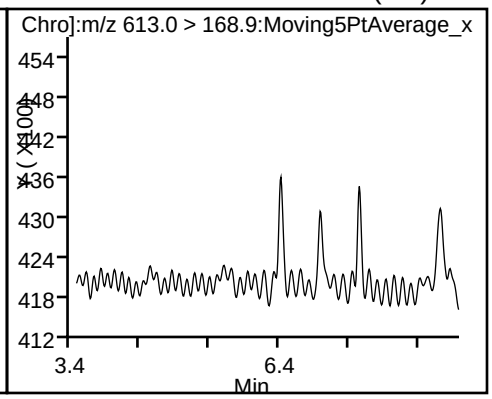
* 28 13C2 PFDoA (IS)



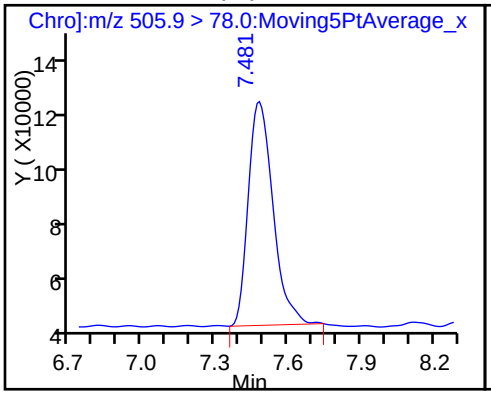
29 Perfluorododecanoic acid (ND)



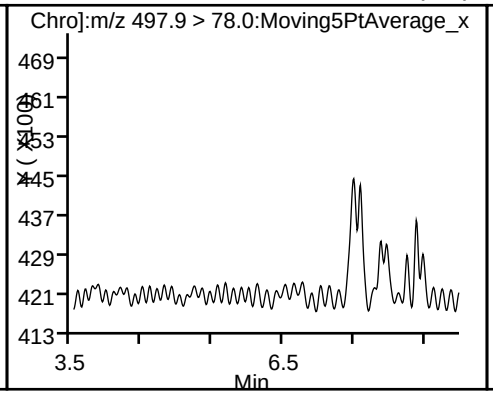
29 Perfluorododecanoic acid (ND)



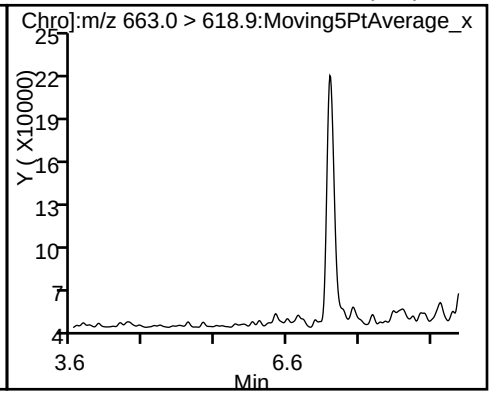
* 31 13C8 FOSA (IS)



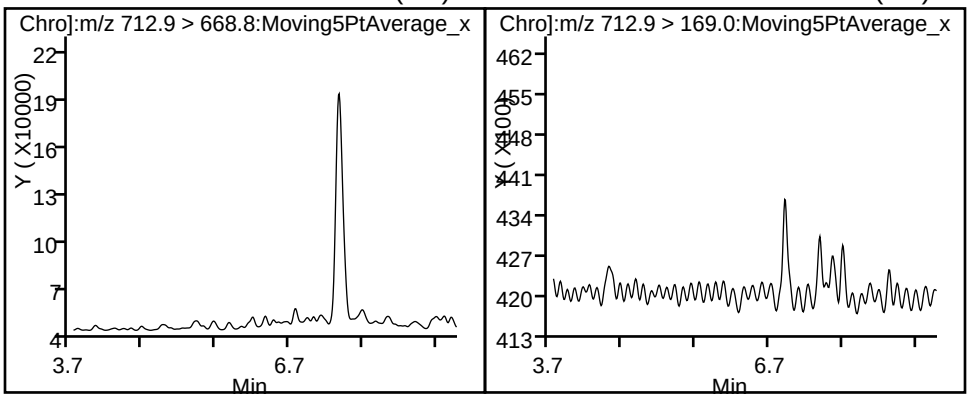
32 Perfluorooctane Sulfonamide (ND)



30 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-341407/1-A

Matrix: Water | Lab File ID: PC516I09105.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/08/2016 22:13

Sample wt/vol: 250(mL) | Date Analyzed: 09/10/2016 02:07

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 341622 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	105		60-155
STL01054	13C8 PFOS	124		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09105.d
Lims ID: MB 280-341407/1-A
Client ID:
Sample Type: MB
Inject. Date: 10-Sep-2016 02:07:18 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: mb 280-341407/1-a, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 12-Sep-2016 08:06:07 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK018

First Level Reviewer: fiedlerh Date: 12-Sep-2016 08:01:30

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.774	3.868	-0.094		26998770	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		3.869				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.014				ND			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.128				ND			
298.9 > 98.9		5.128							
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.128				ND			
298.9 > 98.9		5.128							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.553	5.591	-0.038		14571622	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.591				ND			
313.0 > 118.6		5.591							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.997	6.035	-0.038		2403700	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.026				ND			
363.0 > 168.9		6.026							
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.026				ND			
398.9 > 98.9		6.026							
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.026				ND			
398.9 > 98.9		6.026							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.365				ND			
449.0 > 98.9		6.365							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.365				ND			
449.0 > 98.9		6.365							
$ 14 13C8 PFOA									
421.0 > 375.9	6.337	6.375	-0.038	1.000	19715431	10.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.338	6.376	-0.038		23852744	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.376				ND			
413.0 > 169.0		6.376							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.610	6.648	-0.038		8962441	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.639				ND			
498.9 > 98.9		6.639							
$ 18 13C8 PFOS									
506.9 > 80.0	6.610	6.638	-0.028	1.000	5382671	11.5			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.630	6.658	-0.028		20806045	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.659				ND			
463.0 > 218.9		6.659							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.874	6.903	-0.029		19300483	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		6.903				ND			
513.0 > 219.0		6.903							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.091				ND			
598.9 > 99.0		7.091							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.091				ND			
598.9 > 99.0		7.091							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.091	7.110	-0.019		9755855	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.111				ND			
563.0 > 268.9		7.111							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.270	7.289	-0.019		16377972	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.289				ND			
613.0 > 168.9		7.289							
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.450				ND			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.444	7.462	-0.018		398122	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.463				ND			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.582				ND			
712.9 > 169.0		7.582							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

Report Date: 12-Sep-2016 08:06:11 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09105.d

Injection Date: 10-Sep-2016 02:07:18 Instrument ID: LC_LCMS5

Lims ID: MB 280-341407/1-A

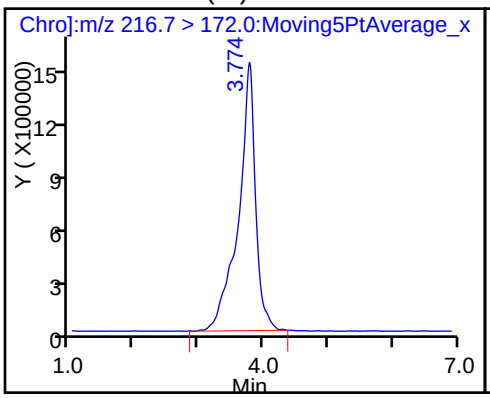
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4

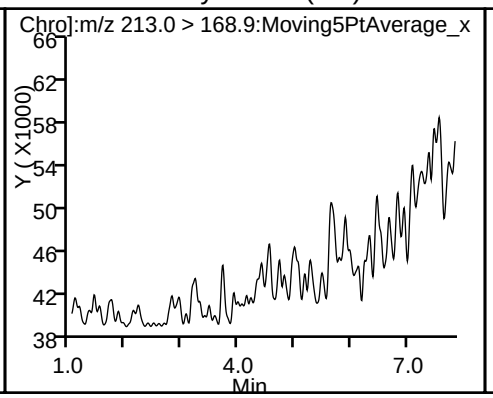
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

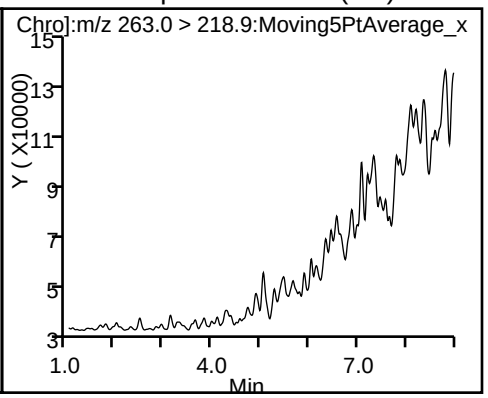
* 1 13C4 PFBA (IS)



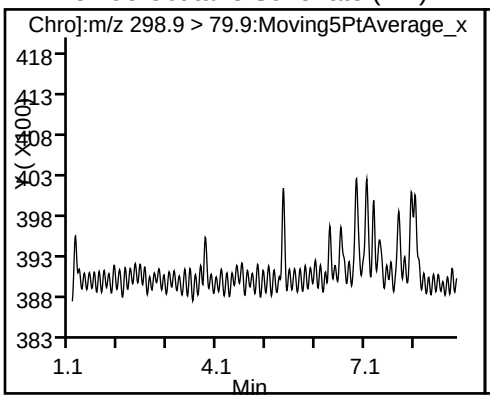
2 Perfluorobutyric acid (ND)



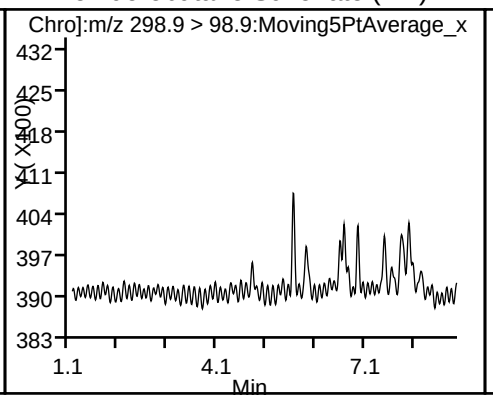
3 Perfluoropentanoic acid (ND)



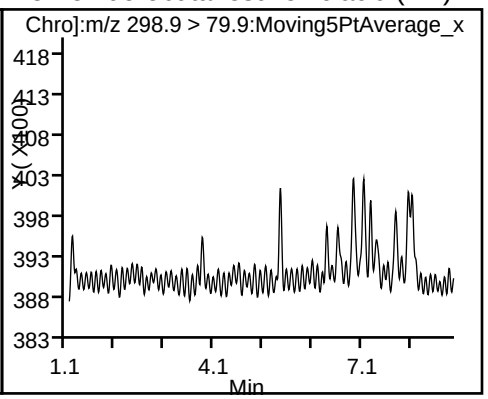
4 Perfluorobutane Sulfonate (ND)



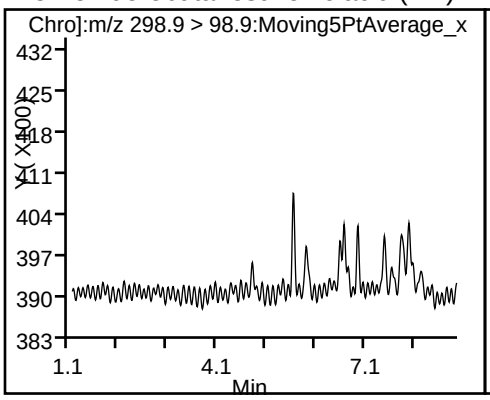
4 Perfluorobutane Sulfonate (ND)



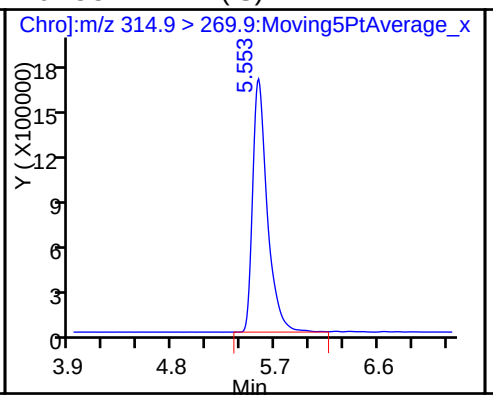
5 Perfluorobutanesulfonic acid (ND)



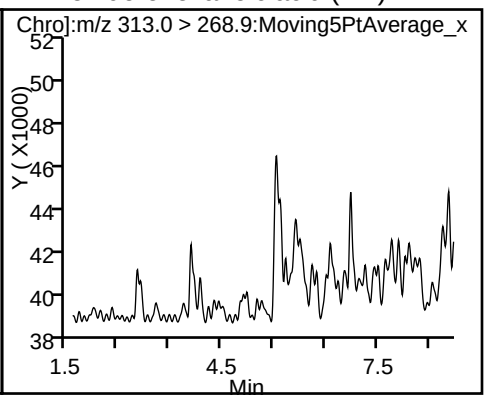
5 Perfluorobutanesulfonic acid (ND)



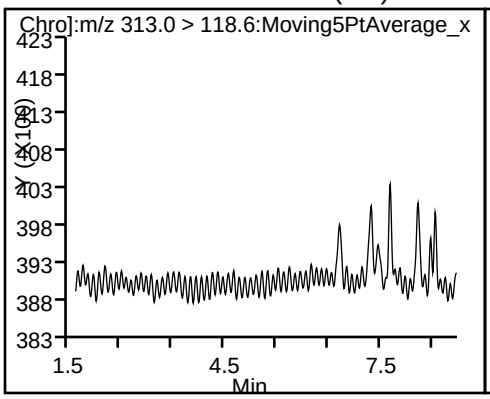
* 6 13C2 PFHxA (IS)



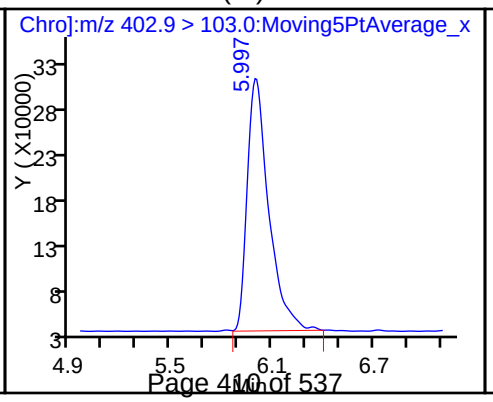
7 Perfluorohexanoic acid (ND)



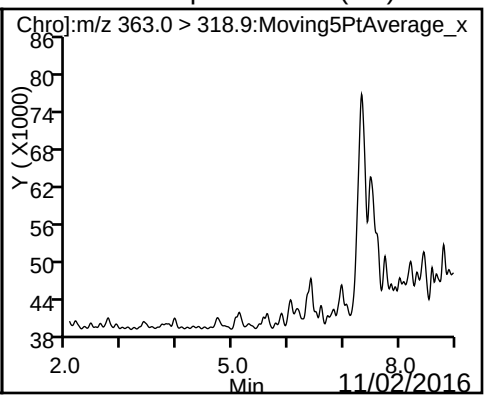
7 Perfluorohexanoic acid (ND)



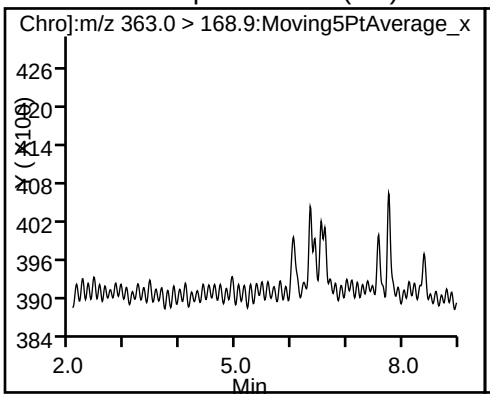
* 9 18O2 PFHxS (IS)



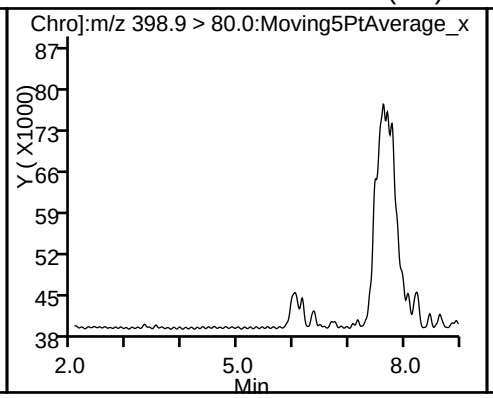
8 Perfluoroheptanoic acid (ND)



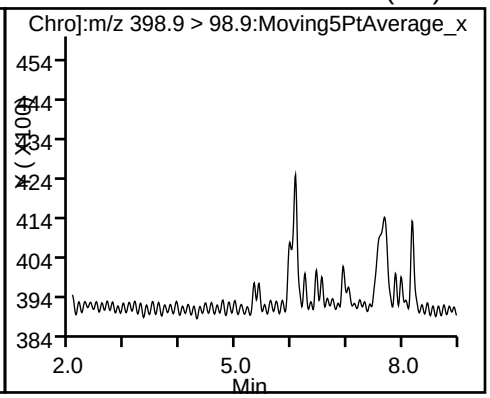
8 Perfluoroheptanoic acid (ND)



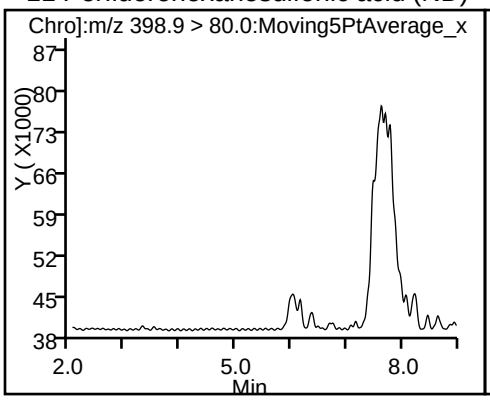
10 Perfluorohexane Sulfonate (ND)



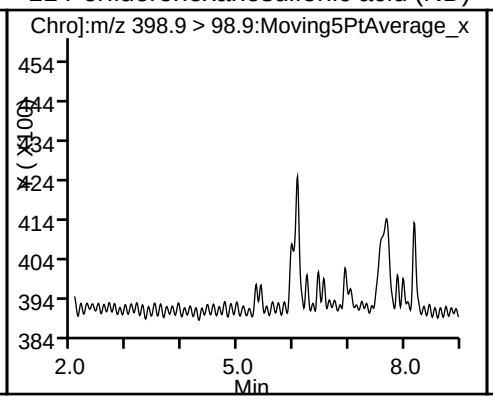
10 Perfluorohexane Sulfonate (ND)



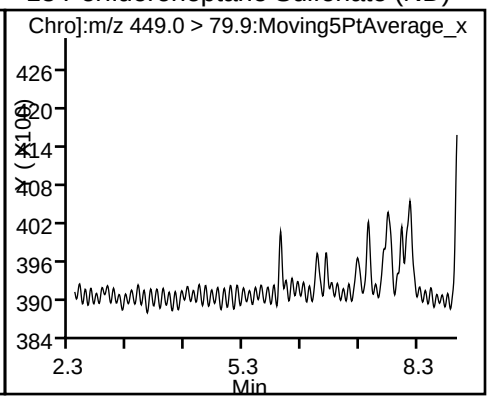
11 Perfluorohexanesulfonic acid (ND)



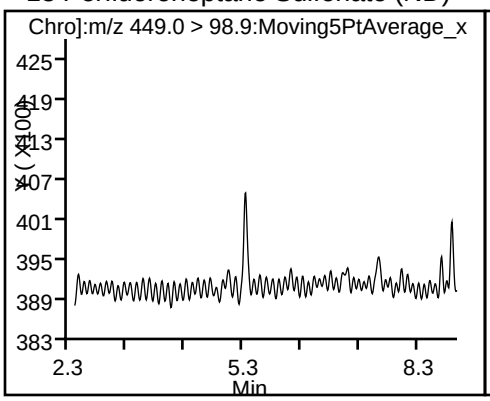
11 Perfluorohexanesulfonic acid (ND)



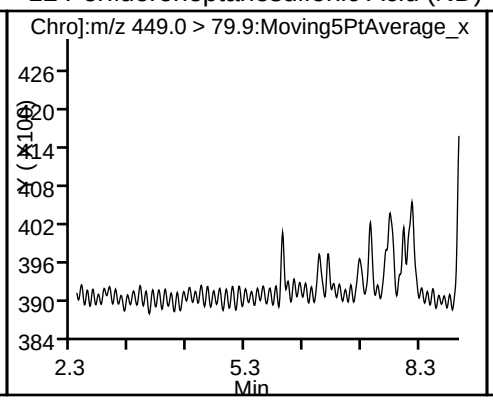
13 Perfluoroheptane Sulfonate (ND)



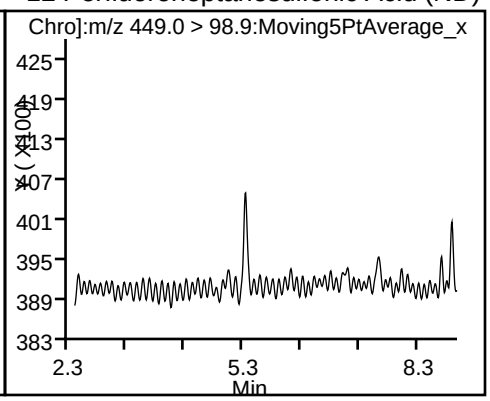
13 Perfluoroheptane Sulfonate (ND)



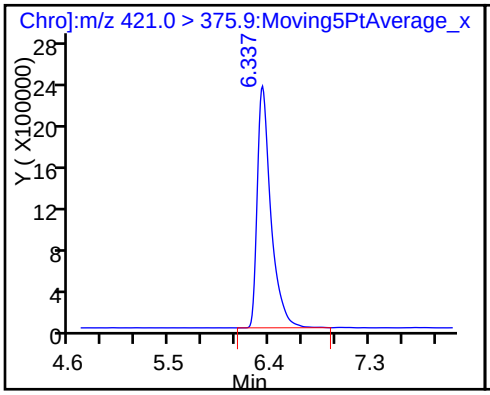
12 Perfluoroheptanesulfonic Acid (ND)



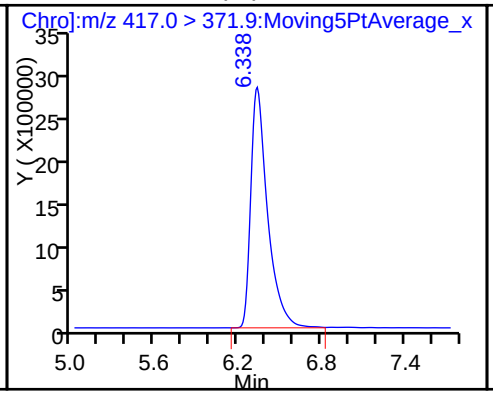
12 Perfluoroheptanesulfonic Acid (ND)



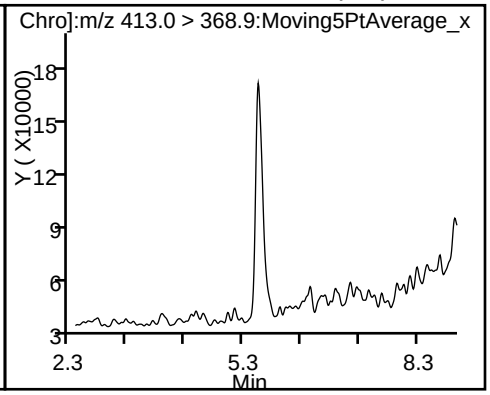
$ 14 13C8 PFOA



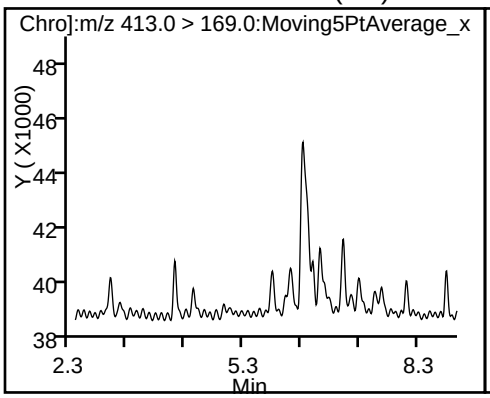
* 15 13C4 PFOA (IS)



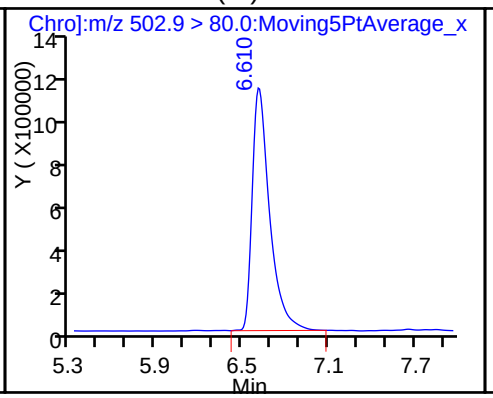
16 Perfluorooctanoic acid (ND)



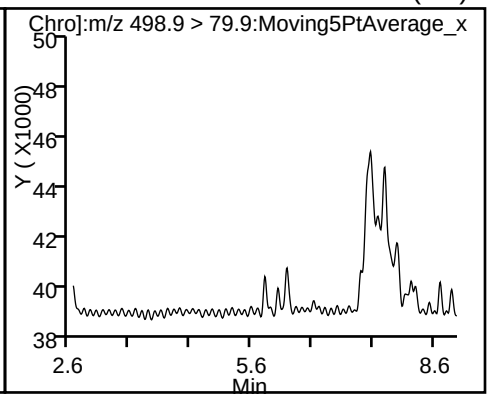
16 Perfluorooctanoic acid (ND)



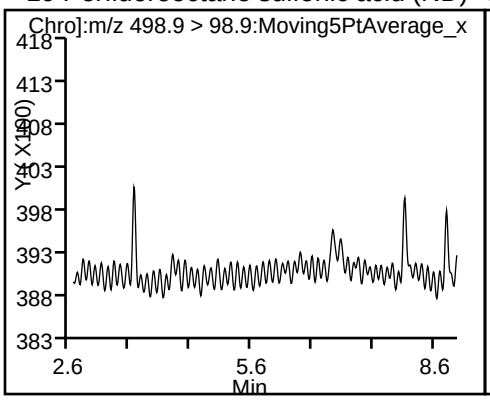
* 17 13C4 PFOS (IS)



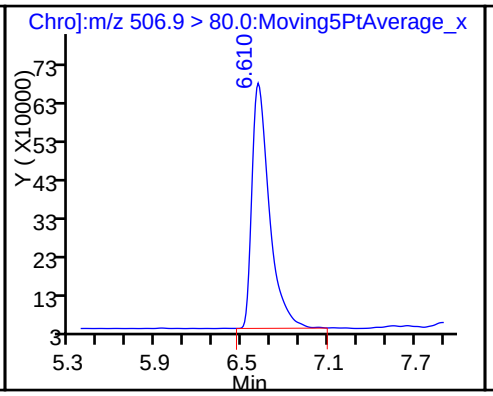
19 Perfluorooctane sulfonic acid (ND)



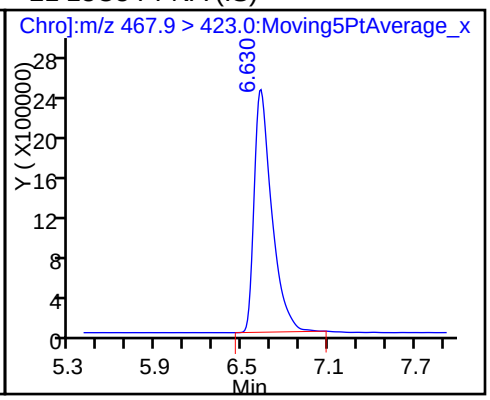
19 Perfluorooctane sulfonic acid (ND)



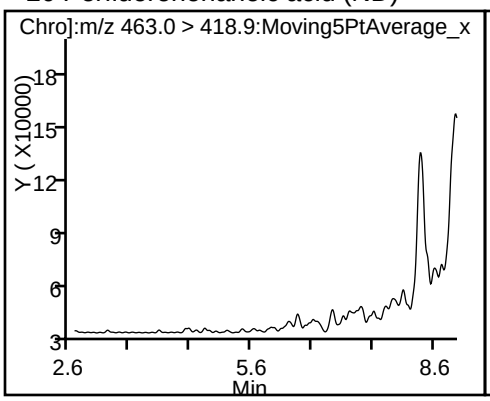
$ 18 13C8 PFOS



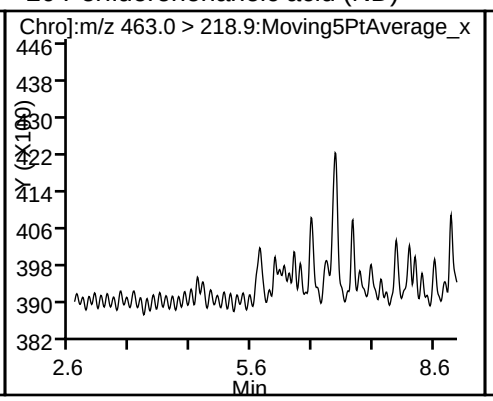
* 21 13C5 PFNA (IS)



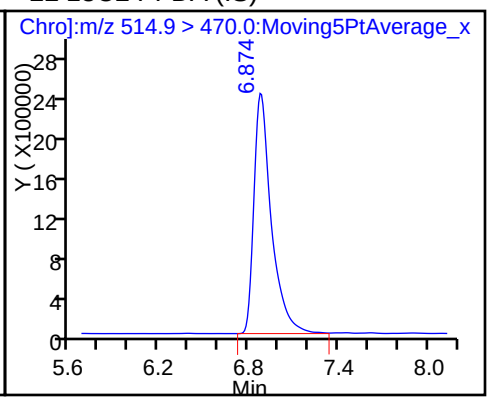
20 Perfluorononanoic acid (ND)



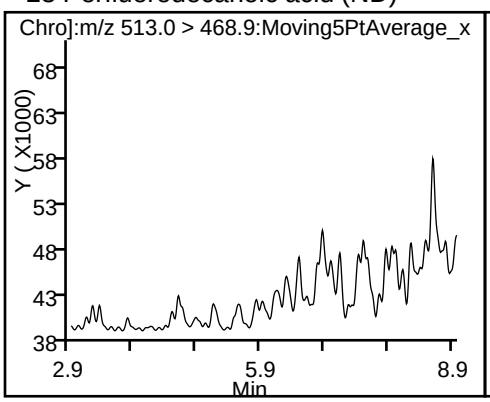
20 Perfluorononanoic acid (ND)



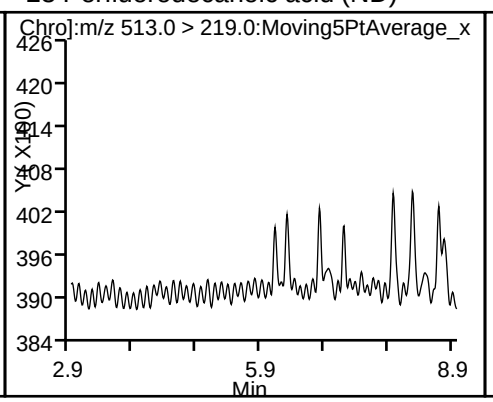
* 22 13C2 PFDA (IS)



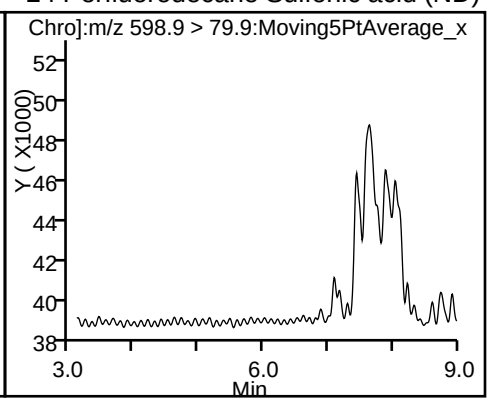
23 Perfluorodecanoic acid (ND)



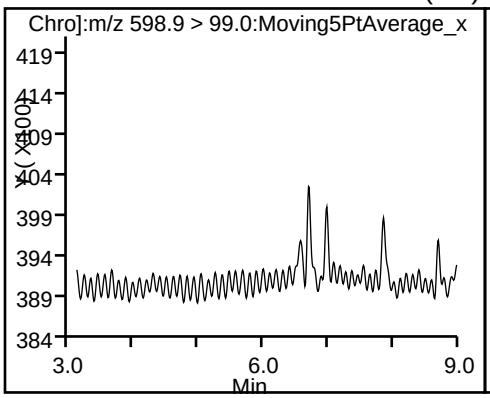
23 Perfluorodecanoic acid (ND)



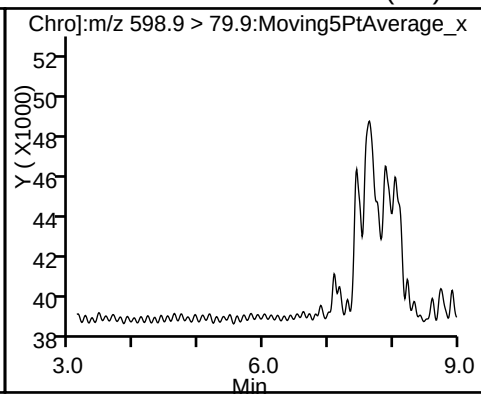
24 Perfluorodecane Sulfonic acid (ND)



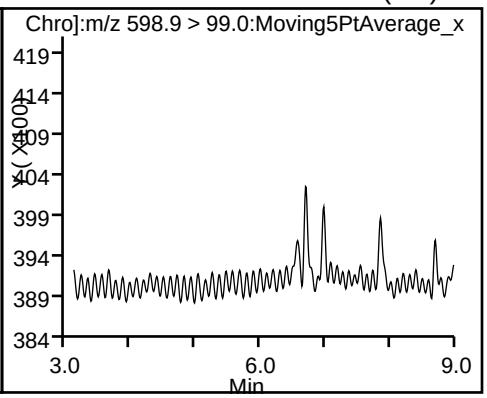
24 Perfluorodecane Sulfonic acid (ND)



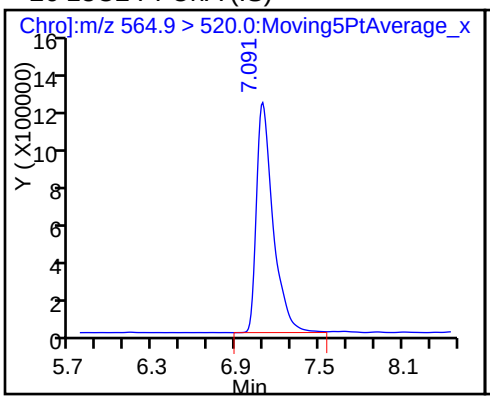
25 Perfluorodecane Sulfonate (ND)



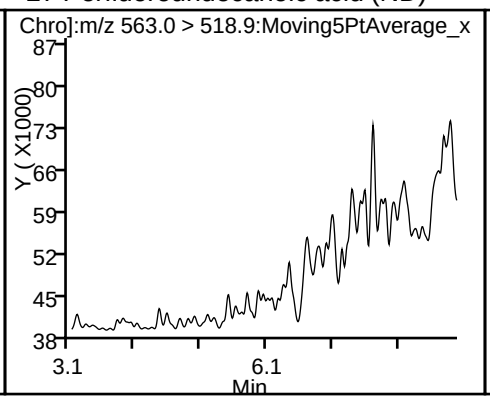
25 Perfluorodecane Sulfonate (ND)



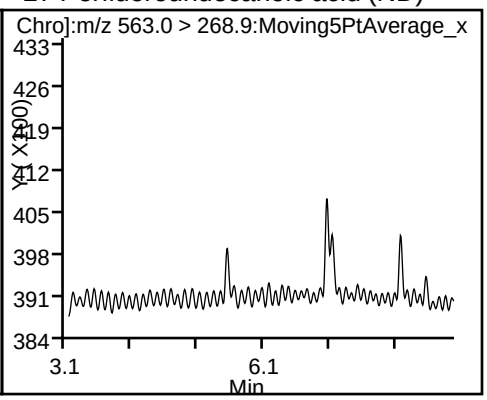
* 26 13C2 PFUnA (IS)



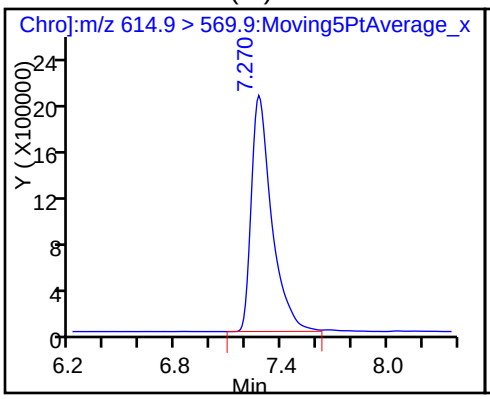
27 Perfluoroundecanoic acid (ND)



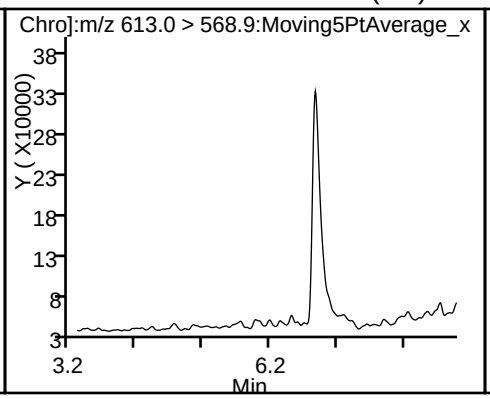
27 Perfluoroundecanoic acid (ND)



* 28 13C2 PFDoA (IS)



29 Perfluorododecanoic acid (ND)



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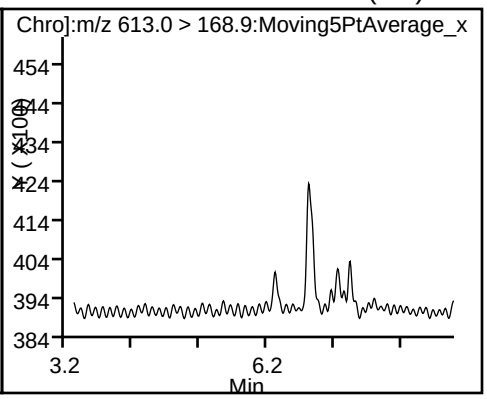
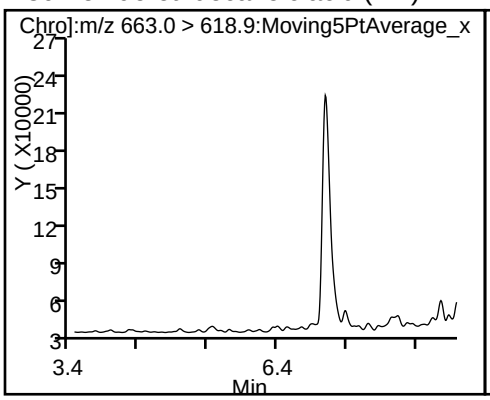
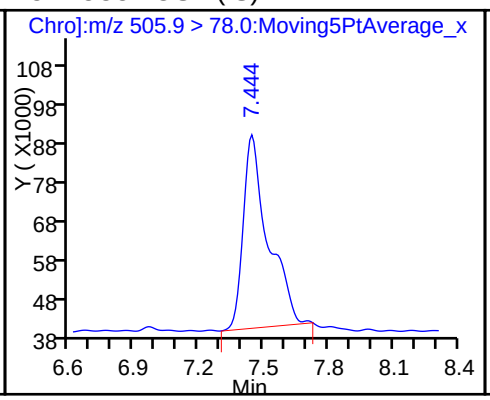


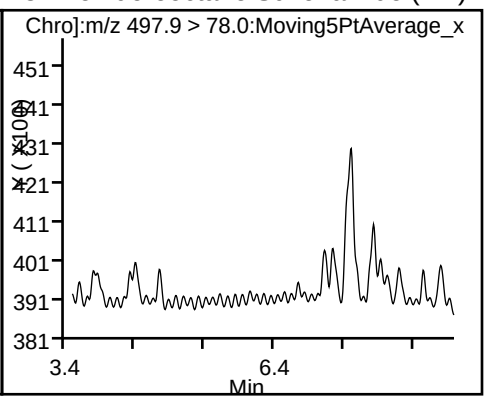
30 Perfluorotridecanoic acid (ND)



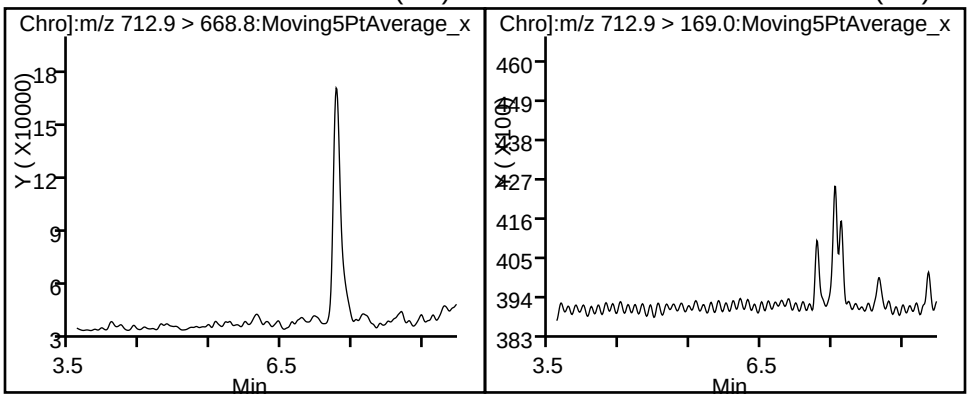
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide (ND)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-339949/2-A

Matrix: Solid | Lab File ID: PC516I02060.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.48(g) | Date Analyzed: 09/02/2016 22:24

Con. Extract Vol.: 20.4(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	16.58		0.78	0.14
375-85-9	Perfluoroheptanoic acid (PFHpA)	20.30		0.78	0.12
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	18.98		0.78	0.27
375-95-1	Perfluorononanoic acid (PFNA)	17.46		0.78	0.21
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19.05		0.78	0.14
335-67-1	Perfluorooctanoic acid (PFOA)	20.29		0.78	0.22

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	121		57-153
STL01054	13C8 PFOS	112		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02060.d
Lims ID: LCS 280-339949/2-A
Client ID:
Sample Type: LCS
Inject. Date: 02-Sep-2016 22:24:15 ALS Bottle#: 0 Worklist Smp#: 48
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-339949/2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:33:54 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:58:26

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
2 Perfluorobutyric acid									
213.0 > 168.9	4.058	4.030	0.028	1.000	15594899	10.4			
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.058	4.029	0.029		15298070	9.80			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.147	5.128	0.019	0.899	12421287	10.1			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.270	5.241	0.029	0.856	5695328	8.52			R
298.9 > 98.9	5.270	5.241	0.029	0.856	1623118		3.51(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.270	5.241	0.029	0.856	5695328	8.52			
298.9 > 98.9	5.270	5.241	0.029	0.856	1623118		3.51(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.705	0.019		11056928	9.80			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.724	5.705	0.019	1.000	9697234	9.68			
313.0 > 118.6	5.724	5.705	0.019	1.000	332403		29.17(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.159	6.140	0.019	1.000	5917515	9.75			R
398.9 > 98.9	6.159	6.140	0.019	1.000	1885454		3.14(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.159	6.140	0.019	1.000	5917515	9.75			
398.9 > 98.9	6.159	6.140	0.019	1.000	1885454		3.14(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.140	0.010	0.948	14830154	10.4			
363.0 > 168.9	6.150	6.140	0.010	0.948	3943199		3.76(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.149	0.009		1407796	9.27			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.479	6.479	0.0	0.960	5953751	9.04			
449.0 > 98.9	6.479	6.479	0.0	0.960	1667047		3.57(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.479	6.479	0.0	0.960	5953751	9.04			
449.0 > 98.9	6.479	6.479	0.0	0.960	1667047		3.57(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.489	0.0	1.000	13515252	11.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.489	0.0		16609719	9.80			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.489	0.0	1.000	17286696	10.4			
413.0 > 169.0	6.489	6.489	0.0	1.000	5278778		3.27(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.752	0.009	1.001	3514297	10.2			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.752	6.752	0.0	1.000	5993043	9.79			R
498.9 > 98.9	6.752	6.752	0.0	1.000	2310003		2.59(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.752	6.752	0.0		5631629	9.37			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.772	0.0		13670724	9.80			
20 Perfluorononanoic acid									
463.0 > 418.9	6.782	6.772	0.010	1.001	13230211	8.97			
463.0 > 218.9	6.772	6.772	0.0	1.000	1894008		6.99(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.016	0.0		13189000	9.80			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.017	7.007	0.010	1.000	12418965	9.73			
513.0 > 219.0	7.007	7.007	0.0	0.999	1105432		11.23(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.195	7.195	0.0	1.066	6230540	10.5			
598.9 > 99.0	7.195	7.195	0.0	1.066	1947680		3.20(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.195	7.195	0.0	1.066	6230540	10.5			
598.9 > 99.0	7.195	7.195	0.0	1.066	1947680		3.20(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.215	0.009		7857025	9.80			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.224	7.215	0.009	1.000	10291669	9.88			R
563.0 > 268.9	7.234	7.215	0.019	1.001	1236130		8.33(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.403	7.393	0.010		16597730	9.80			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.403	7.394	0.009	1.000	15674440	9.53			
613.0 > 168.9	7.394	7.394	0.0	0.999	2018975		7.76(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.548	7.567	-0.019		19538285	9.80			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.558	7.568	-0.010	1.001	17508266	8.50			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.019	18173794	8.48			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.668	0.009	1.037	14211675	8.63			
712.9 > 169.0	7.677	7.668	0.009	1.037	2326153		6.11(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Report Date: 06-Sep-2016 08:34:05 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02060.d

Injection Date: 02-Sep-2016 22:24:15 Instrument ID: LC_LCMS5

Lims ID: LCS 280-339949/2-A

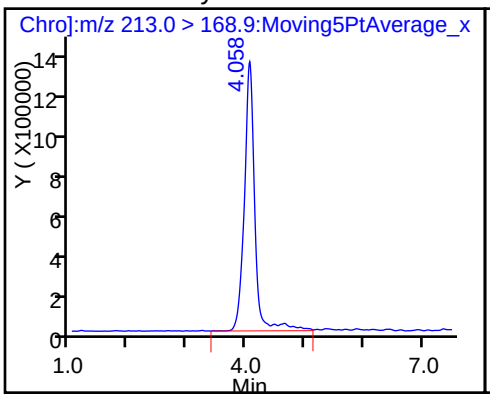
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 48

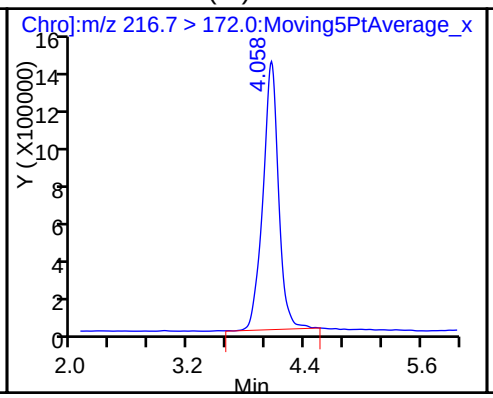
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

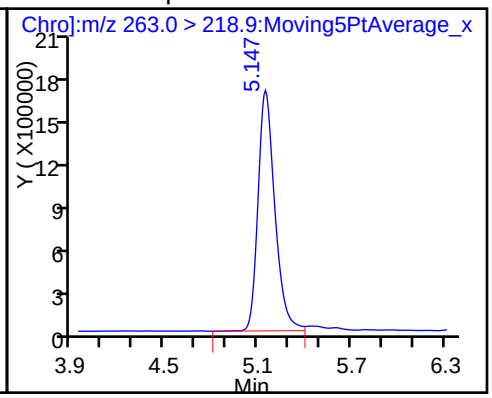
2 Perfluorobutyric acid



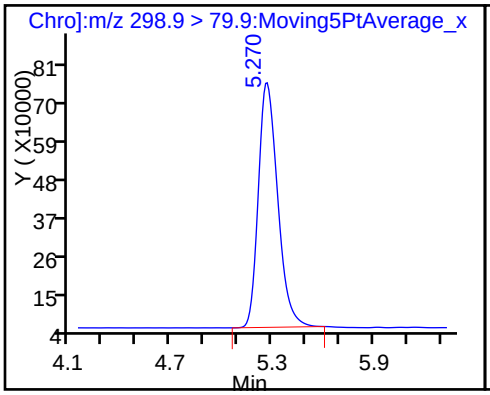
* 1 13C4 PFBA (IS)



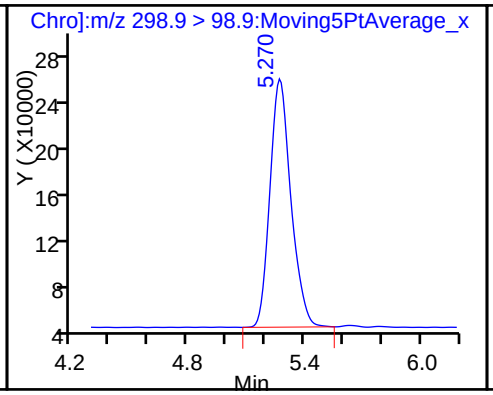
3 Perfluoropentanoic acid



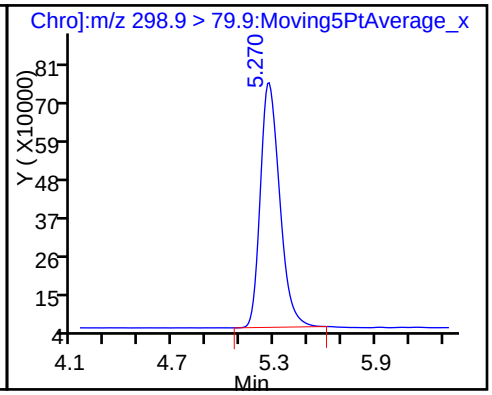
4 Perfluorobutane Sulfonate



4 Perfluorobutane Sulfonate

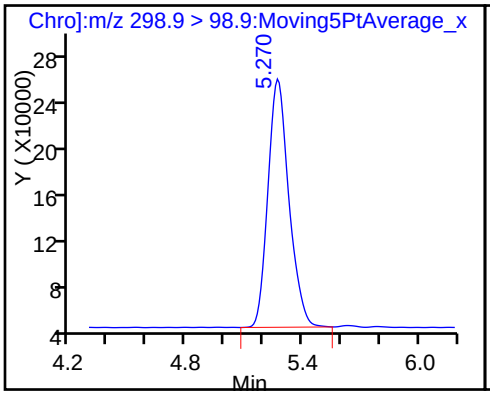


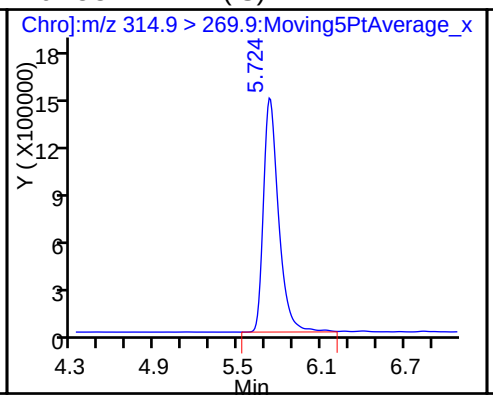
5 Perfluorobutanesulfonic acid



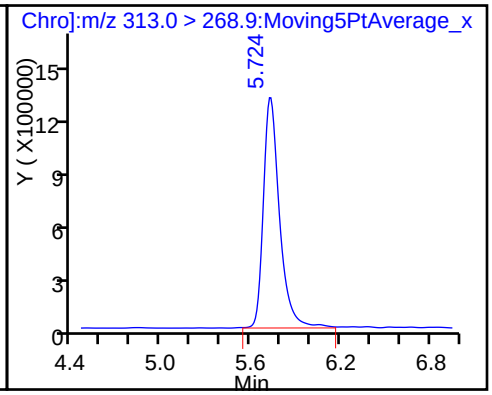
5 Perfluorobutanesulfonic acid

* 6 13C2 PFHxA (IS)

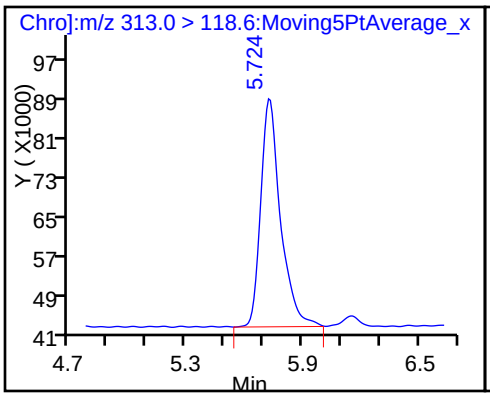




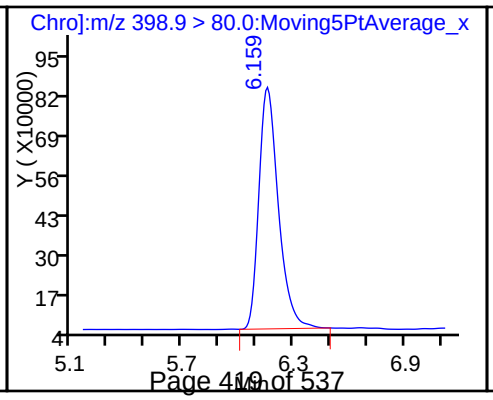
7 Perfluorohexanoic acid



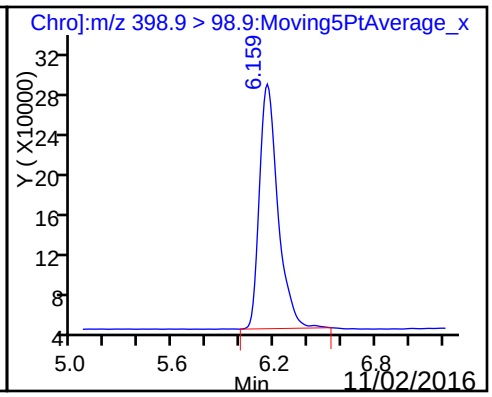
7 Perfluorohexanoic acid



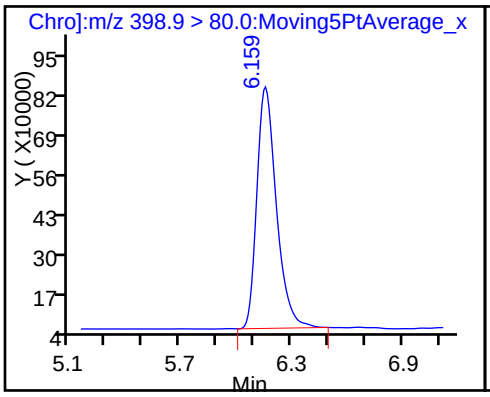
10 Perfluorohexane Sulfonate



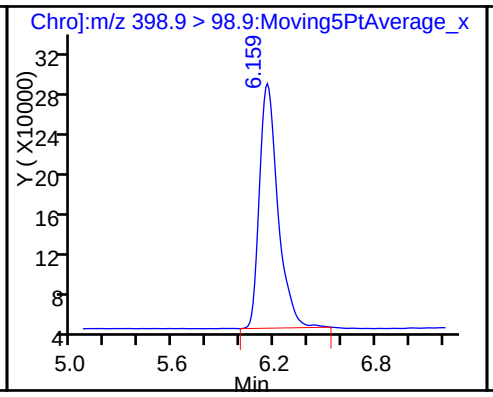
10 Perfluorohexane Sulfonate



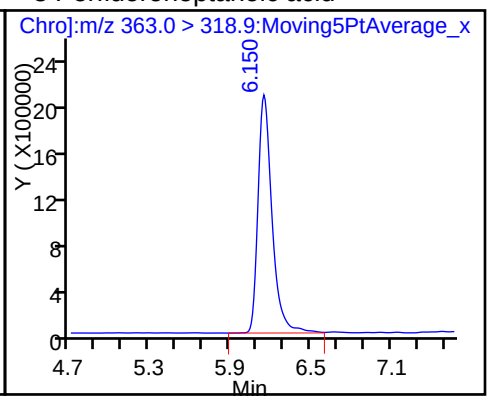
11 Perfluorohexanesulfonic acid



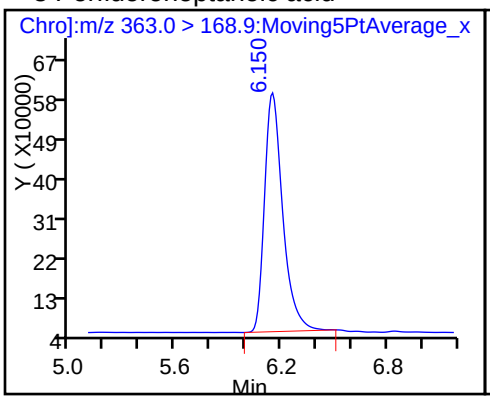
11 Perfluorohexanesulfonic acid



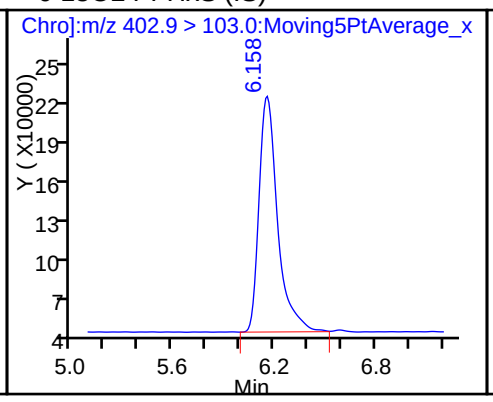
8 Perfluoroheptanoic acid



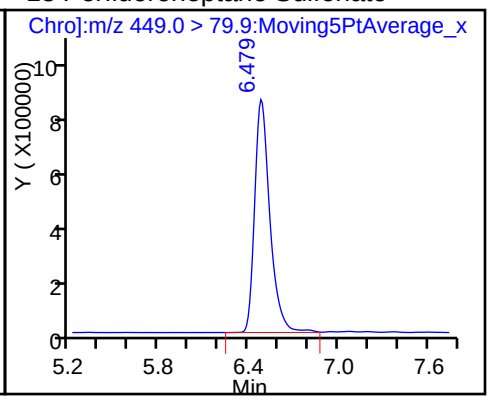
8 Perfluoroheptanoic acid



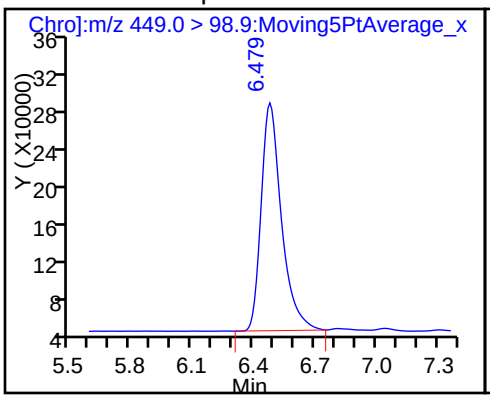
* 9 18O2 PFHxS (IS)



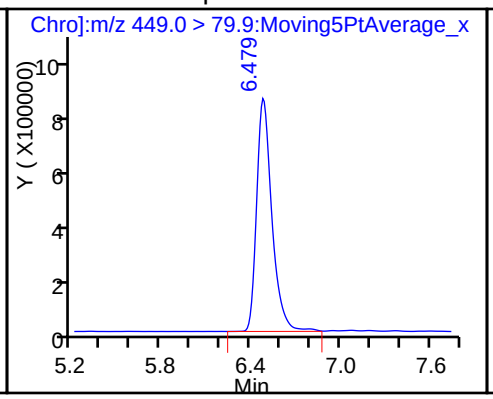
13 Perfluoroheptane Sulfonate



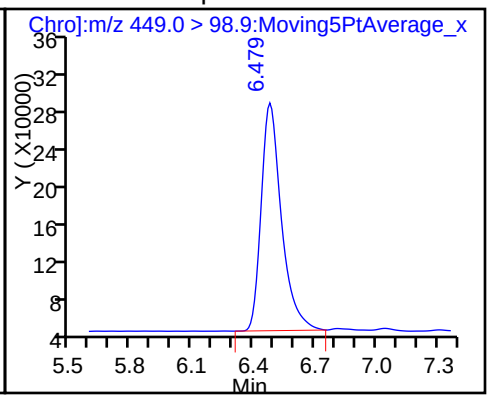
13 Perfluoroheptane Sulfonate



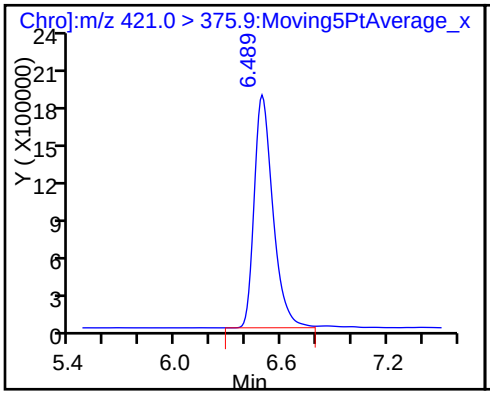
12 Perfluoroheptanesulfonic Acid



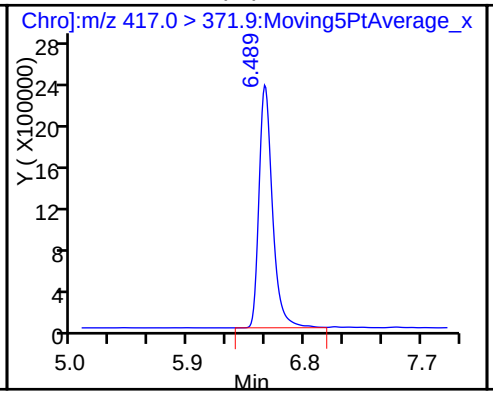
12 Perfluoroheptanesulfonic Acid



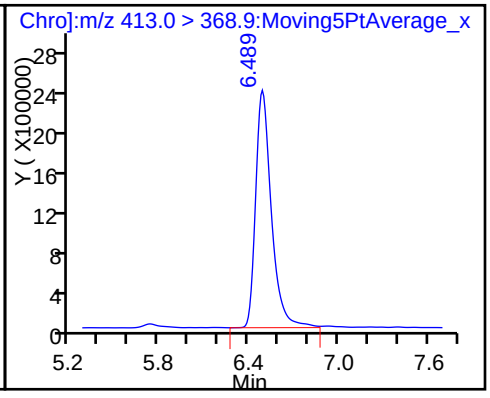
$ 14 13C8 PFOA



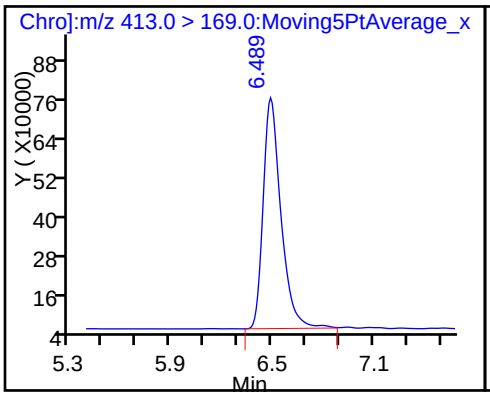
* 15 13C4 PFOA (IS)



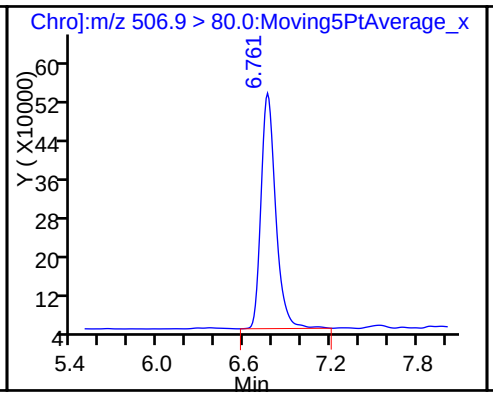
16 Perfluorooctanoic acid



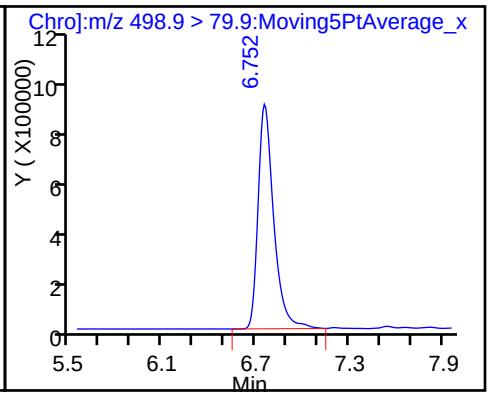
16 Perfluorooctanoic acid



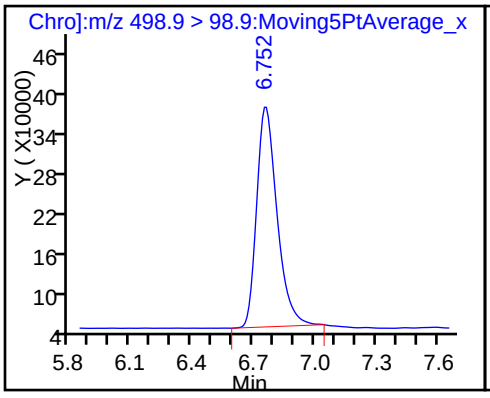
$ 18 13C8 PFOS



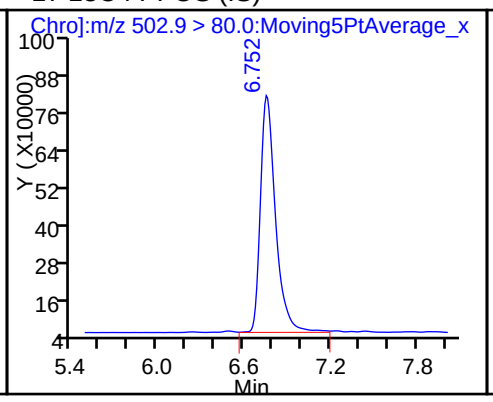
19 Perfluorooctane sulfonic acid



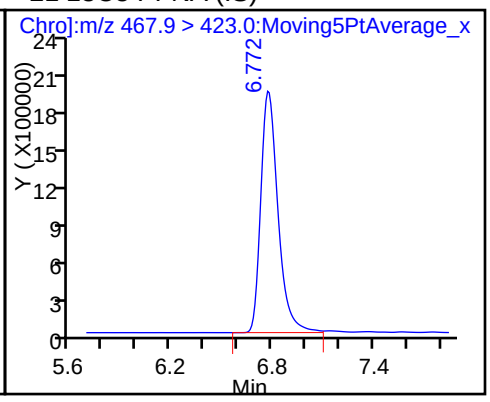
19 Perfluorooctane sulfonic acid



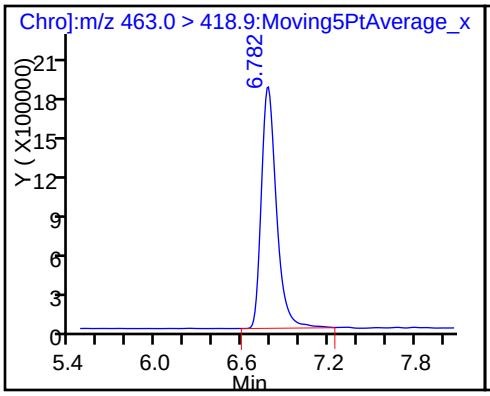
* 17 13C4 PFOS (IS)



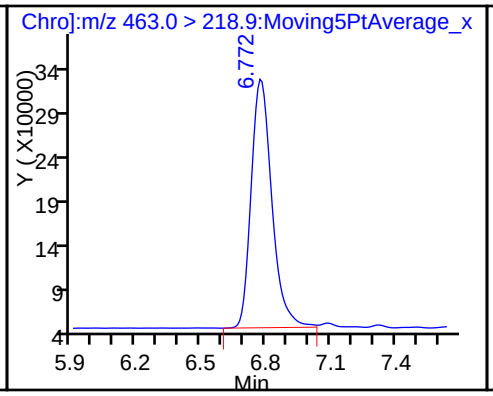
* 21 13C5 PFNA (IS)



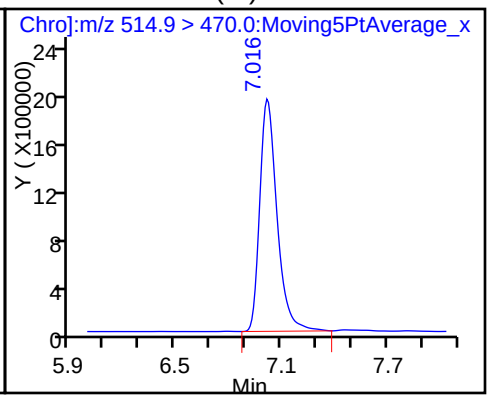
20 Perfluorononanoic acid



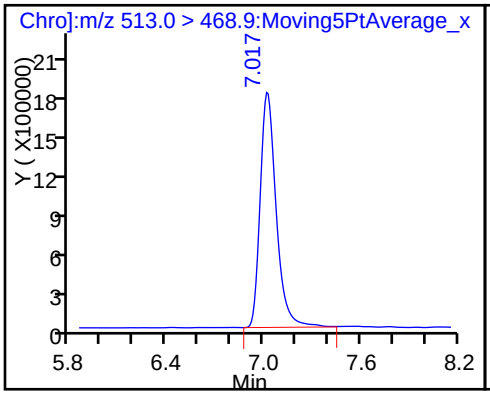
20 Perfluorononanoic acid



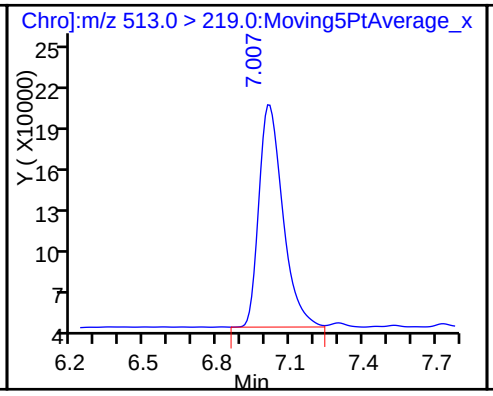
* 22 13C2 PFDA (IS)



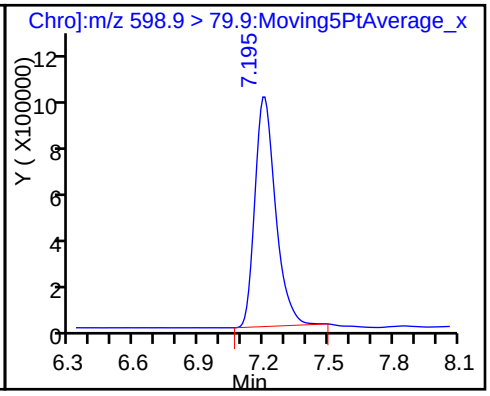
23 Perfluorodecanoic acid



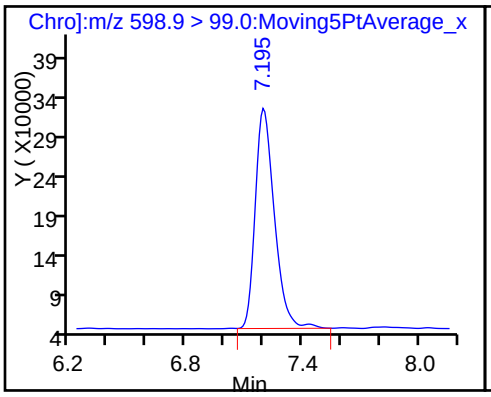
23 Perfluorodecanoic acid



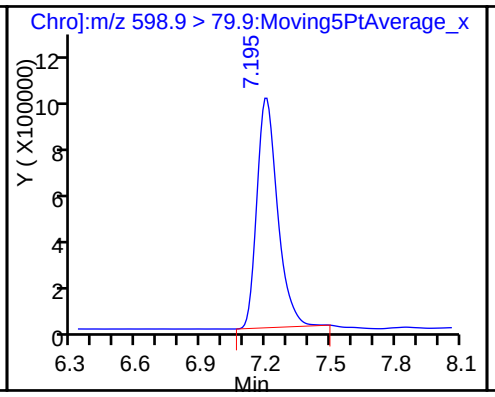
24 Perfluorodecane Sulfonic acid



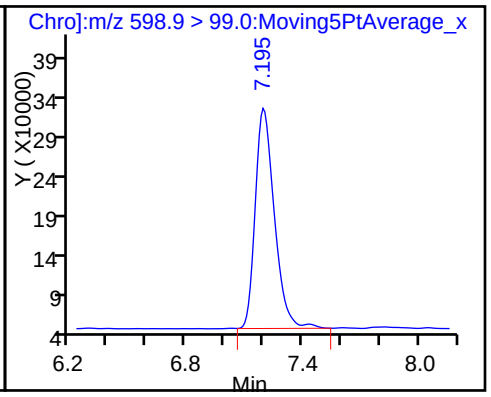
24 Perfluorodecane Sulfonic acid



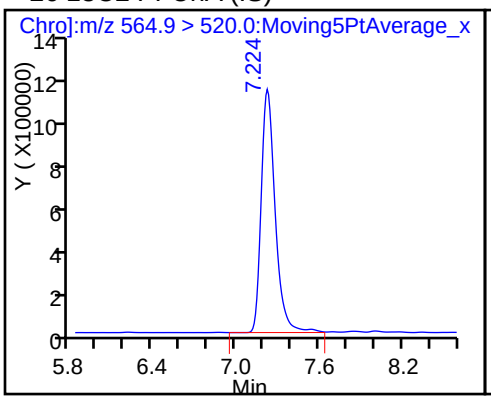
25 Perfluorodecane Sulfonate



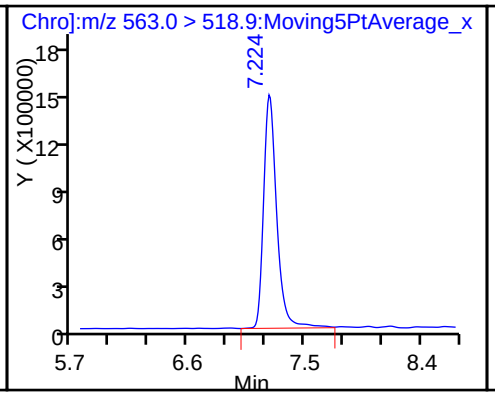
25 Perfluorodecane Sulfonate



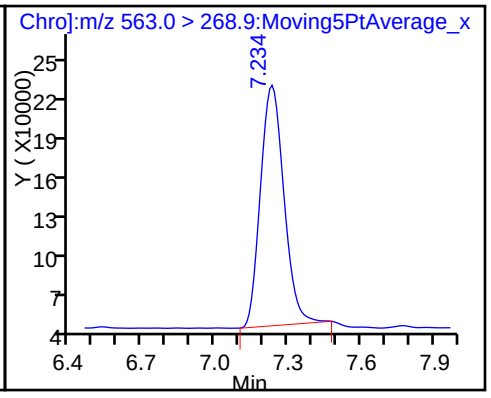
* 26 13C2 PFUnA (IS)



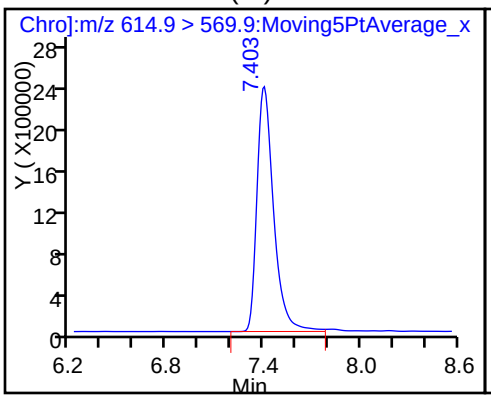
27 Perfluoroundecanoic acid



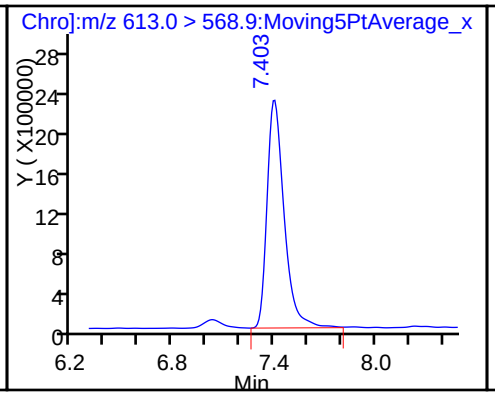
27 Perfluoroundecanoic acid



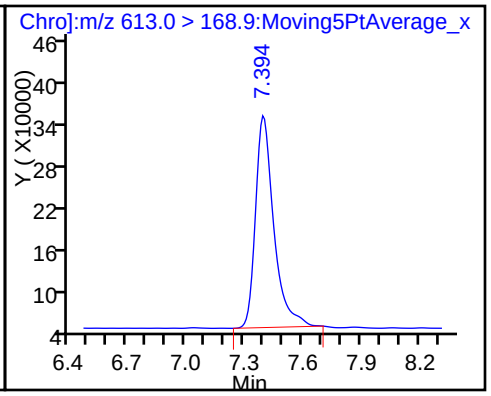
* 28 13C2 PFDoA (IS)



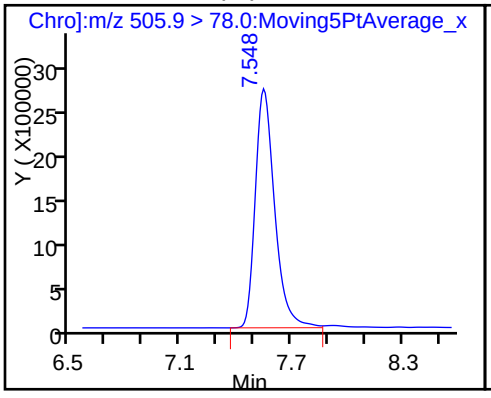
29 Perfluorododecanoic acid



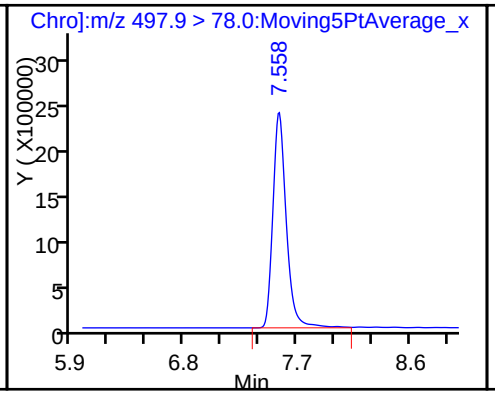
29 Perfluorododecanoic acid



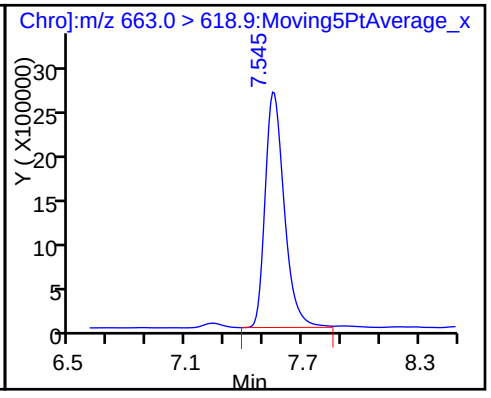
* 31 13C8 FOSA (IS)



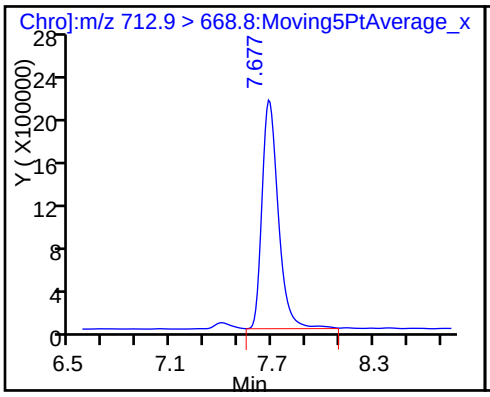
32 Perfluorooctane Sulfonamide



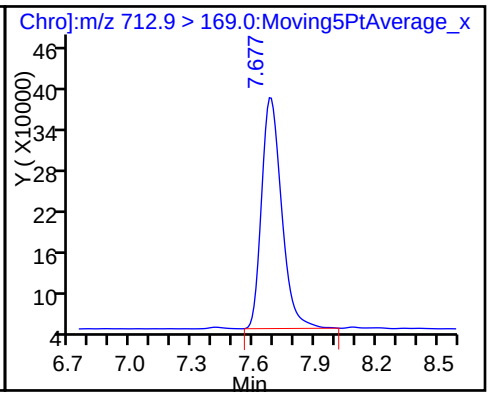
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-340544/2-A

Matrix: Water | Lab File ID: PC516I02017.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/01/2016 19:29

Sample wt/vol: 250(mL) | Date Analyzed: 09/02/2016 13:34

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340829 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.167		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.186		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.170		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.172		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.170		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.182		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	125		60-155
STL01054	13C8 PFOS	103		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02017.d
Lims ID: LCS 280-340544/2-A
Client ID:
Sample Type: LCS
Inject. Date: 02-Sep-2016 13:34:23 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-340544/2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:24 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:26:54

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.077	4.314	-0.237		17606729	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.068	4.314	-0.246	0.998	15652279	9.22			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.138	5.346	-0.208	0.901	12261670	9.21			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.251	5.459	-0.208	0.855	6010048	8.33			R
298.9 > 98.9	5.251	5.459	-0.208	0.855	1726803		3.48(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.251	5.459	-0.208	0.855	6010048	8.33			
298.9 > 98.9	5.251	5.459	-0.208	0.855	1726803		3.48(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.923	-0.218		12206841	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.705	5.923	-0.218	1.000	9432137	8.70			
313.0 > 118.6	5.705	5.923	-0.218	1.000	274617		34.35(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.139	6.348	-0.209		1549466	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.140	6.348	-0.208	1.000	5562981	8.49			
398.9 > 98.9	6.140	6.348	-0.208	1.000	1617951		3.44(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.140	6.348	-0.208	1.000	5562981	8.49			R
398.9 > 98.9	6.140	6.348	-0.208	1.000	1617951		3.44(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.131	6.349	-0.218	0.948	13345919	9.32			
363.0 > 168.9	6.131	6.349	-0.218	0.948	3504020		3.81(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.460	6.678	-0.218	0.958	5203064	7.91			
449.0 > 98.9	6.460	6.678	-0.218	0.958	1712418		3.04(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.460	6.678	-0.218	0.958	5203064	7.91			
449.0 > 98.9	6.460	6.678	-0.218	0.958	1712418		3.04(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.470	6.688	-0.218	1.000	14364304	12.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.470	6.688	-0.218		17060212	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.471	6.688	-0.217	1.000	15241923	9.12			
413.0 > 169.0	6.471	6.688	-0.217	1.000	5008404		3.04(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.742	6.960	-0.218	1.000	3314695	9.60			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.743	6.961	-0.218		5742336	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.743	6.951	-0.208	1.000	5195856	8.50			R
498.9 > 98.9	6.743	6.951	-0.208	1.000	1985457		2.62(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.763	6.971	-0.208		13504779	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.971	-0.218	0.999	12265716	8.59			
463.0 > 218.9	6.763	6.971	-0.208	1.000	1628017		7.53(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	7.206	-0.199		12816337	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.998	7.206	-0.208	0.999	11177349	9.19			
513.0 > 219.0	6.998	7.206	-0.208	0.999	1009321		11.07(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.385	-0.199	1.066	4450053	7.46			
598.9 > 99.0	7.195	7.385	-0.190	1.067	1509164		2.95(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.385	-0.199	1.066	4450053	7.46			
598.9 > 99.0	7.195	7.385	-0.190	1.067	1509164		2.95(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.404	-0.189		7402956	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.404	-0.189	1.000	8966359	9.31			R
563.0 > 268.9	7.205	7.404	-0.199	0.999	1021471		8.78(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.573	-0.180		12365149	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.574	-0.180	1.000	10914227	9.08			
613.0 > 168.9	7.384	7.574	-0.190	0.999	1291837		8.45(5.96-11.06)		
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.538	7.718	-0.180		960815	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.719	-0.189	0.999	742339	7.47			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.715	-0.170	1.020	11091473	7.08			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.847	-0.170	1.038	8106019	6.73			
712.9 > 169.0	7.677	7.847	-0.170	1.038	1394174		5.81(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 06-Sep-2016 08:22:32 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02017.d

Injection Date: 02-Sep-2016 13:34:23 Instrument ID: LC_LCMS5

Lims ID: LCS 280-340544/2-A

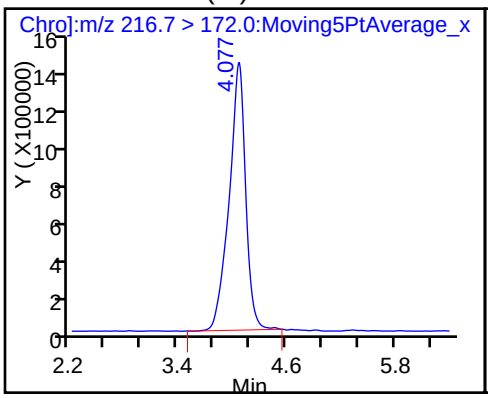
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

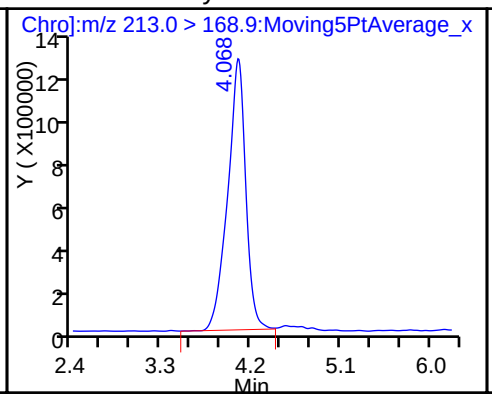
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

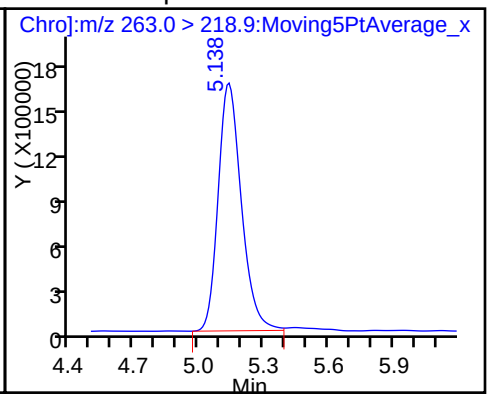
* 1 13C4 PFBA (IS)



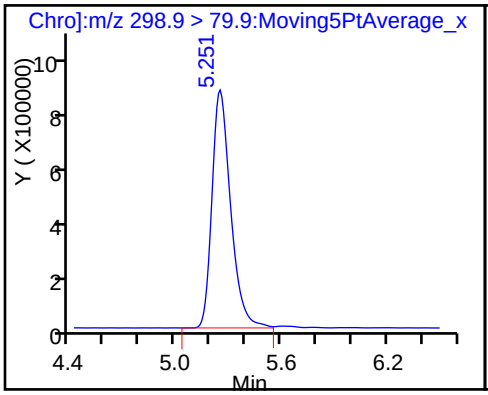
2 Perfluorobutyric acid



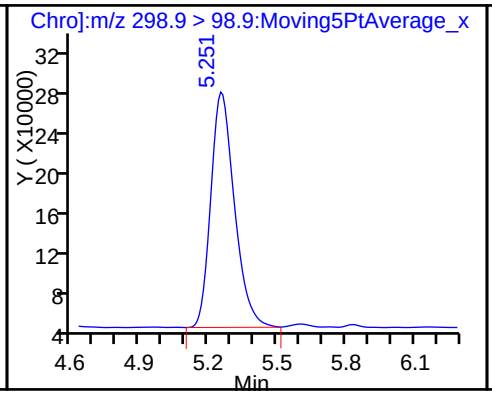
3 Perfluoropentanoic acid



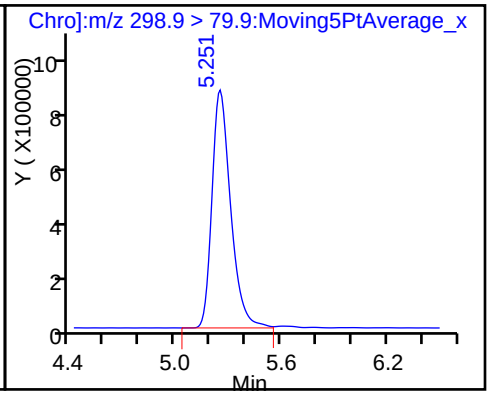
4 Perfluorobutane Sulfonate



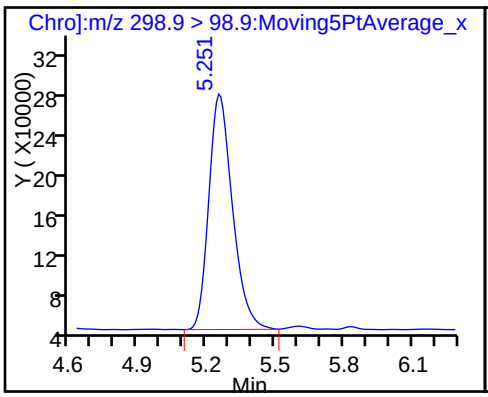
4 Perfluorobutane Sulfonate



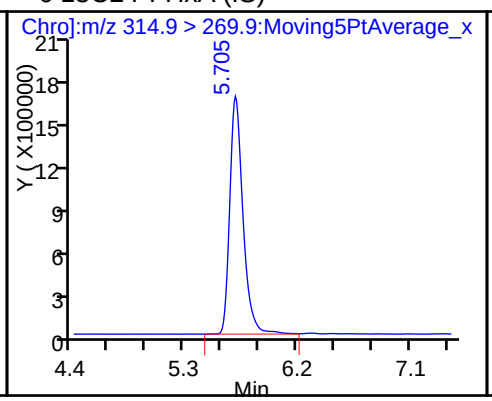
5 Perfluorobutanesulfonic acid



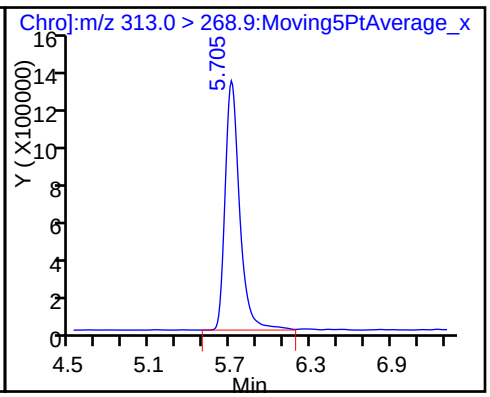
5 Perfluorobutanesulfonic acid



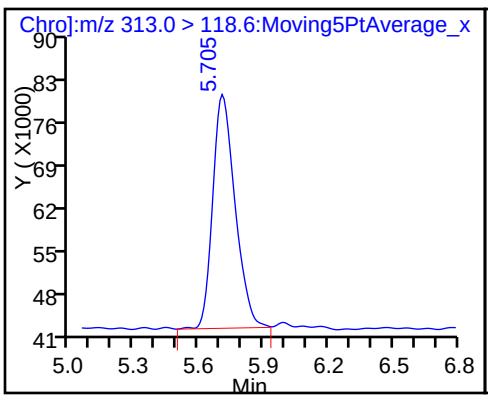
* 6 13C2 PFHxA (IS)



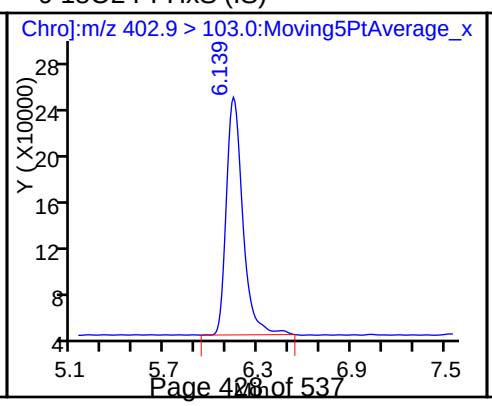
7 Perfluorohexanoic acid



7 Perfluorohexanoic acid



* 9 18O2 PFHxS (IS)



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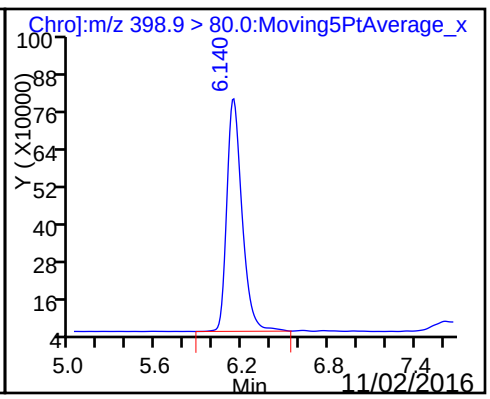
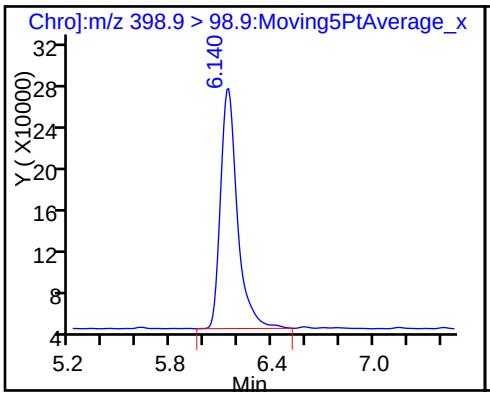
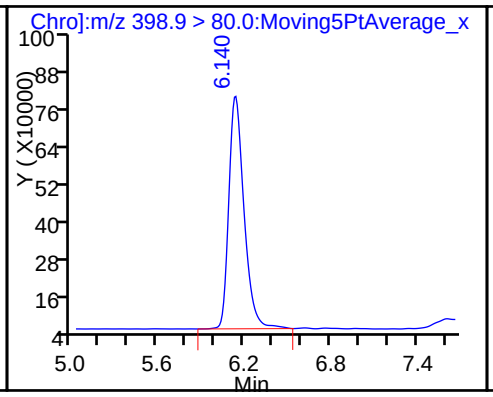


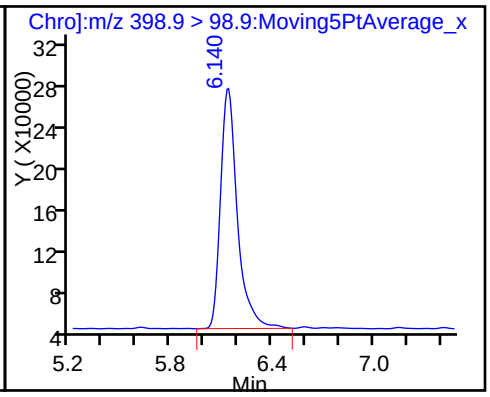
11 Perfluorohexanesulfonic acid



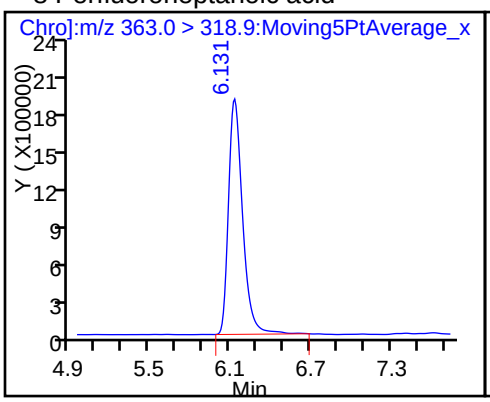
10 Perfluorohexane Sulfonate



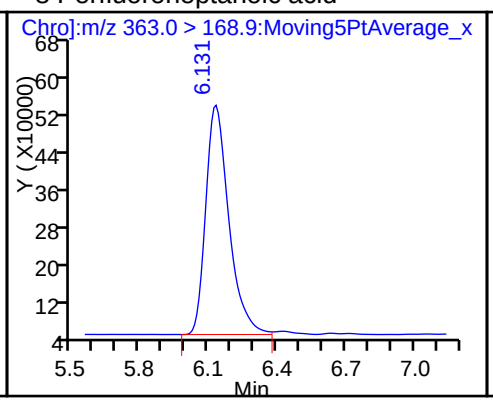
10 Perfluorohexane Sulfonate



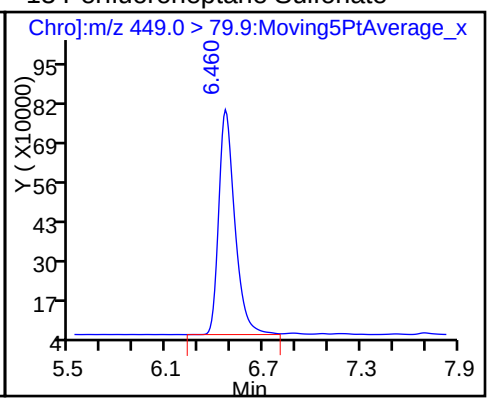
8 Perfluoroheptanoic acid



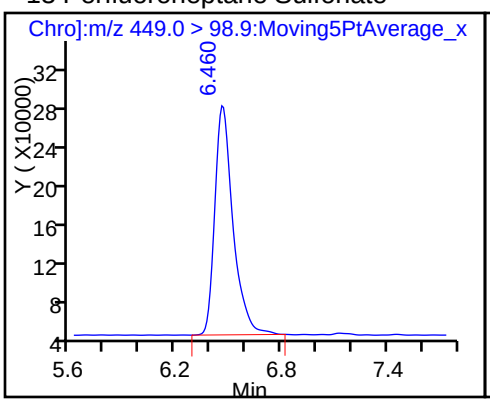
8 Perfluoroheptanoic acid



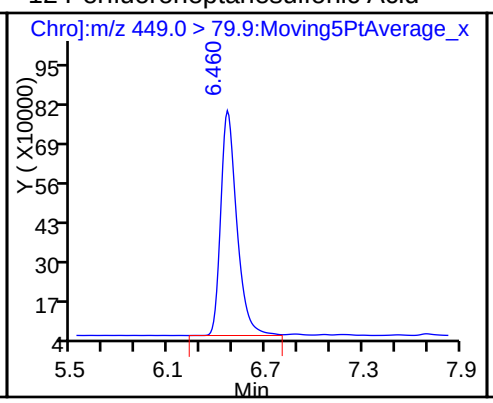
13 Perfluoroheptane Sulfonate



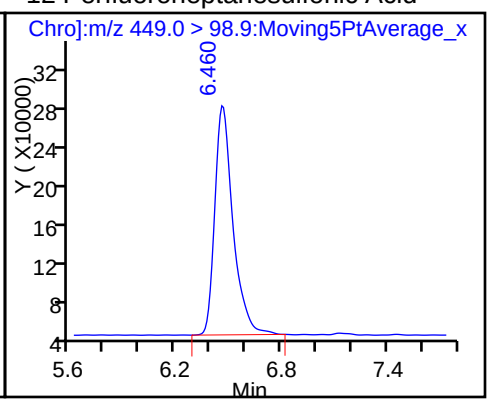
13 Perfluoroheptane Sulfonate



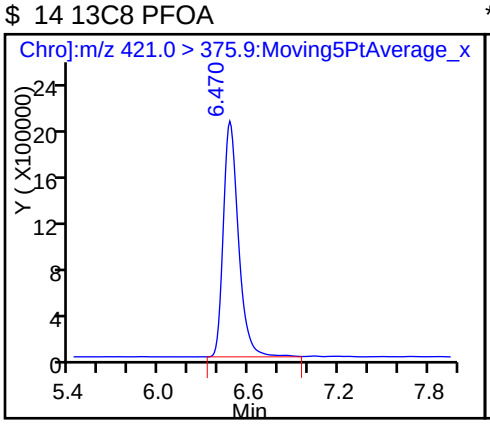
12 Perfluoroheptanesulfonic Acid



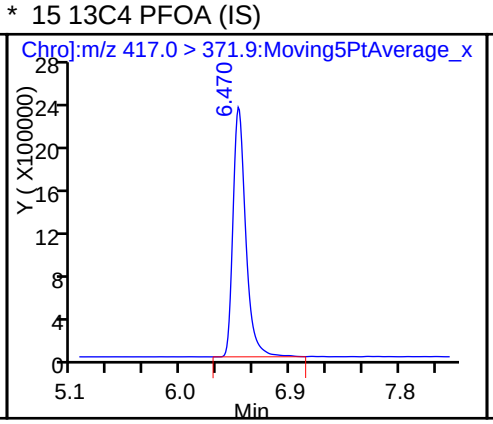
12 Perfluoroheptanesulfonic Acid



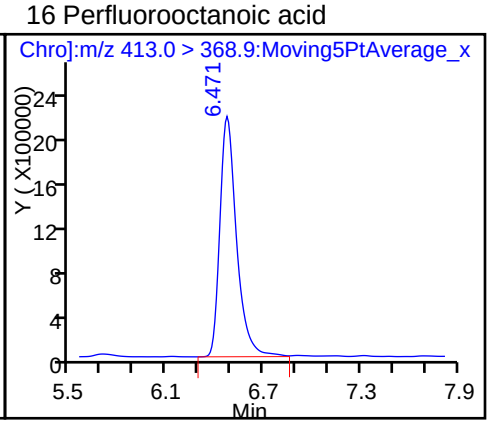
$ 14 13C8 PFOA



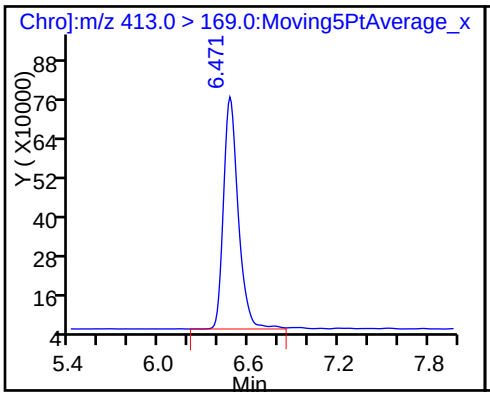
* 15 13C4 PFOA (IS)



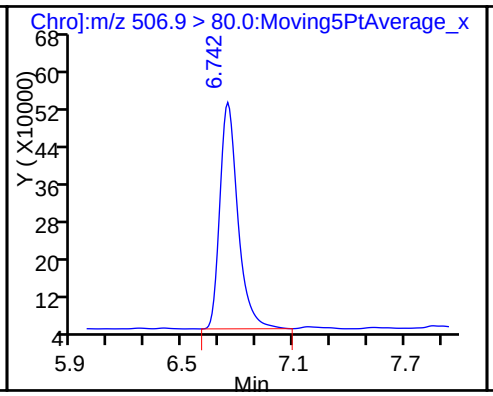
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid



$ 18 13C8 PFOS



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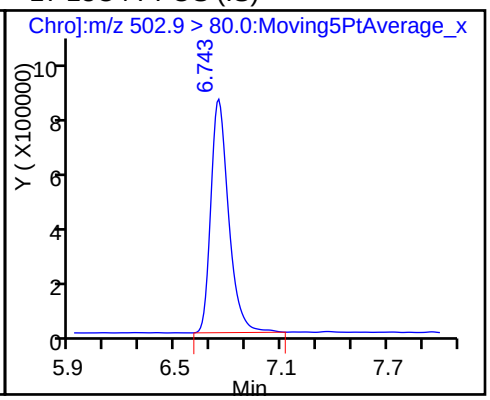
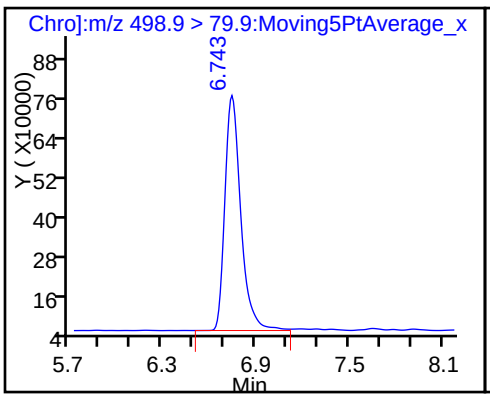
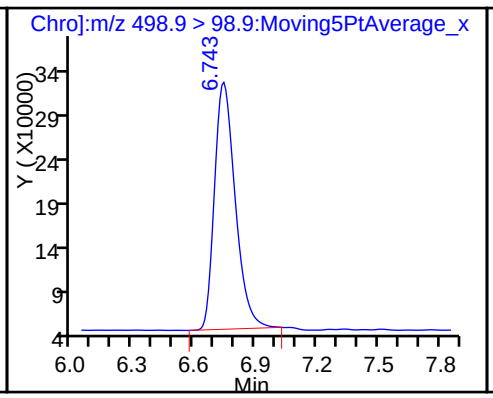


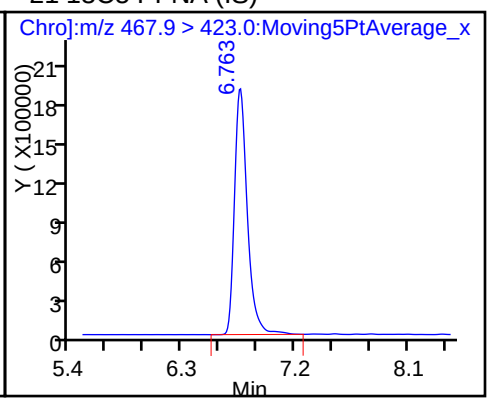
19 Perfluorooctane sulfonic acid



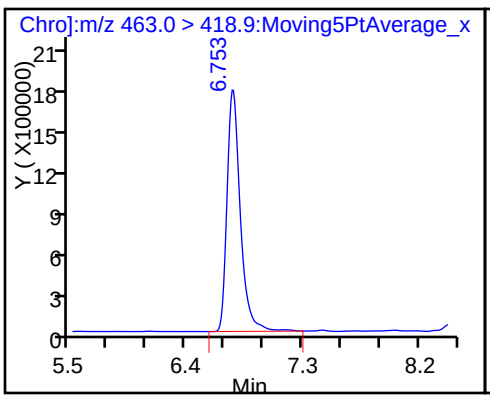
19 Perfluorooctane sulfonic acid



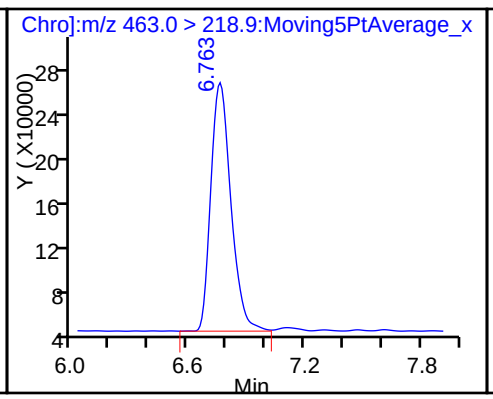
* 21 13C5 PFNA (IS)



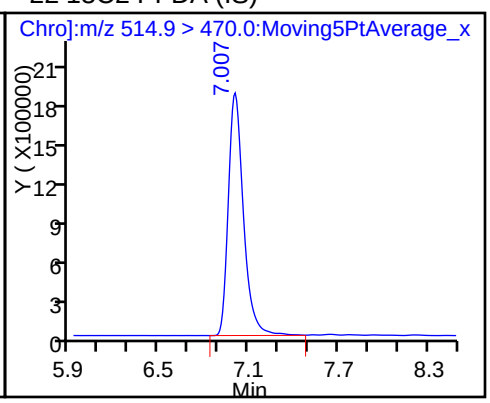
20 Perfluorononanoic acid



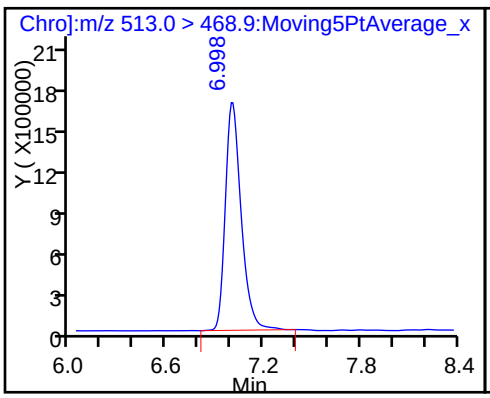
20 Perfluorononanoic acid



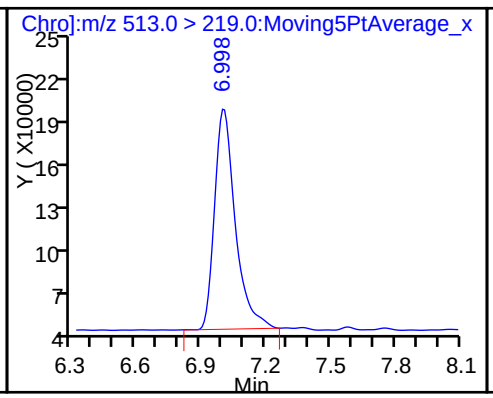
* 22 13C2 PFDA (IS)



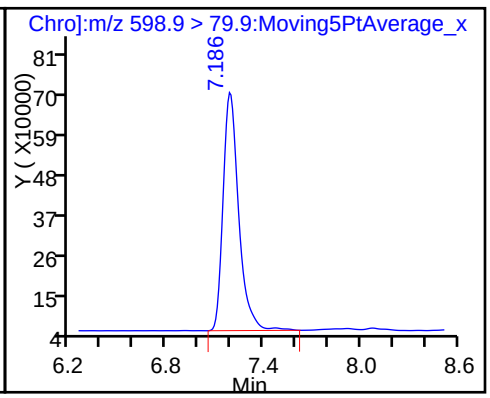
23 Perfluorodecanoic acid



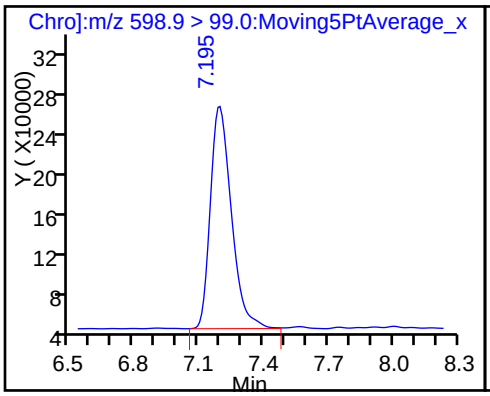
23 Perfluorodecanoic acid



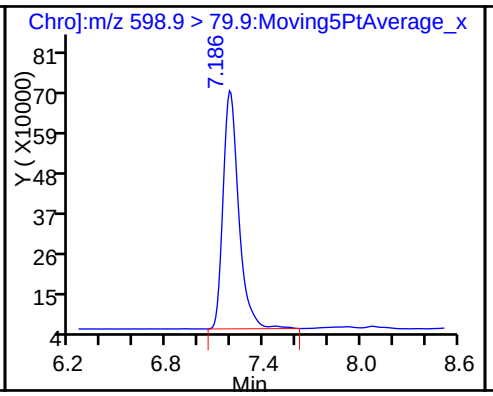
24 Perfluorodecane Sulfonic acid



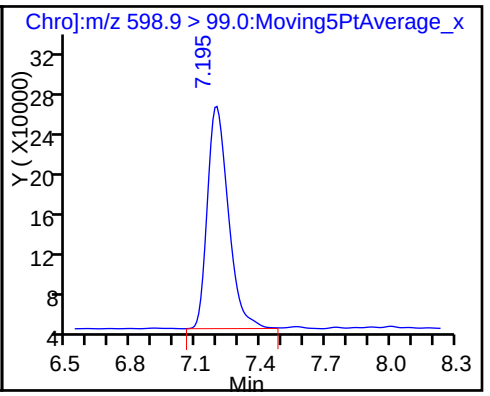
24 Perfluorodecane Sulfonic acid



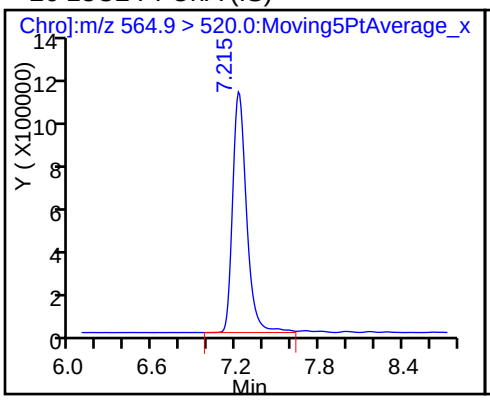
25 Perfluorodecane Sulfonate



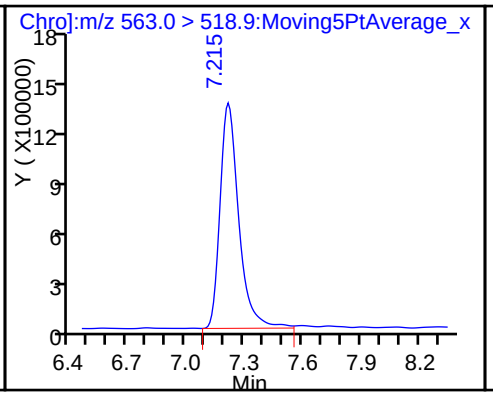
25 Perfluorodecane Sulfonate



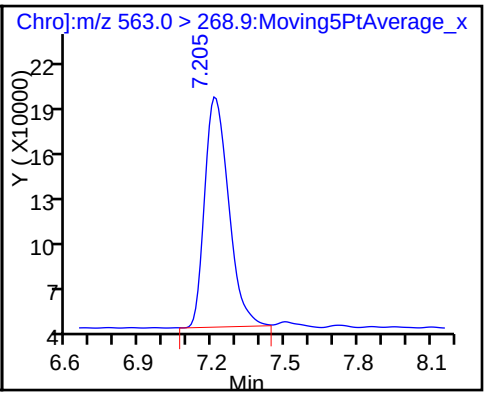
* 26 13C2 PFUnA (IS)



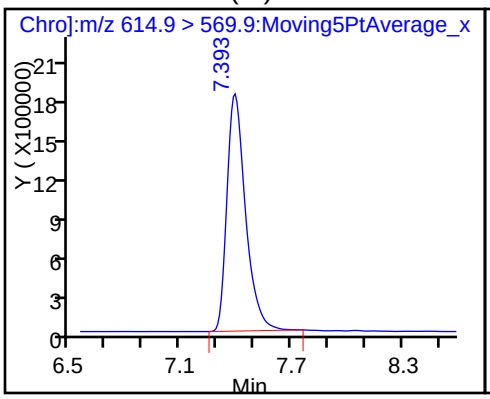
27 Perfluoroundecanoic acid



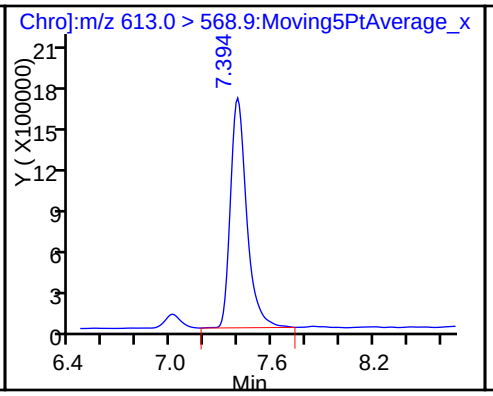
27 Perfluoroundecanoic acid



* 28 13C2 PFDoA (IS)



29 Perfluorododecanoic acid



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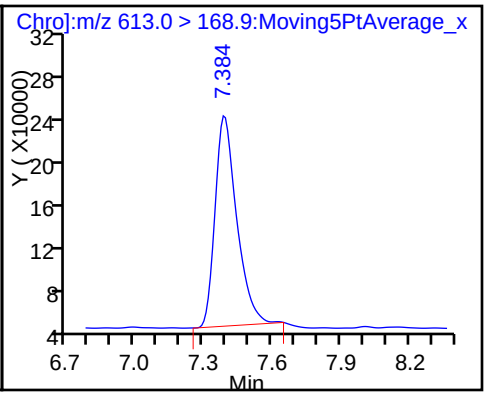
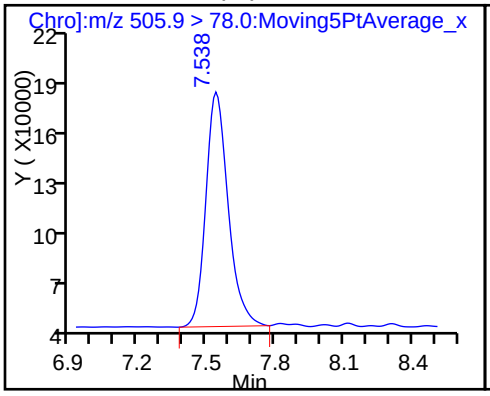
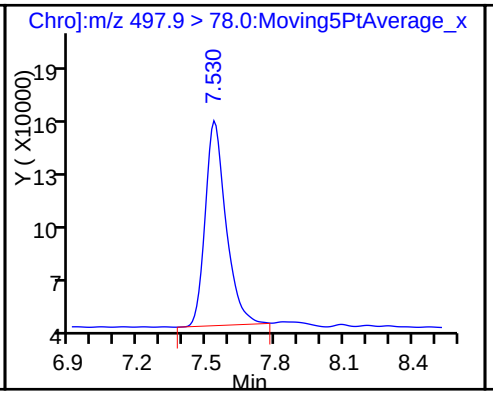


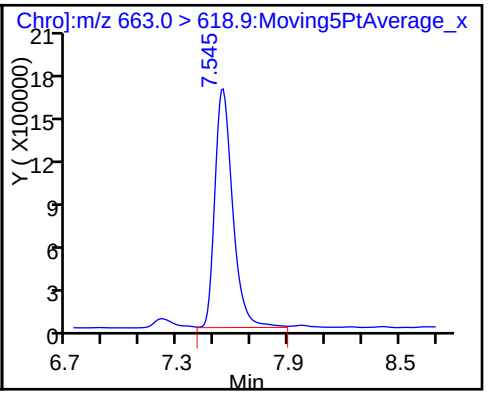
* 31 13C8 FOSA (IS)



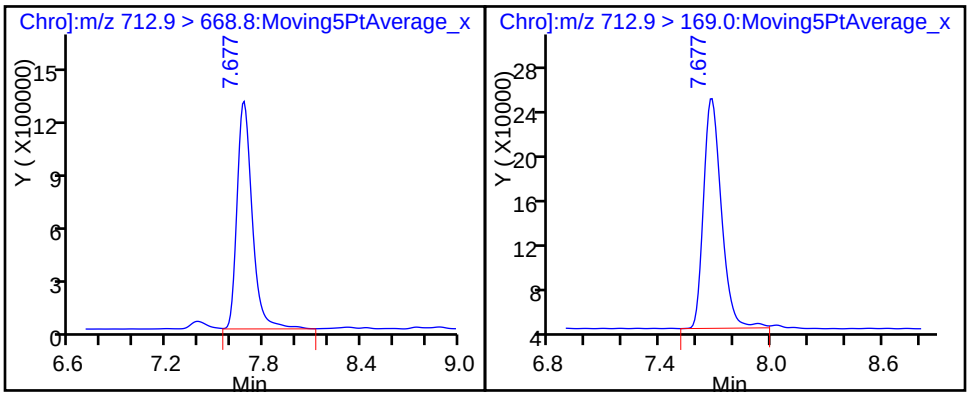
32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-340982/2-A

Matrix: Water | Lab File ID: PC516I08008.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/07/2016 17:42

Sample wt/vol: 250(mL) | Date Analyzed: 09/08/2016 11:25

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 341350 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.179		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.226		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.184		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.201		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.193		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.215		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	107		60-155
STL01054	13C8 PFOS	127		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08008.d
Lims ID: LCS 280-340982/2-A
Client ID:
Sample Type: LCS
Inject. Date: 08-Sep-2016 11:25:27 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-340982/2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 20:38:36 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK012

First Level Reviewer: fiedlerh Date: 08-Sep-2016 20:34:29

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.868	4.048	-0.180		17285608	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.869	4.049	-0.180	1.000	16691525	9.89			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.033	5.138	-0.105	0.893	13885308	10.3			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.166	5.251	-0.085	0.849	6280472	8.94			R
298.9 > 98.9	5.166	5.251	-0.085	0.849	1861323		3.37(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.166	5.251	-0.085	0.849	6280472	8.94			
298.9 > 98.9	5.166	5.251	-0.085	0.849	1861323		3.37(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.638	5.724	-0.086		11851243	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.639	5.724	-0.085	1.000	10140034	9.58			
313.0 > 118.6	5.639	5.724	-0.085	1.000	200509		50.57(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.074	6.159	-0.085	0.946	15129716	11.3			
363.0 > 168.9	6.074	6.159	-0.085	0.946	3695989		4.09(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.083	6.168	-0.085		1634883	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.083	6.168	-0.085	1.000	5879882	9.21			R
398.9 > 98.9	6.083	6.168	-0.085	1.000	2075328		2.83(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.083	6.168	-0.085	1.000	5879882	9.21			
398.9 > 98.9	6.083	6.168	-0.085	1.000	2075328		2.83(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.413	6.508	-0.095	0.956	5893702	9.25			
449.0 > 98.9	6.422	6.508	-0.086	0.958	1946537		3.03(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.413	6.508	-0.095	0.956	5893702	9.25			
449.0 > 98.9	6.422	6.508	-0.086	0.958	1946537		3.03(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.423	6.508	-0.085	1.000	14003235	10.5			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.423	6.518	-0.095		16615648	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.423	6.508	-0.085	1.000	17668031	10.8			
413.0 > 169.0	6.423	6.508	-0.085	1.000	5429671		3.25(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.704	6.790	-0.086	1.000	3657930	11.8			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.705	6.790	-0.085		5921228	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.705	6.790	-0.085	1.000	6175773	9.65			
498.9 > 98.9	6.705	6.790	-0.085	1.000	2564814		2.41(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.725	6.810	-0.085		13477569	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.725	6.810	-0.085	1.000	14143406	10.1			
463.0 > 218.9	6.715	6.810	-0.095	0.999	2151715		6.57(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.969	7.054	-0.085		14154694	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.969	7.054	-0.085	1.000	13374763	9.78			R
513.0 > 219.0	6.969	7.054	-0.085	1.000	1304715		10.25(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.157	7.243	-0.086	1.067	5429521	8.07			
598.9 > 99.0	7.157	7.243	-0.086	1.067	1675056		3.24(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.157	7.243	-0.086	1.067	5429521	8.07			
598.9 > 99.0	7.157	7.243	-0.086	1.067	1675056		3.24(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.271	-0.085		7665528	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.186	7.272	-0.086	1.000	10620989	10.5			R
563.0 > 268.9	7.186	7.272	-0.086	1.000	1618963		6.56(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.375	7.450	-0.075		14076265	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.365	7.451	-0.086	0.999	13072914	9.37			
613.0 > 168.9	7.365	7.451	-0.086	0.999	1579447		8.28(5.96-11.06)		
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.481	7.510	-0.029		596768	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.492	7.511	-0.019	1.001	554702	9.15			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.526	7.602	-0.076	1.021	10341883	7.11			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.668	7.734	-0.066	1.040	6958364	6.20			
712.9 > 169.0	7.668	7.734	-0.066	1.040	1204006		5.78(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 08-Sep-2016 20:38:44 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08008.d

Injection Date: 08-Sep-2016 11:25:27 Instrument ID: LC_LCMS5

Lims ID: LCS 280-340982/2-A

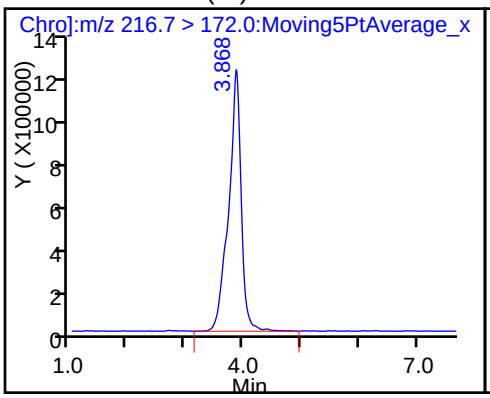
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

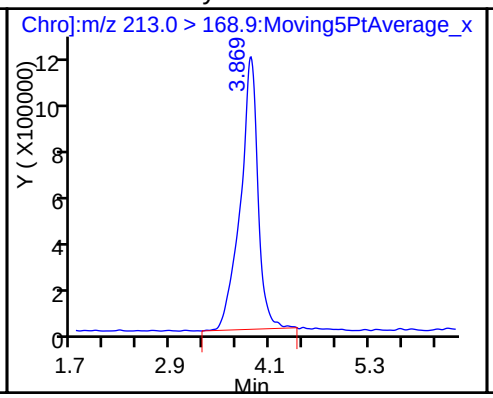
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

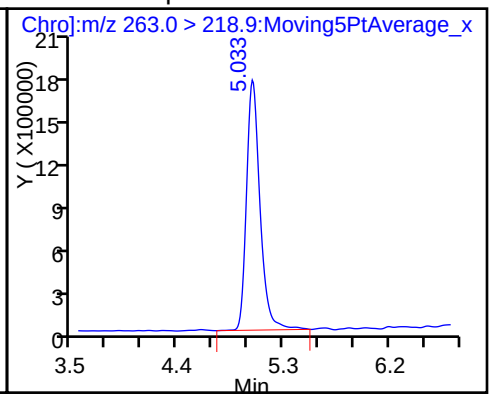
* 1 13C4 PFBA (IS)



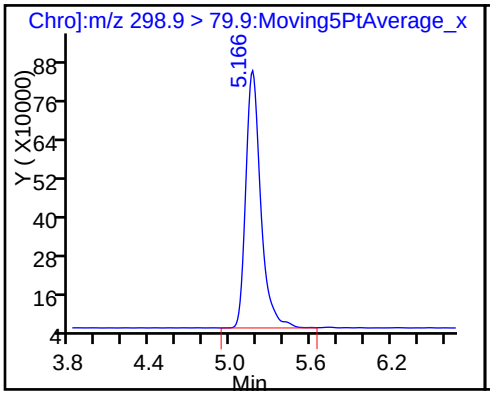
2 Perfluorobutyric acid



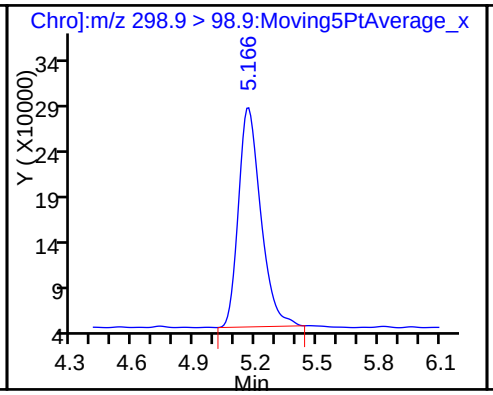
3 Perfluoropentanoic acid



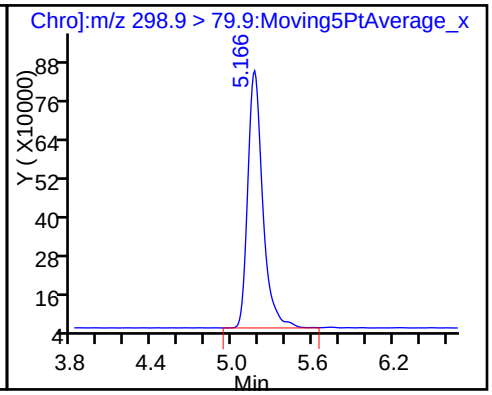
4 Perfluorobutane Sulfonate



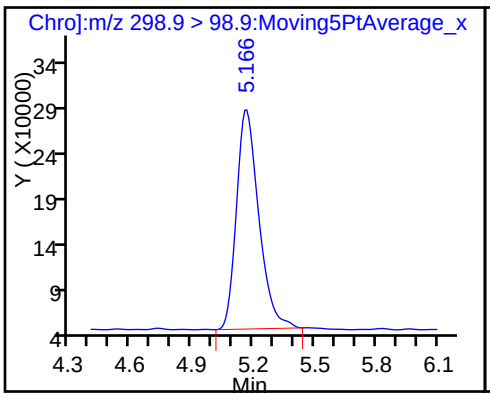
4 Perfluorobutane Sulfonate



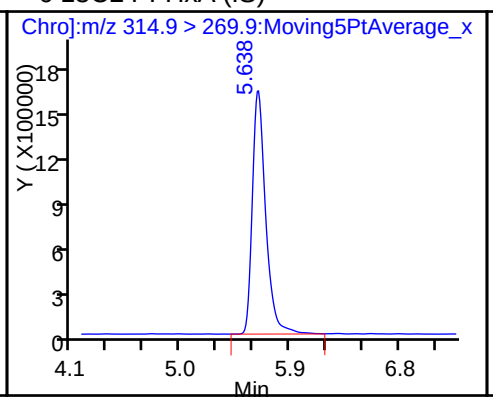
5 Perfluorobutanesulfonic acid



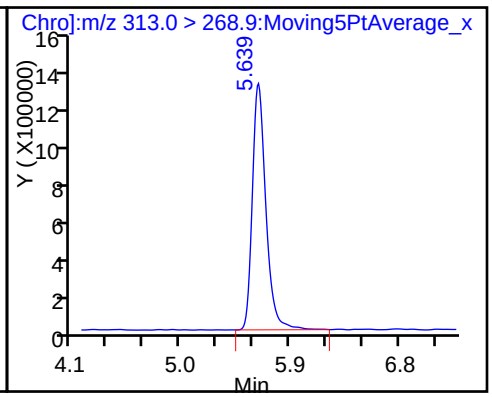
5 Perfluorobutanesulfonic acid



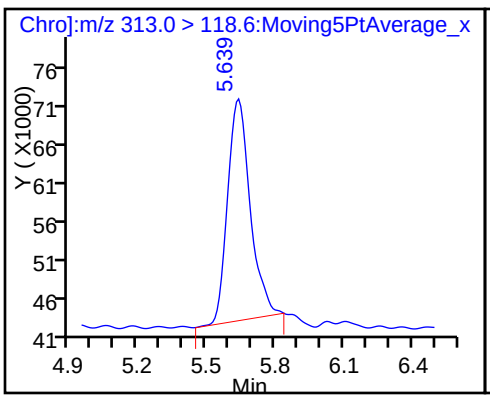
* 6 13C2 PFHxA (IS)



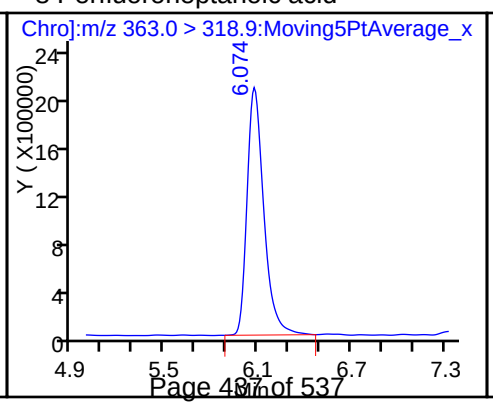
7 Perfluorohexanoic acid



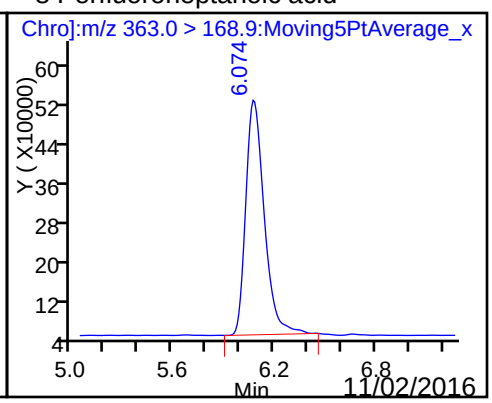
7 Perfluorohexanoic acid



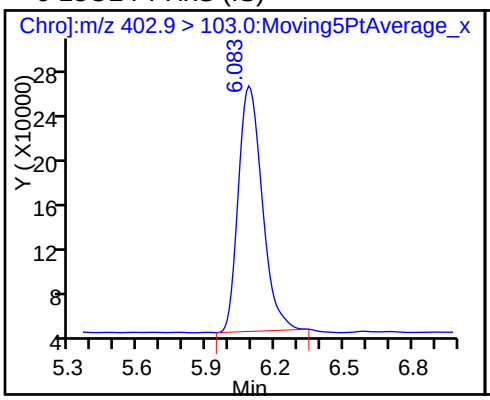
8 Perfluoroheptanoic acid



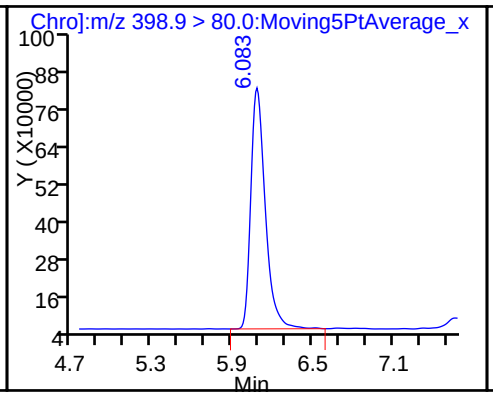
8 Perfluoroheptanoic acid



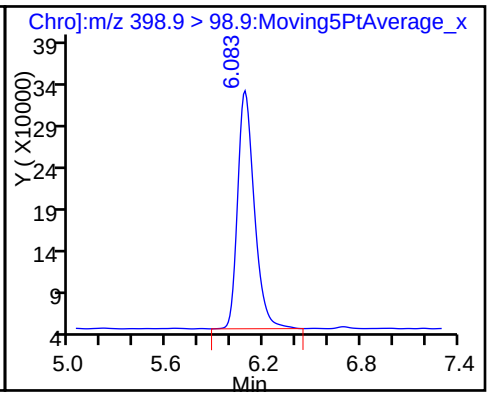
* 9 18O2 PFHxS (IS)



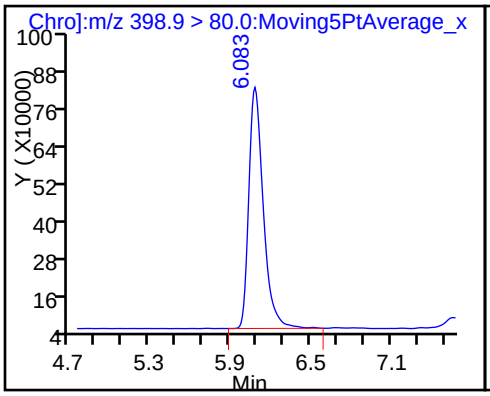
10 Perfluorohexane Sulfonate



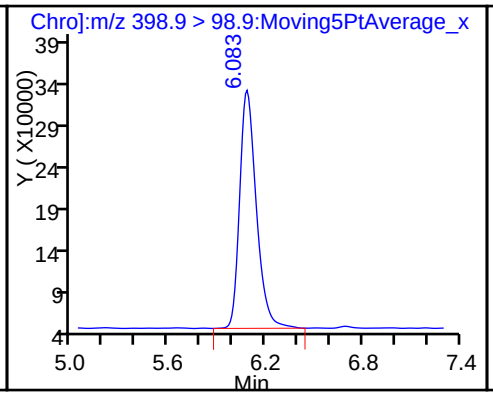
10 Perfluorohexane Sulfonate



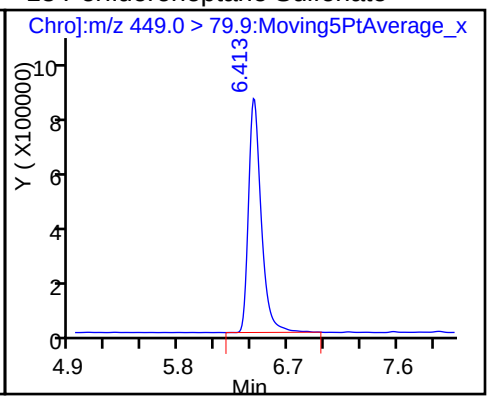
11 Perfluorohexanesulfonic acid



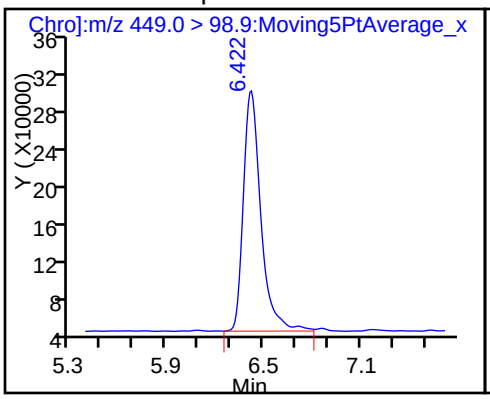
11 Perfluorohexanesulfonic acid



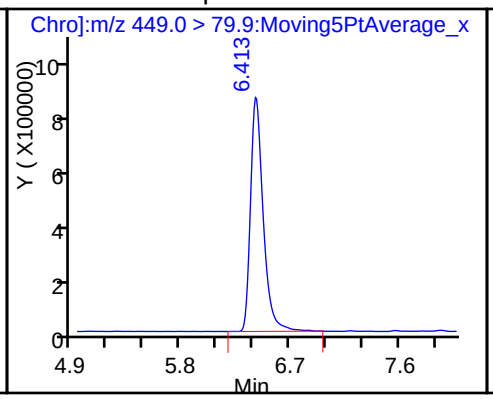
13 Perfluoroheptane Sulfonate



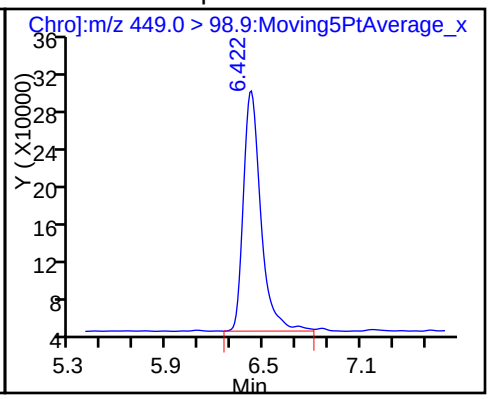
13 Perfluoroheptane Sulfonate



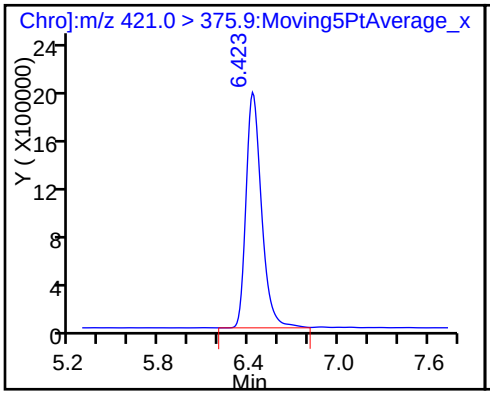
12 Perfluoroheptanesulfonic Acid



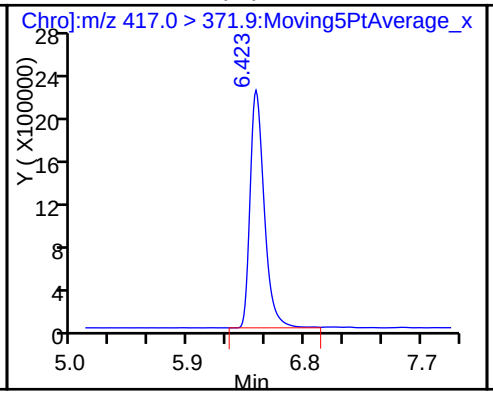
12 Perfluoroheptanesulfonic Acid



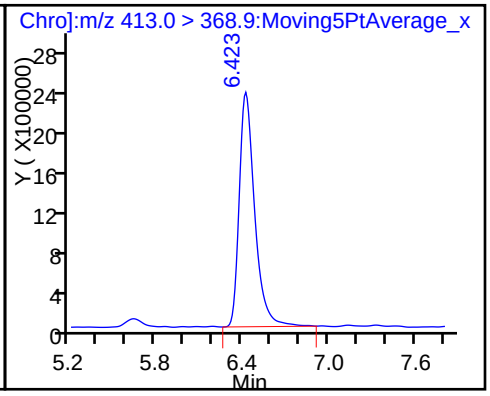
$ 14 13C8 PFOA



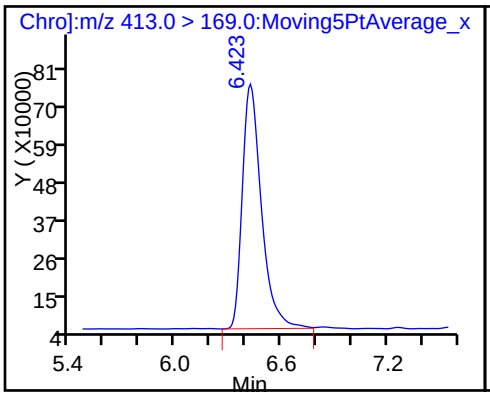
* 15 13C4 PFOA (IS)



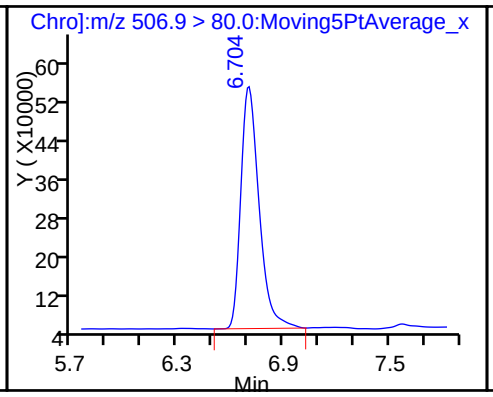
16 Perfluorooctanoic acid



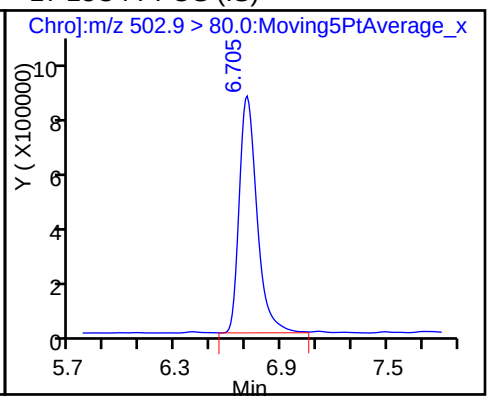
16 Perfluorooctanoic acid



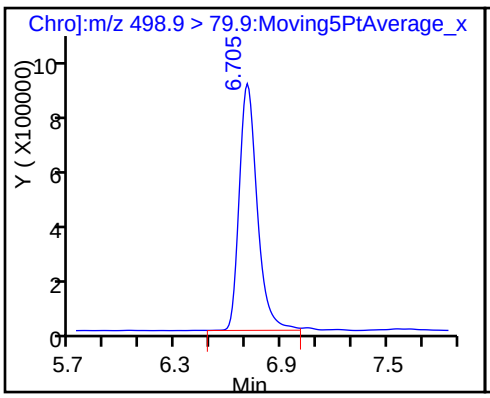
$ 18 13C8 PFOS



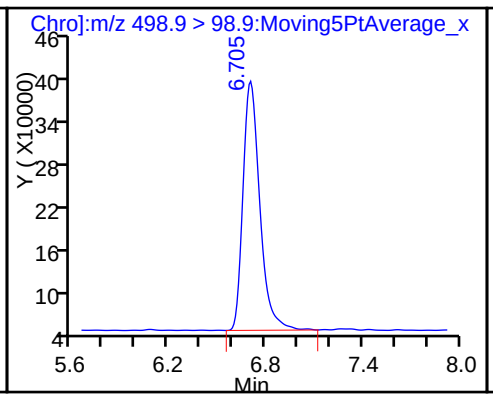
* 17 13C4 PFOS (IS)



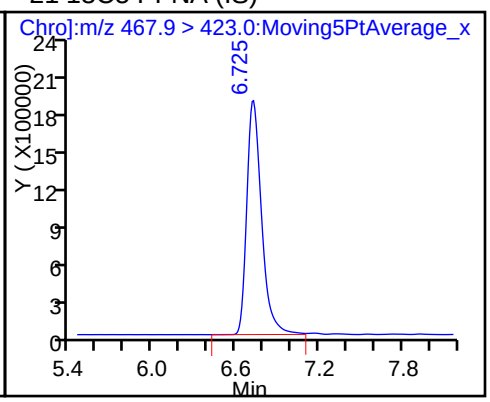
19 Perfluorooctane sulfonic acid



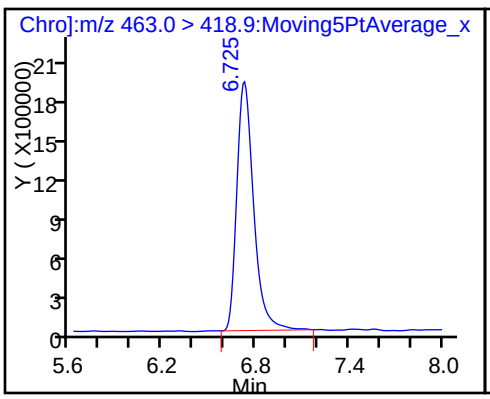
19 Perfluorooctane sulfonic acid



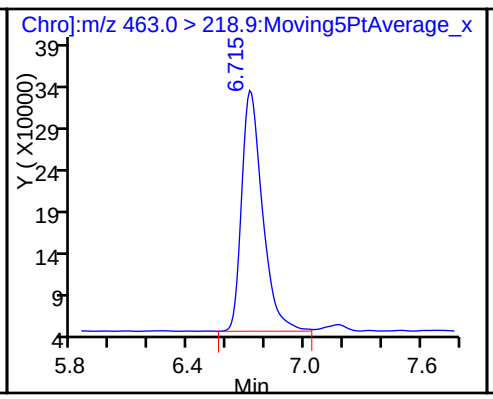
* 21 13C5 PFNA (IS)



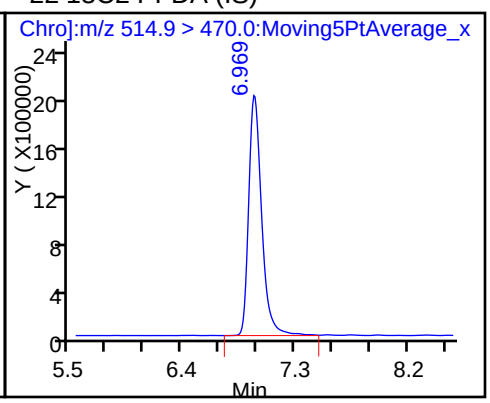
20 Perfluorononanoic acid



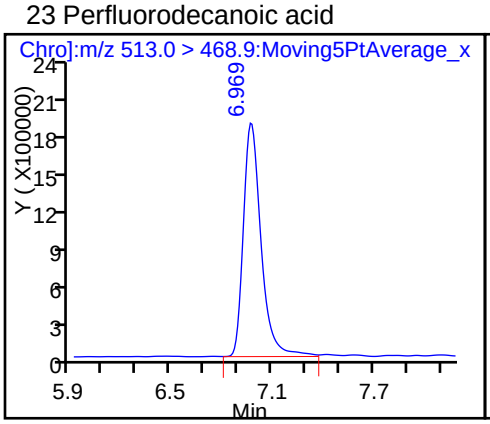
20 Perfluorononanoic acid



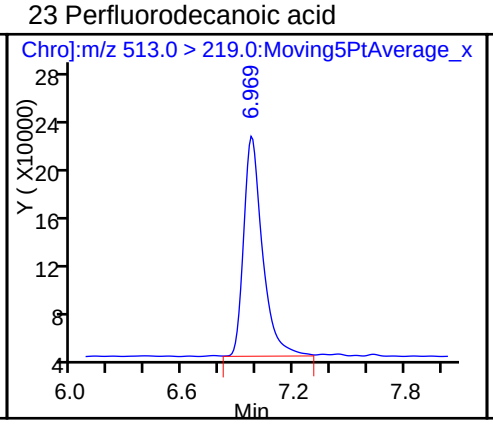
* 22 13C2 PFDA (IS)



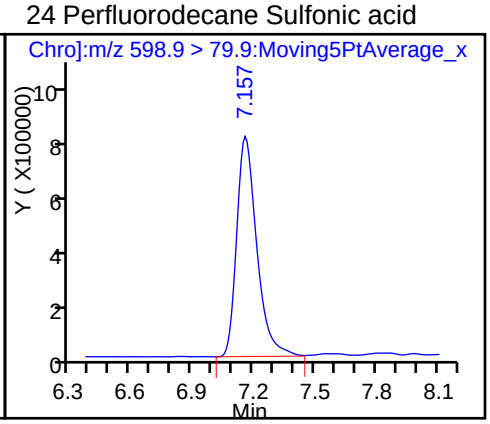
23 Perfluorodecanoic acid



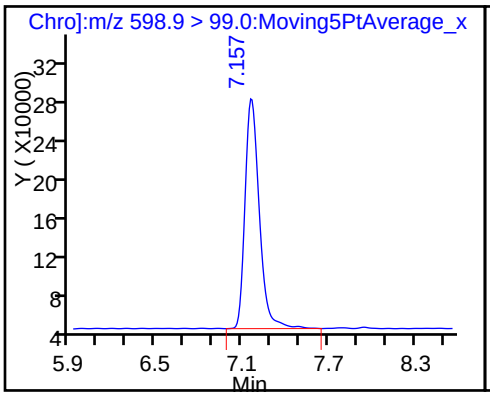
23 Perfluorodecanoic acid



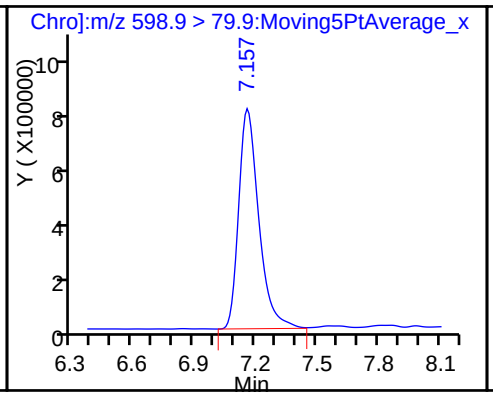
24 Perfluorodecane Sulfonic acid



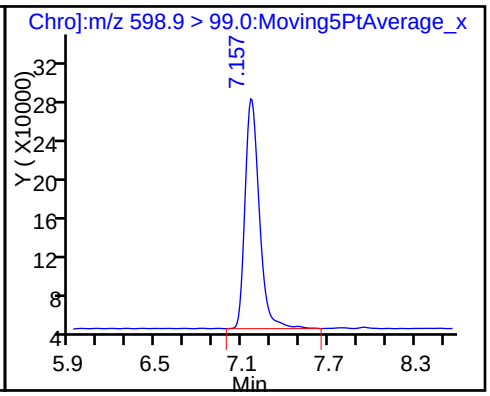
24 Perfluorodecane Sulfonic acid



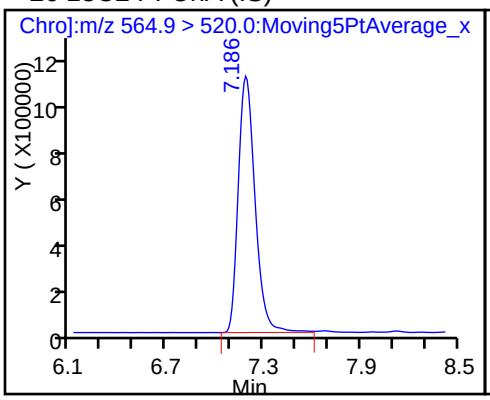
25 Perfluorodecane Sulfonate



25 Perfluorodecane Sulfonate



* 26 13C2 PFUnA (IS)



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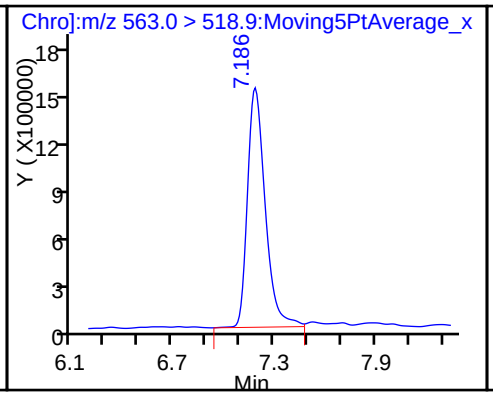
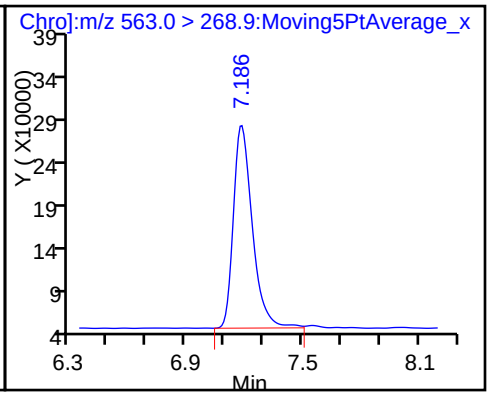
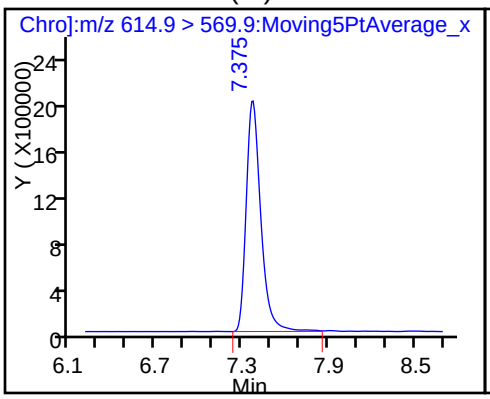


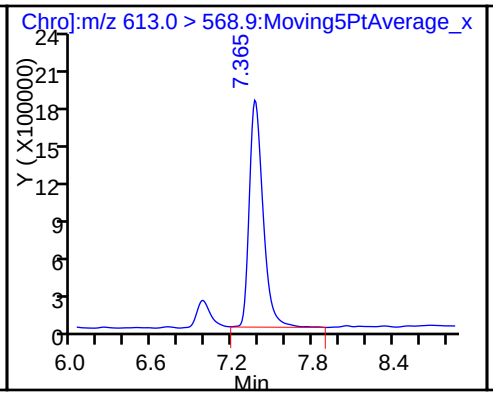
27 Perfluoroundecanoic acid



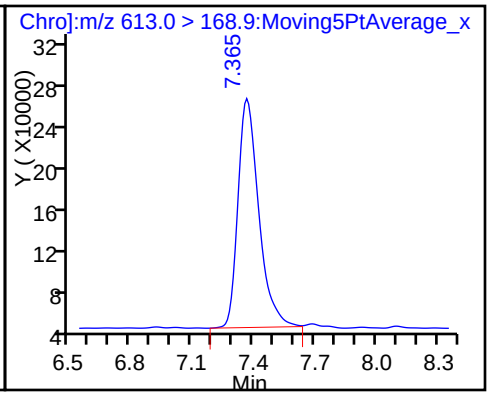
* 28 13C2 PFDoA (IS)



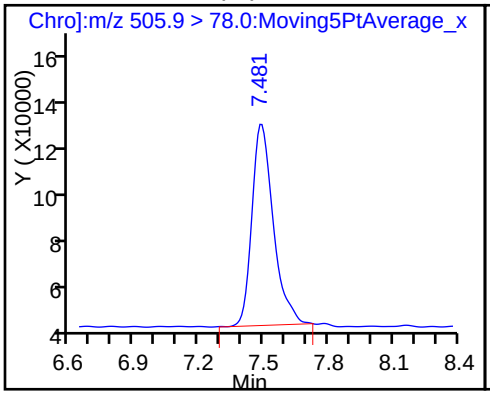
29 Perfluorododecanoic acid



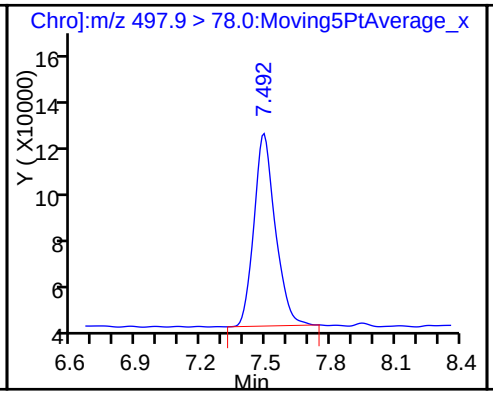
29 Perfluorododecanoic acid



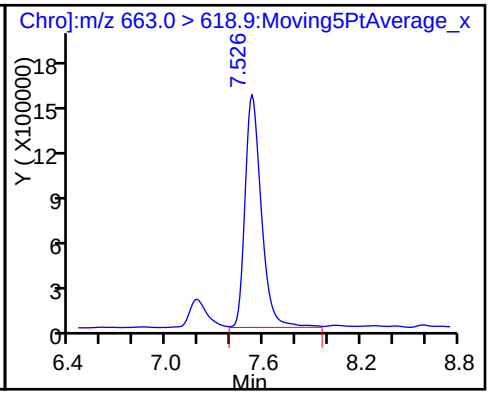
* 31 13C8 FOSA (IS)



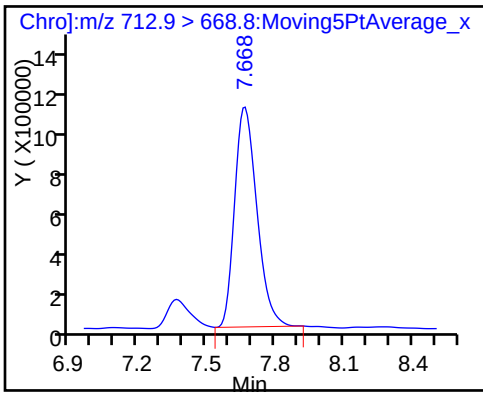
32 Perfluorooctane Sulfonamide



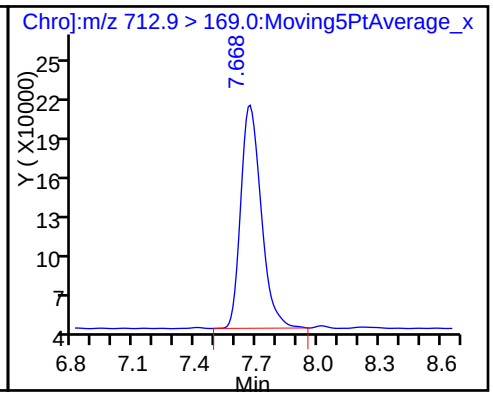
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-341407/2-A

Matrix: Water | Lab File ID: PC516I09106.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/08/2016 22:13

Sample wt/vol: 250(mL) | Date Analyzed: 09/10/2016 02:19

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 341622 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.128		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.168		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.156		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.148		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.131		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.164		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	101		60-155
STL01054	13C8 PFOS	122		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09106.d
Lims ID: LCS 280-341407/2-A
Client ID:
Sample Type: LCS
Inject. Date: 10-Sep-2016 02:19:37 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: lcs 280-341407/2-a, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 12-Sep-2016 08:06:07 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK018

First Level Reviewer: fiedlerh Date: 12-Sep-2016 08:01:43

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.755	3.868	-0.113		25726637	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.755	3.869	-0.114	1.000	15996205	6.33			
3 Perfluoropentanoic acid									
263.0 > 218.9	4.958	5.014	-0.056	0.894	13319754	7.77			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.090	5.128	-0.038	0.850	6269110	6.39			R
298.9 > 98.9	5.090	5.128	-0.038	0.850	1827882		3.43(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.090	5.128	-0.038	0.850	6269110	6.39			
298.9 > 98.9	5.090	5.128	-0.038	0.850	1827882		3.43(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.544	5.591	-0.047		15070484	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.544	5.591	-0.047	1.000	10579847	7.85			
313.0 > 118.6	5.544	5.591	-0.047	1.000	330112		32.05(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.988	6.035	-0.047		2281805	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	5.979	6.026	-0.047	0.945	15929048	8.41			
363.0 > 168.9	5.979	6.026	-0.047	0.945	4037047		3.95(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	5.988	6.026	-0.038	1.000	6947785	7.78			R
398.9 > 98.9	5.988	6.026	-0.038	1.000	2073385		3.35(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	5.988	6.026	-0.038	1.000	6947785	7.78			
398.9 > 98.9	5.988	6.026	-0.038	1.000	2073385		3.35(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.318	6.365	-0.047	0.956	6168758	6.31			
449.0 > 98.9	6.318	6.365	-0.047	0.956	1812225		3.40(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.318	6.365	-0.047	0.956	6168758	6.31			
449.0 > 98.9	6.318	6.365	-0.047	0.956	1812225		3.40(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.328	6.375	-0.047	1.000	18661172	9.86			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.328	6.376	-0.048		23496629	10.0			
16 Perfluorooctanoic acid									R
413.0 > 368.9	6.328	6.376	-0.048	1.000	19067591	8.20			R
413.0 > 169.0	6.328	6.376	-0.048	1.000	7360858		2.59(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.610	6.648	-0.038		9079604	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.610	6.639	-0.029	1.000	6435551	6.55			R
498.9 > 98.9	6.601	6.639	-0.038	0.999	2508884		2.57(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.600	6.638	-0.038	0.998	5390767	11.3			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.621	6.658	-0.037		20506440	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.621	6.659	-0.038	1.000	15810422	7.39			
463.0 > 218.9	6.621	6.659	-0.038	1.000	2144493		7.37(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.865	6.903	-0.038		19832820	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.865	6.903	-0.038	1.000	14610973	7.62			R
513.0 > 219.0	6.874	6.903	-0.029	1.001	1455907		10.04(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.053	7.091	-0.038	1.067	4917178	4.76			
598.9 > 99.0	7.053	7.091	-0.038	1.067	1897360		2.59(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.053	7.091	-0.038	1.067	4917178	4.76			
598.9 > 99.0	7.053	7.091	-0.038	1.067	1897360		2.59(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.082	7.110	-0.028		11023360	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.082	7.111	-0.029	1.000	10725279	7.31			R
563.0 > 268.9	7.082	7.111	-0.029	1.000	1449155		7.40(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.261	7.289	-0.028		19363963	10.0			
29 Perfluorododecanoic acid									R
613.0 > 568.9	7.261	7.289	-0.028	1.000	13490340	7.02			R
613.0 > 168.9	7.261	7.289	-0.028	1.000	595295		22.66(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.422	7.450	-0.028	1.022	10684167	5.34			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.444	7.462	-0.018		418388	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.435	7.463	-0.028	0.999	354752	8.34			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.563	7.582	-0.019	1.042	8983118	5.82			
712.9 > 169.0	7.563	7.582	-0.019	1.042	1568378		5.73(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 12-Sep-2016 08:06:15 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09106.d

Injection Date: 10-Sep-2016 02:19:37 Instrument ID: LC_LCMS5

Lims ID: LCS 280-341407/2-A

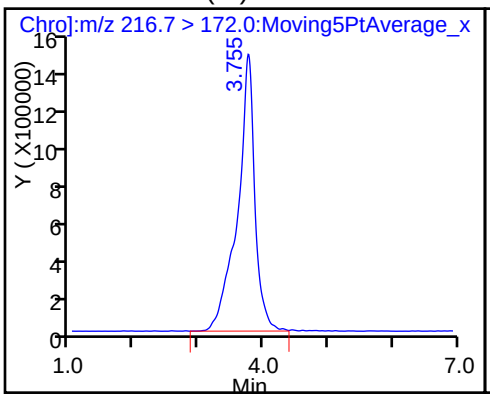
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

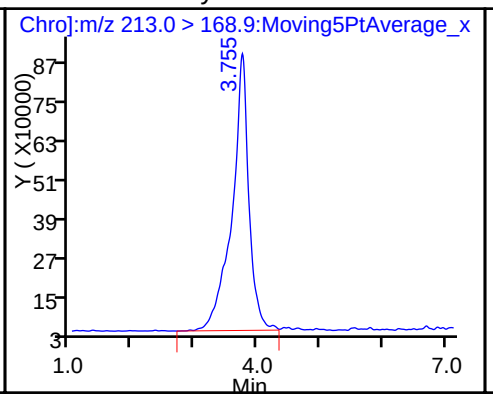
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

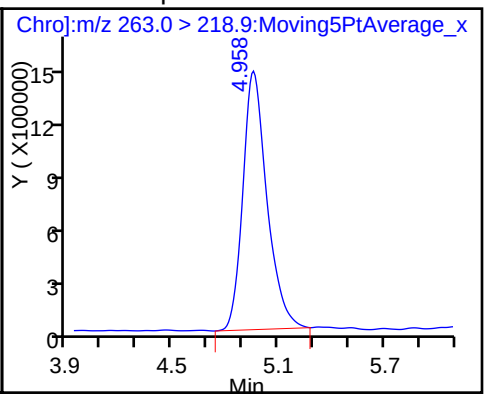
* 1 13C4 PFBA (IS)



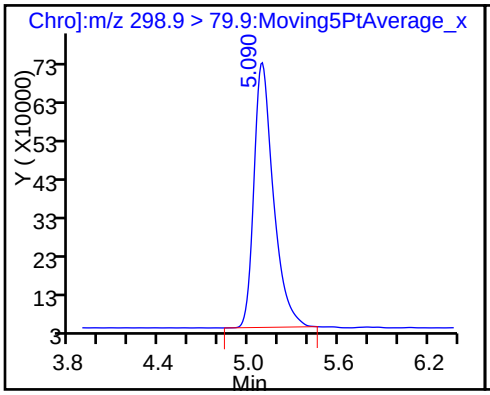
2 Perfluorobutyric acid



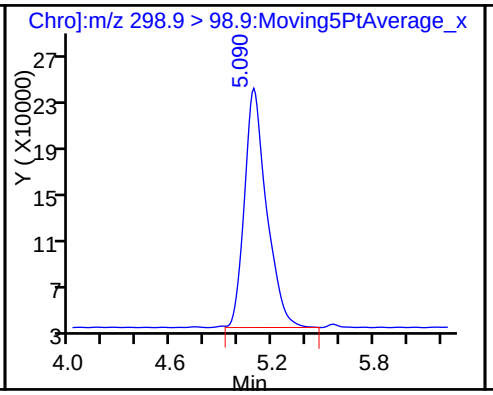
3 Perfluoropentanoic acid



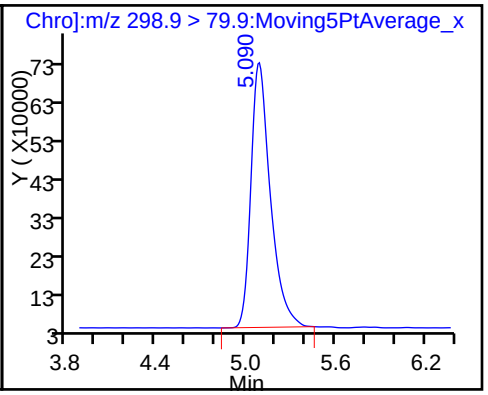
4 Perfluorobutane Sulfonate



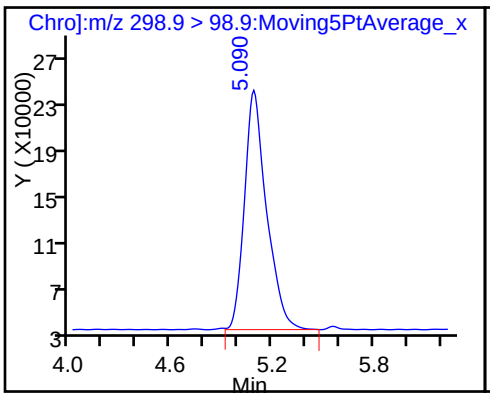
4 Perfluorobutane Sulfonate



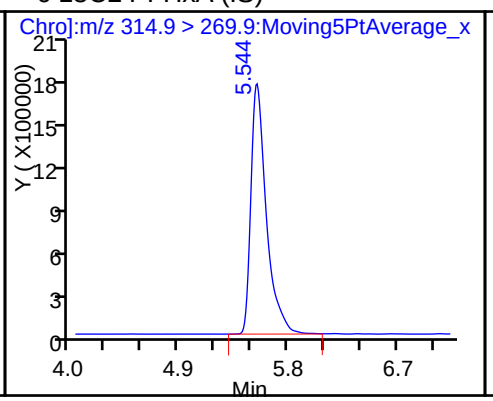
5 Perfluorobutanesulfonic acid



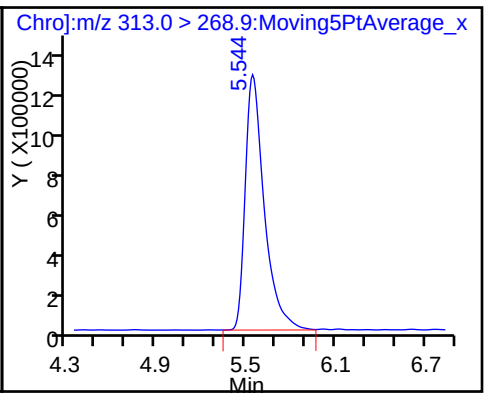
5 Perfluorobutanesulfonic acid



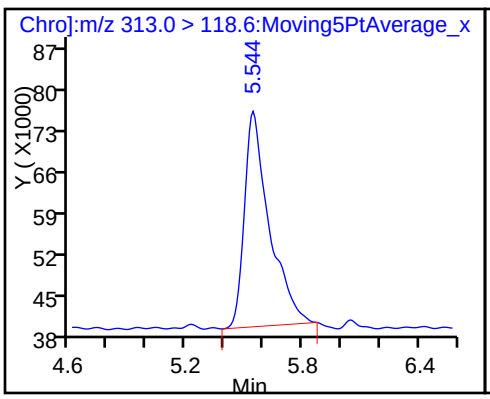
* 6 13C2 PFHxA (IS)



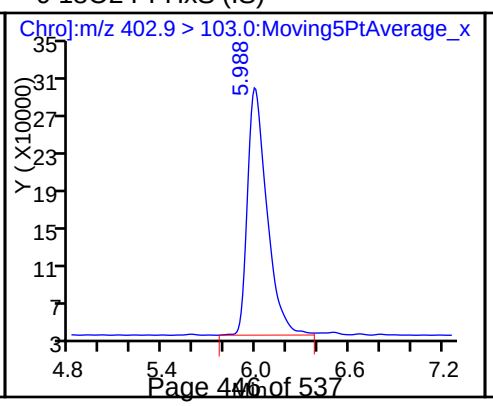
7 Perfluorohexanoic acid



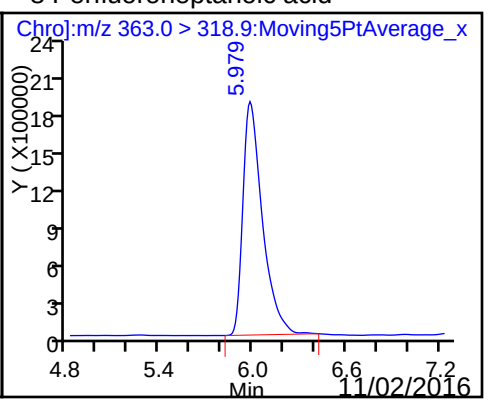
7 Perfluorohexanoic acid



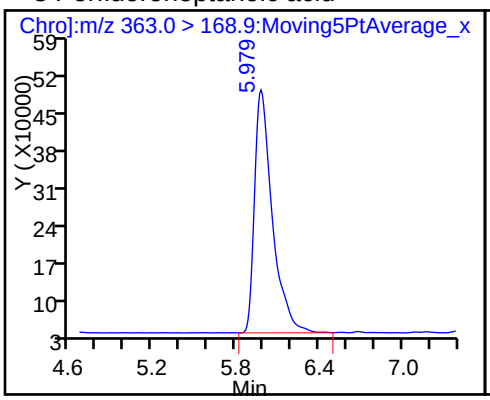
* 9 18O2 PFHxS (IS)



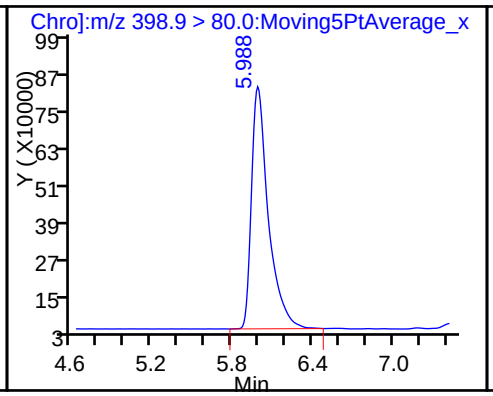
8 Perfluoroheptanoic acid



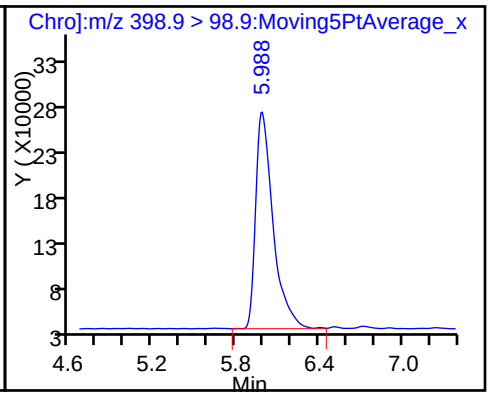
8 Perfluoroheptanoic acid



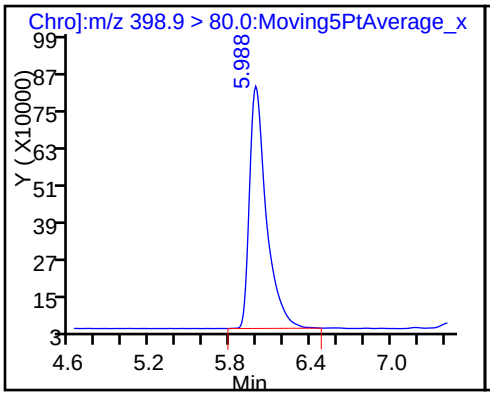
10 Perfluorohexane Sulfonate



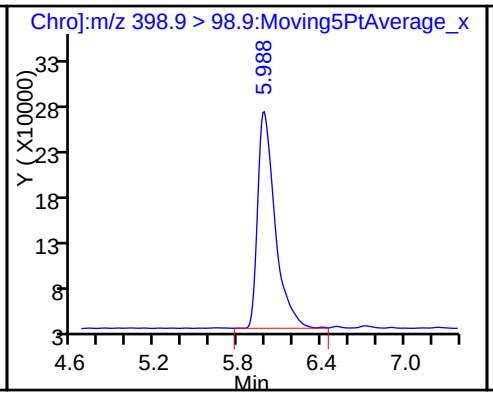
10 Perfluorohexane Sulfonate



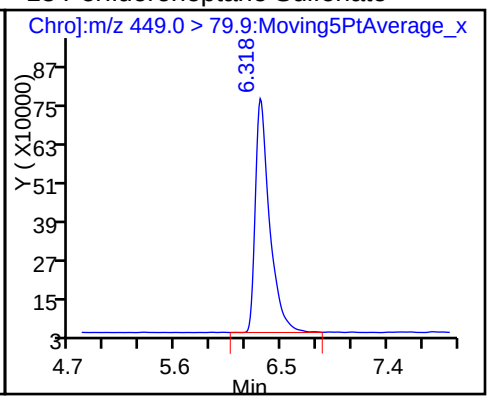
11 Perfluorohexanesulfonic acid



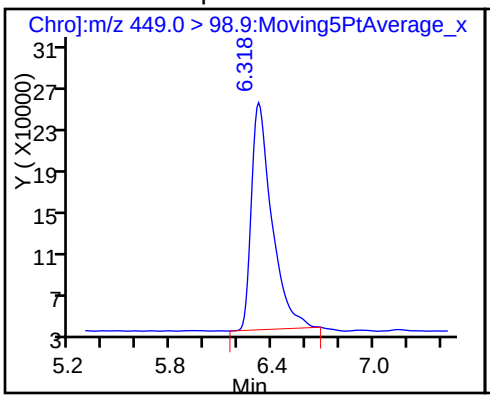
11 Perfluorohexanesulfonic acid



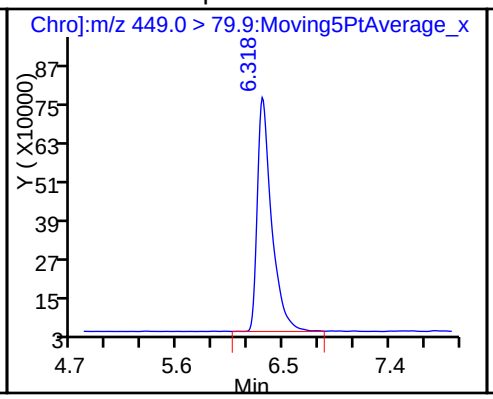
13 Perfluoroheptane Sulfonate



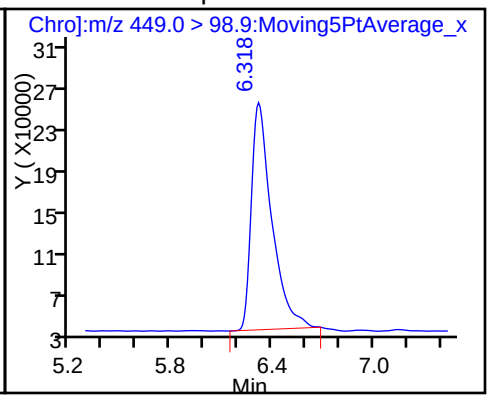
13 Perfluoroheptane Sulfonate



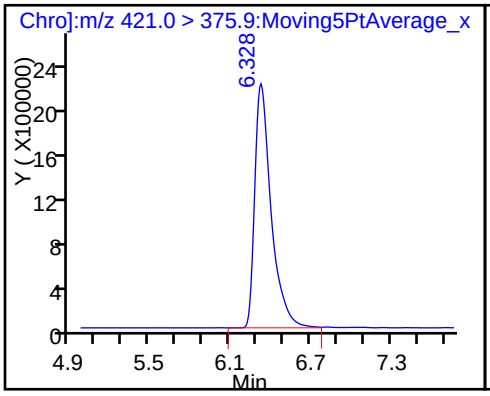
12 Perfluoroheptanesulfonic Acid



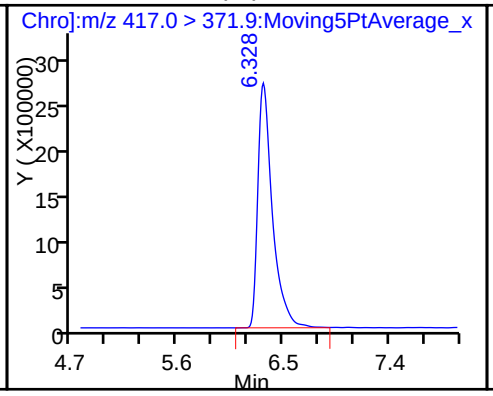
12 Perfluoroheptanesulfonic Acid



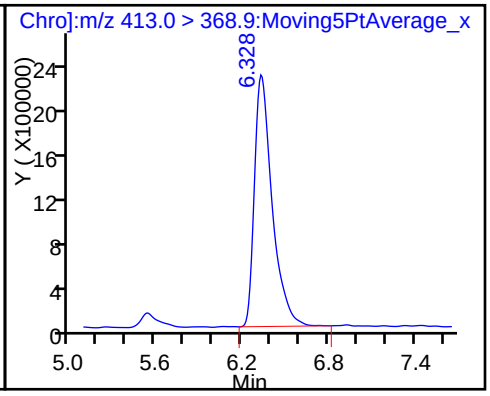
$ 14 13C8 PFOA



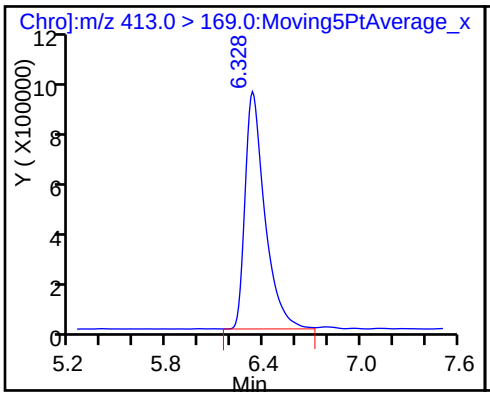
* 15 13C4 PFOA (IS)



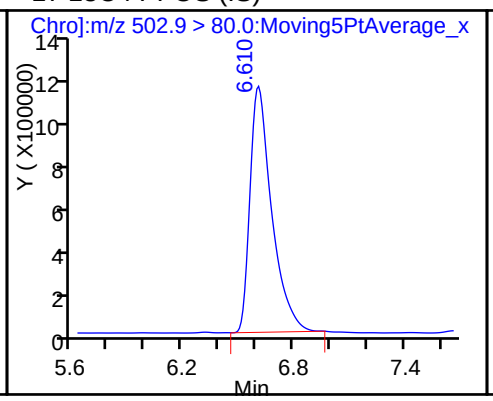
16 Perfluorooctanoic acid



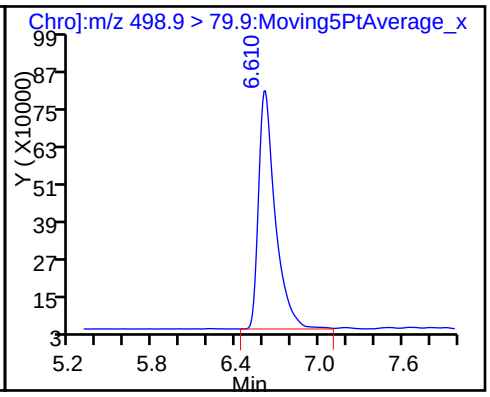
16 Perfluorooctanoic acid



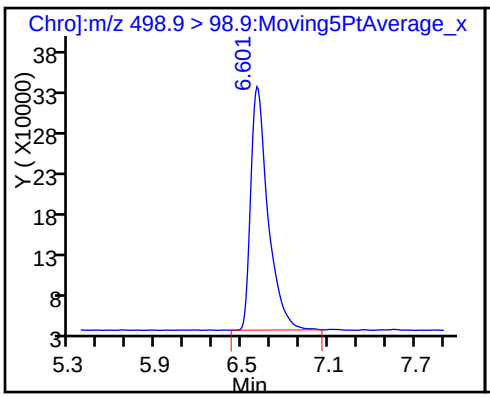
* 17 13C4 PFOS (IS)



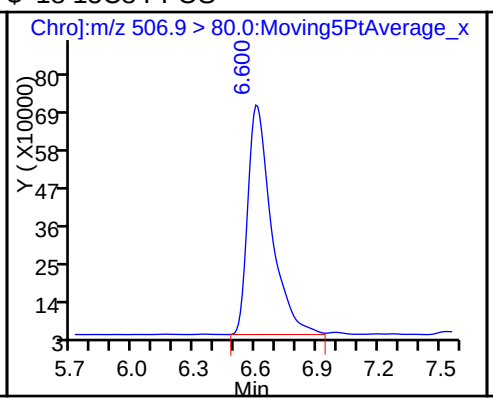
19 Perfluorooctane sulfonic acid



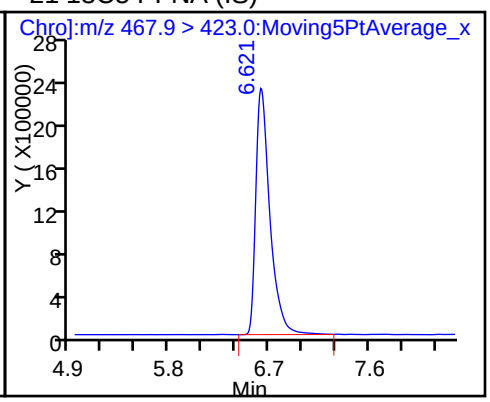
19 Perfluorooctane sulfonic acid



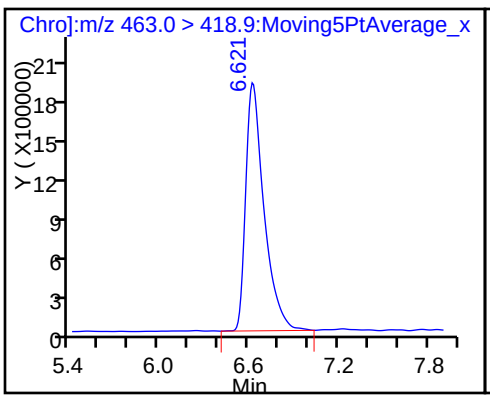
$ 18 13C8 PFOS



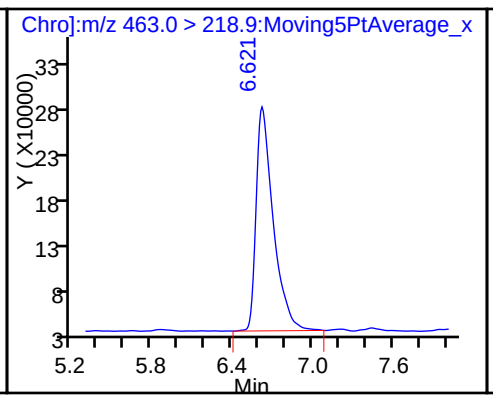
* 21 13C5 PFNA (IS)



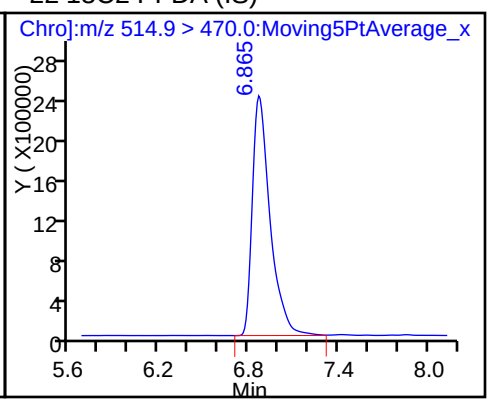
20 Perfluorononanoic acid



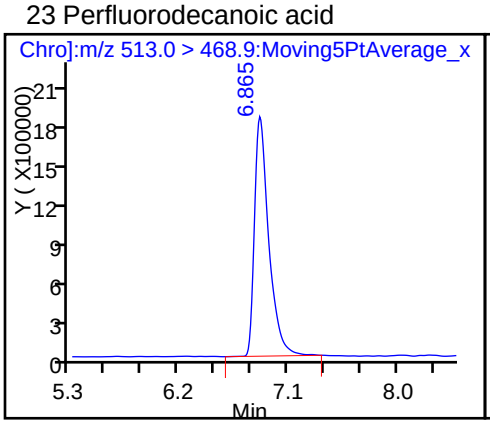
20 Perfluorononanoic acid



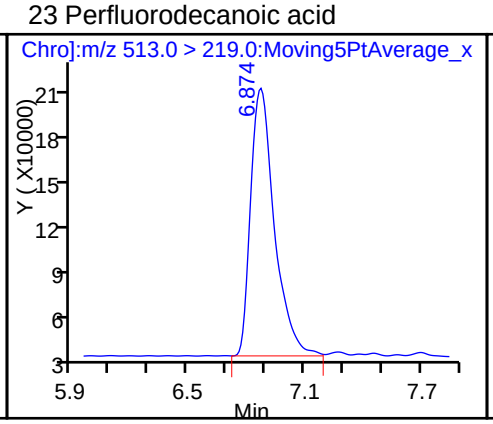
* 22 13C2 PFDA (IS)



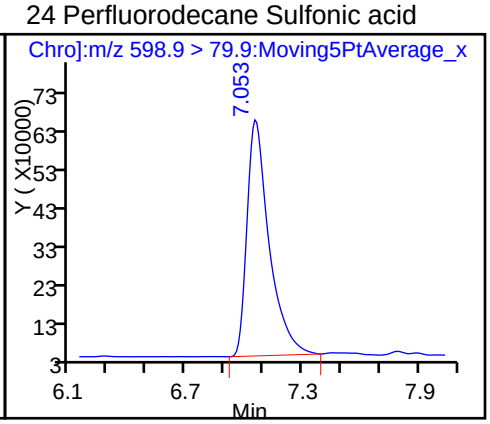
23 Perfluorodecanoic acid



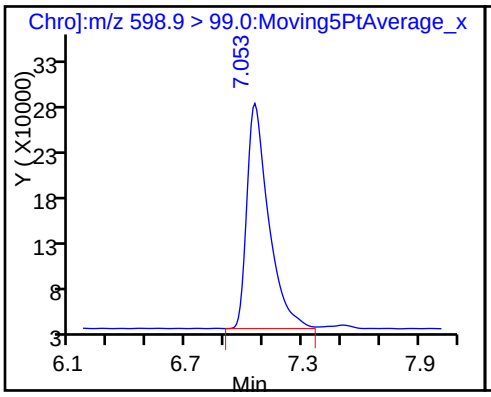
23 Perfluorodecanoic acid



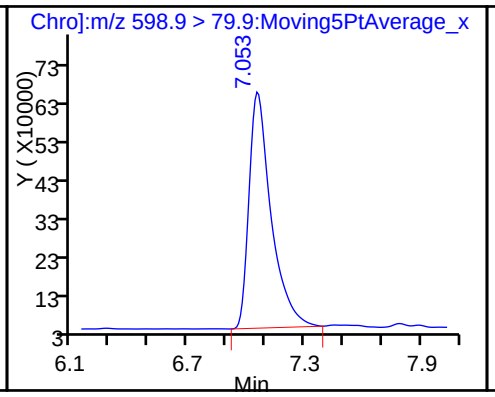
24 Perfluorodecane Sulfonic acid



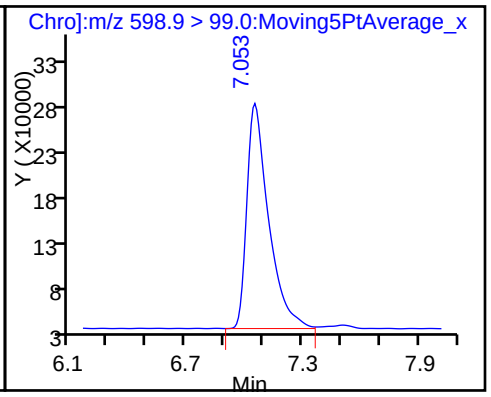
24 Perfluorodecane Sulfonic acid



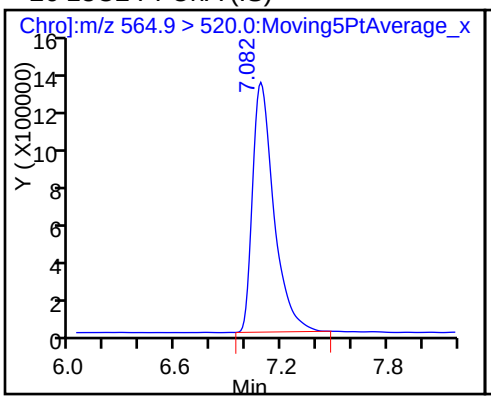
25 Perfluorodecane Sulfonate



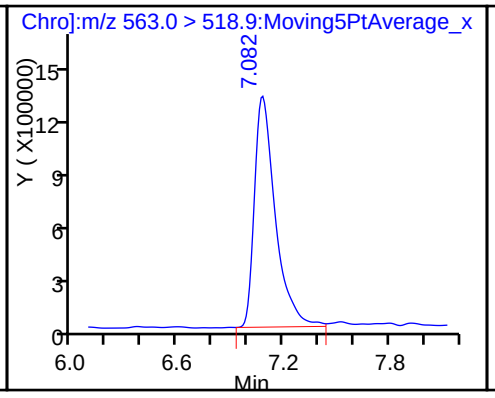
25 Perfluorodecane Sulfonate



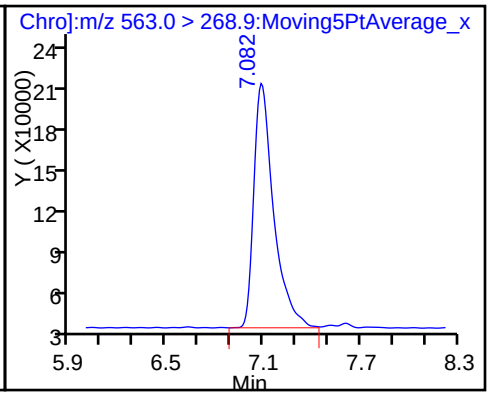
* 26 13C2 PFUnA (IS)



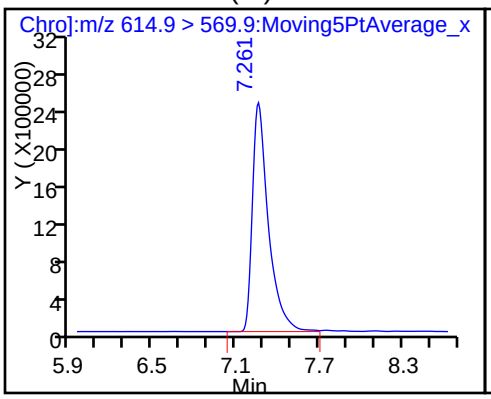
27 Perfluoroundecanoic acid



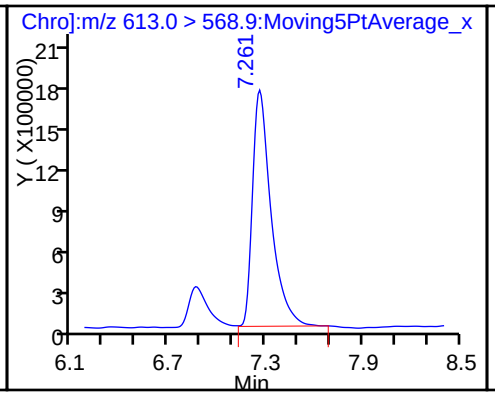
27 Perfluoroundecanoic acid



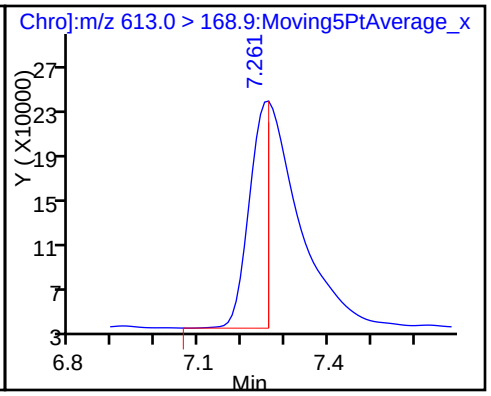
* 28 13C2 PFDoA (IS)



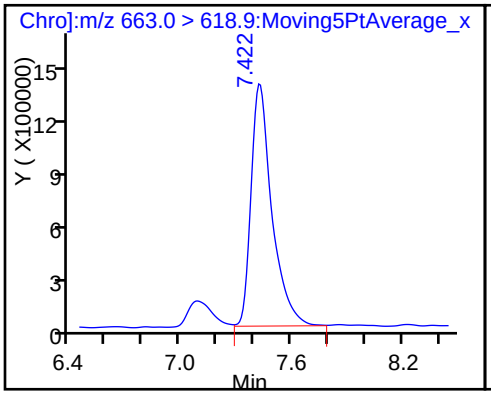
29 Perfluorododecanoic acid



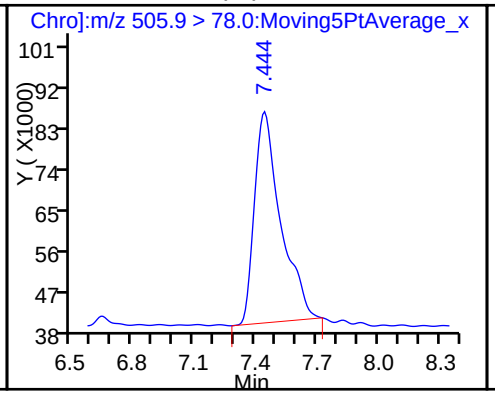
29 Perfluorododecanoic acid



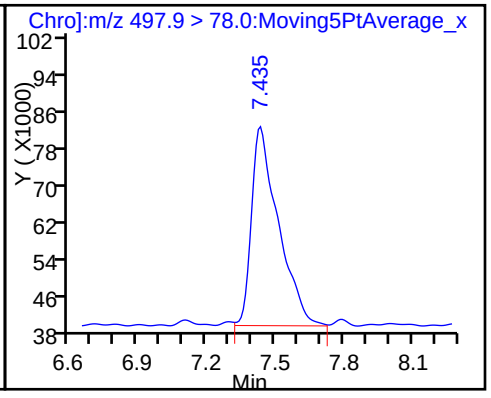
30 Perfluorotridecanoic acid



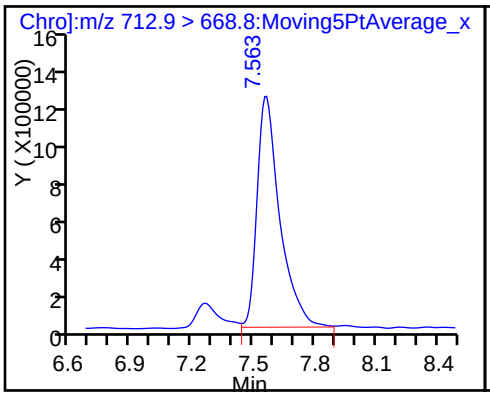
* 31 13C8 FOSA (IS)



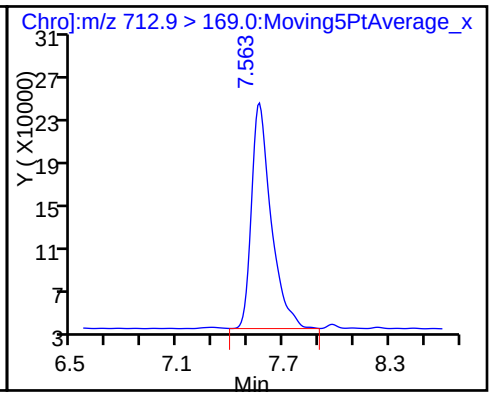
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-340544/3-A

Matrix: Water | Lab File ID: PC516I02018.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/01/2016 19:29

Sample wt/vol: 250(mL) | Date Analyzed: 09/02/2016 13:46

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340829 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.148		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.193		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.155		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.178		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.172		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.176		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	125		60-155
STL01054	13C8 PFOS	102		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02018.d
Lims ID: LCSD 280-340544/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 02-Sep-2016 13:46:43 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 280-340544/3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:22:24 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 07:27:09

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.124	4.314	-0.190		18835182	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.124	4.314	-0.190	1.000	16774376	9.24			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.204	5.346	-0.142	0.899	12696541	9.44			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.327	5.459	-0.132	0.857	6034687	7.38			R
298.9 > 98.9	5.327	5.459	-0.132	0.857	1745834		3.46(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.327	5.459	-0.132	0.857	6034687	7.38			
298.9 > 98.9	5.327	5.459	-0.132	0.857	1745834		3.46(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.790	5.923	-0.133		12327966	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.790	5.923	-0.133	1.000	9418158	8.60			
313.0 > 118.6	5.800	5.923	-0.123	1.002	319658		29.46(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.215	6.348	-0.133		1754705	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.215	6.348	-0.133	1.000	5754719	7.76			
398.9 > 98.9	6.215	6.348	-0.133	1.000	1758382		3.27(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.215	6.348	-0.133	1.000	5754719	7.76			R
398.9 > 98.9	6.215	6.348	-0.133	1.000	1758382		3.27(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.216	6.349	-0.133	0.948	14185831	9.64			
363.0 > 168.9	6.206	6.349	-0.143	0.947	3466463		4.09(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.545	6.678	-0.133	0.960	5268727	7.62			
449.0 > 98.9	6.545	6.678	-0.133	0.960	1575423		3.34(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.545	6.678	-0.133	0.960	5268727	7.62			
449.0 > 98.9	6.545	6.678	-0.133	0.960	1575423		3.34(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.555	6.688	-0.133	1.000	14754872	12.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.556	6.688	-0.132		17526288	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.556	6.688	-0.132	1.000	15094481	8.79			
413.0 > 169.0	6.556	6.688	-0.132	1.000	4988663		3.03(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.818	6.960	-0.142	1.000	3449736	9.51			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.819	6.961	-0.142		6034649	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.819	6.951	-0.132	1.000	5534368	8.61			R
498.9 > 98.9	6.819	6.951	-0.132	1.000	2032301		2.72(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.838	6.971	-0.133		13389044	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.839	6.971	-0.132	1.000	12616815	8.91			
463.0 > 218.9	6.839	6.971	-0.132	1.000	1848800		6.82(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.073	7.206	-0.133		13616496	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.083	7.206	-0.123	1.001	11462059	8.87			
513.0 > 219.0	7.073	7.206	-0.133	1.000	1087884		10.54(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.252	7.385	-0.133	1.064	4671715	7.45			
598.9 > 99.0	7.262	7.385	-0.123	1.065	1409676		3.31(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.252	7.385	-0.133	1.064	4671715	7.45			
598.9 > 99.0	7.262	7.385	-0.123	1.065	1409676		3.31(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.404	-0.123		7169778	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.281	7.404	-0.123	1.000	8766409	9.40			R
563.0 > 268.9	7.281	7.404	-0.123	1.000	1057429		8.29(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.460	7.573	-0.113		13274300	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.460	7.574	-0.114	1.000	10669103	8.27			
613.0 > 168.9	7.451	7.574	-0.123	0.999	1319591		8.09(5.96-11.06)		
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.624	7.718	-0.094		675248	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.624	7.719	-0.095	1.000	480287	6.88			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.715	-0.113	1.019	11261953	6.69			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734	7.847	-0.113	1.037	7498705	5.79			
712.9 > 169.0	7.734	7.847	-0.113	1.037	1075716		6.97(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 06-Sep-2016 08:22:35 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02018.d

Injection Date: 02-Sep-2016 13:46:43 Instrument ID: LC_LCMS5

Lims ID: LCSD 280-340544/3-A

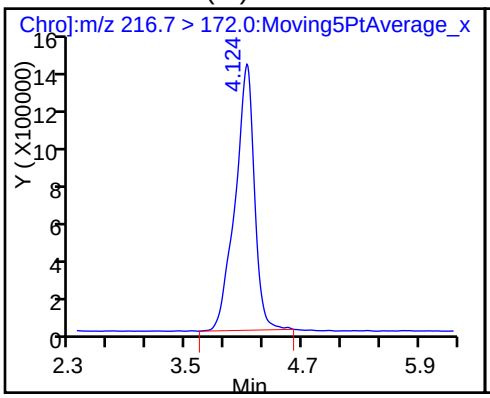
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6

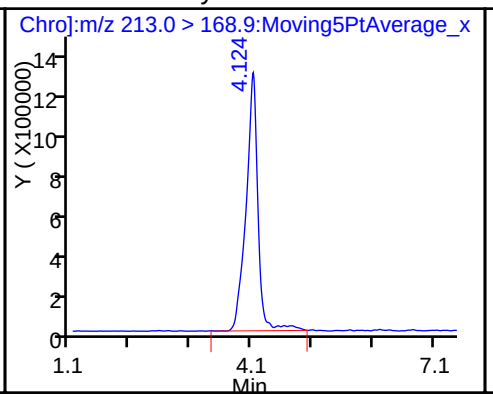
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

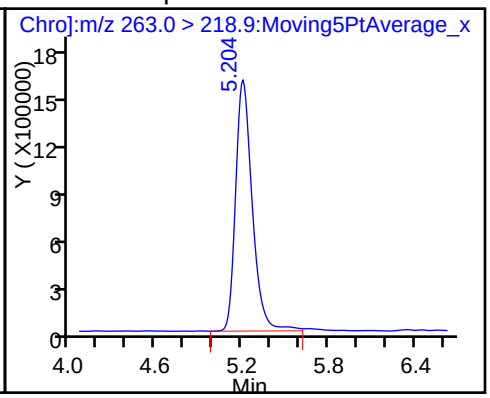
* 1 13C4 PFBA (IS)



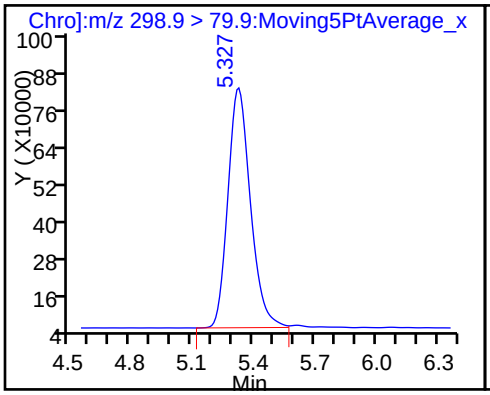
2 Perfluorobutyric acid



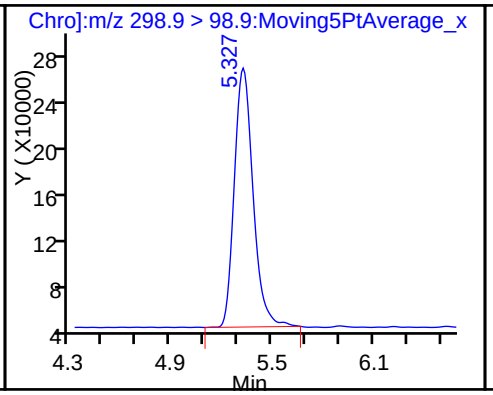
3 Perfluoropentanoic acid



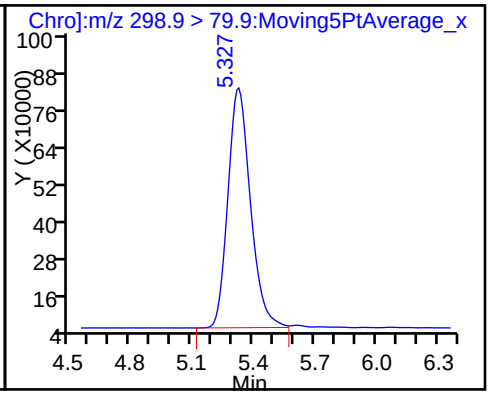
4 Perfluorobutane Sulfonate



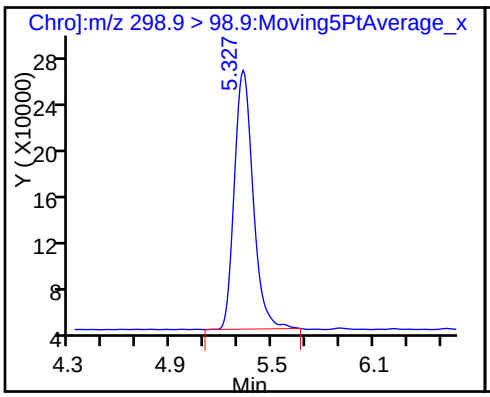
4 Perfluorobutane Sulfonate



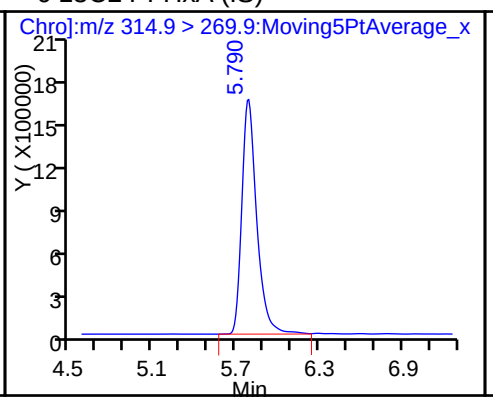
5 Perfluorobutanesulfonic acid



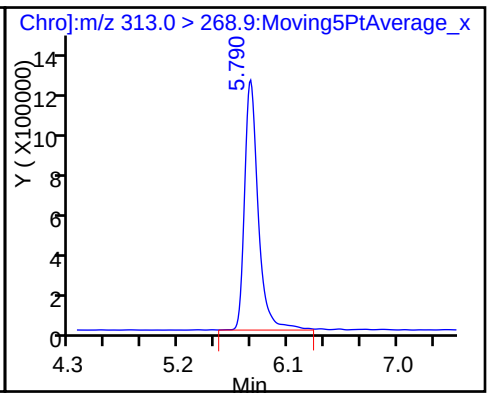
5 Perfluorobutanesulfonic acid



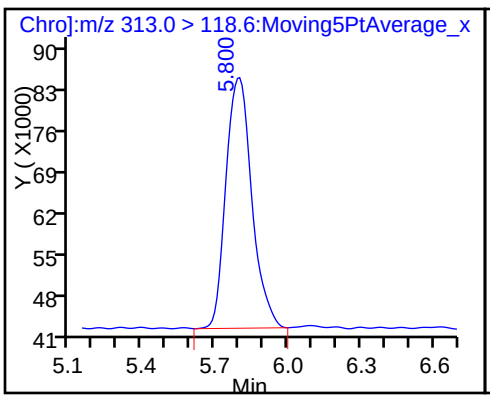
* 6 13C2 PFHxA (IS)



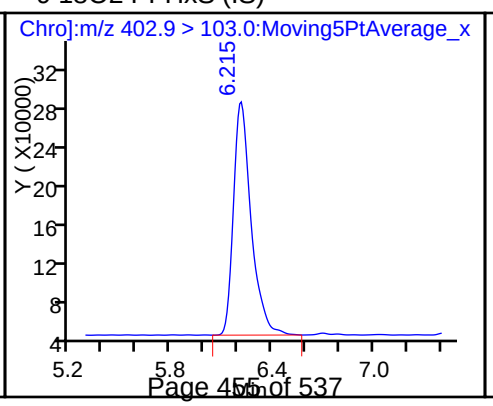
7 Perfluorohexanoic acid



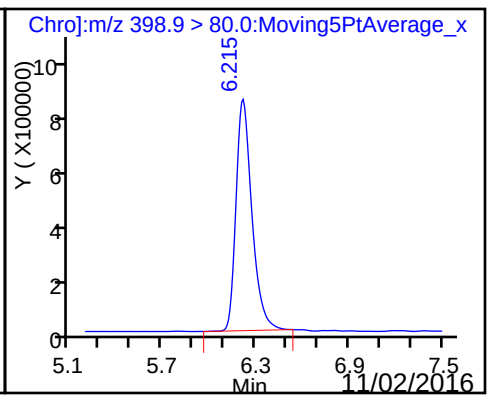
7 Perfluorohexanoic acid



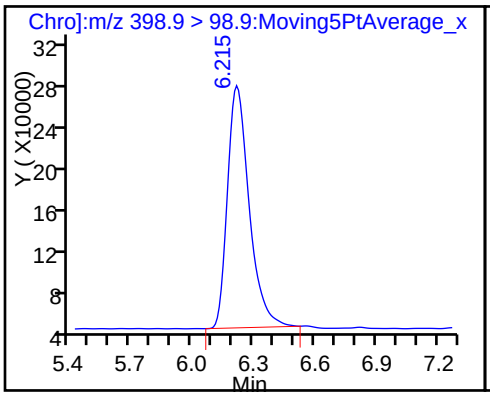
* 9 18O2 PFHxS (IS)



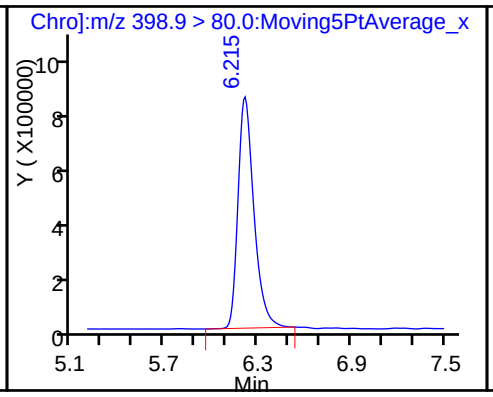
11 Perfluorohexanesulfonic acid



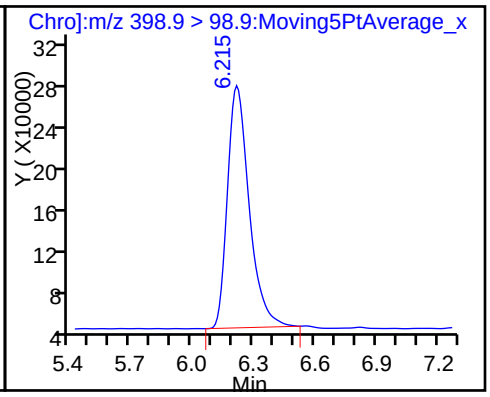
11 Perfluorohexanesulfonic acid



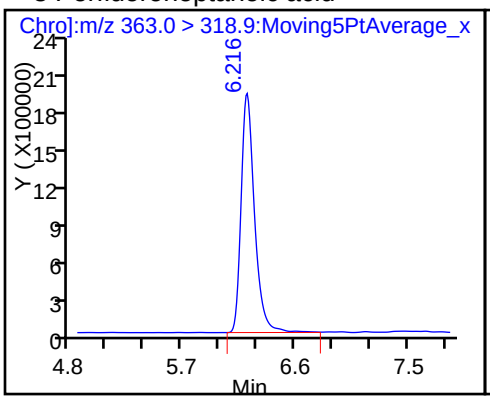
10 Perfluorohexane Sulfonate



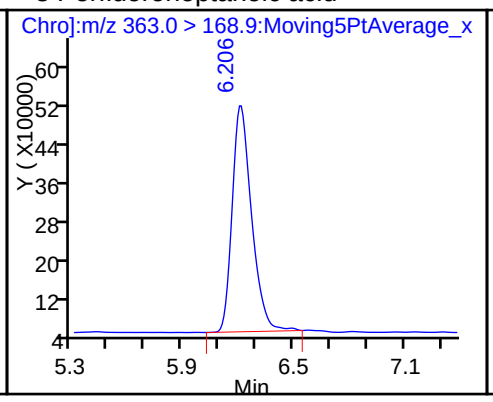
10 Perfluorohexane Sulfonate



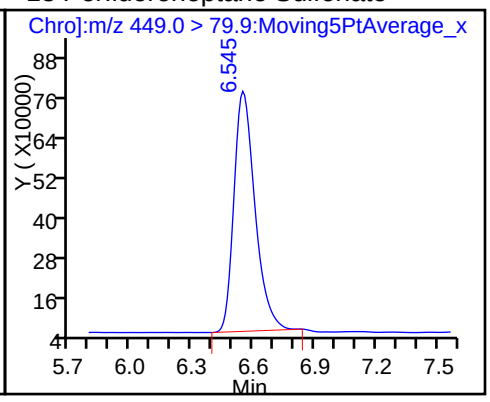
8 Perfluoroheptanoic acid



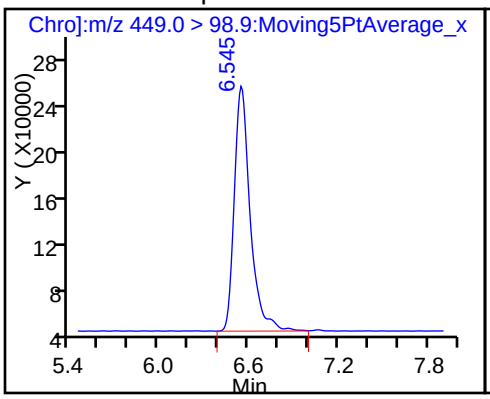
8 Perfluoroheptanoic acid



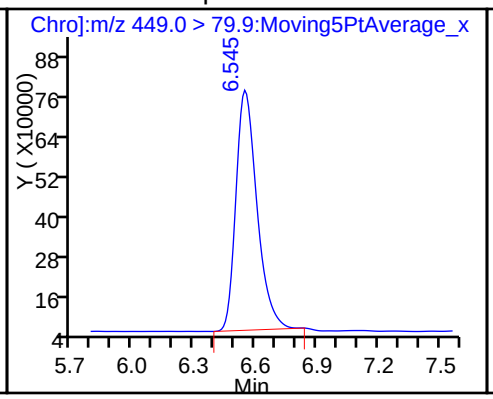
13 Perfluoroheptane Sulfonate



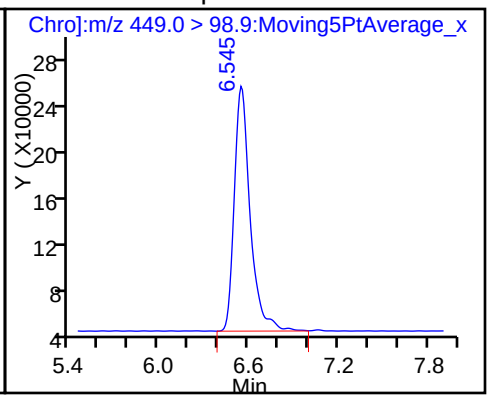
13 Perfluoroheptane Sulfonate



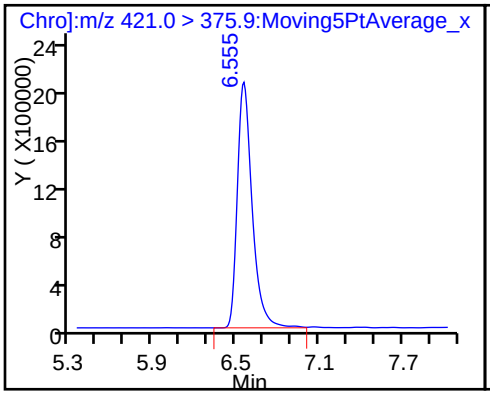
12 Perfluoroheptanesulfonic Acid



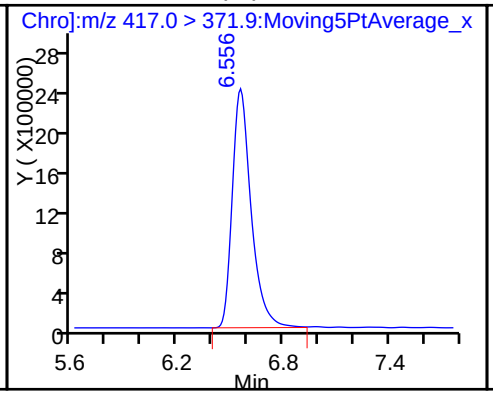
12 Perfluoroheptanesulfonic Acid



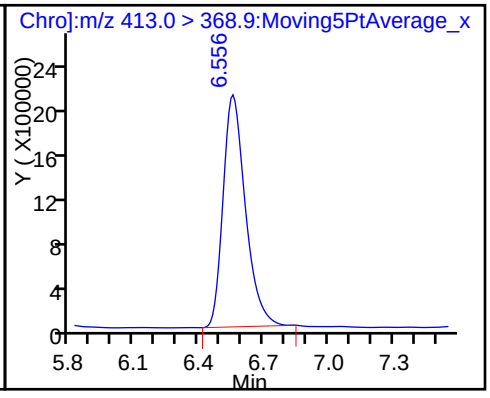
$ 14 13C8 PFOA



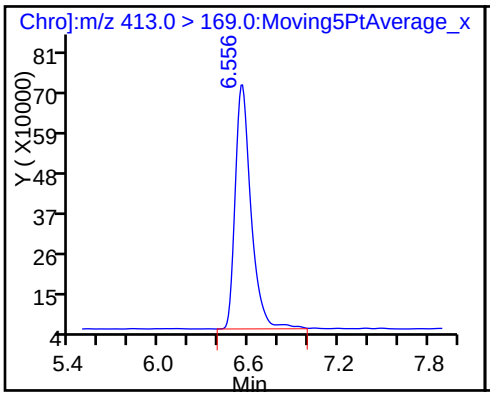
* 15 13C4 PFOA (IS)



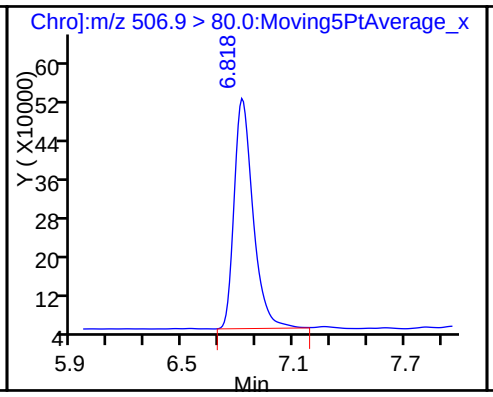
16 Perfluorooctanoic acid



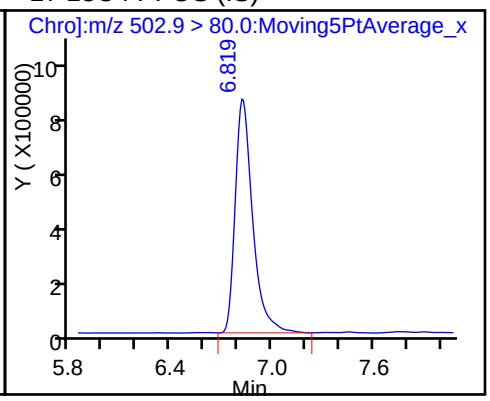
16 Perfluorooctanoic acid



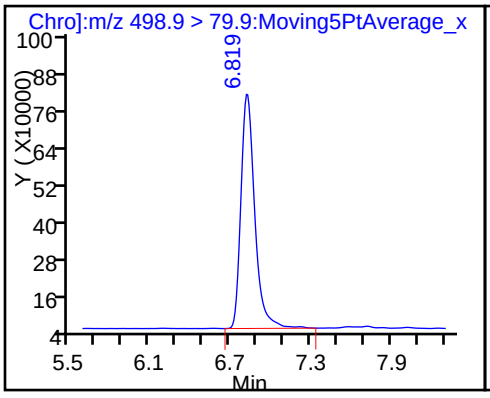
$ 18 13C8 PFOS



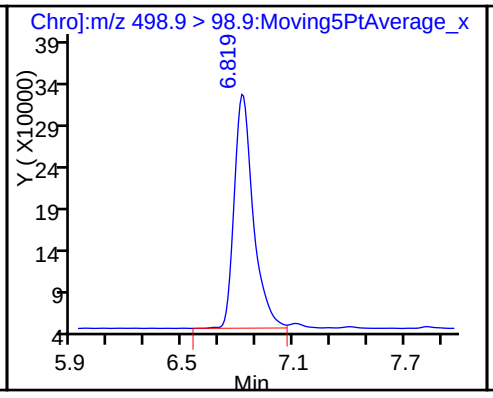
* 17 13C4 PFOS (IS)



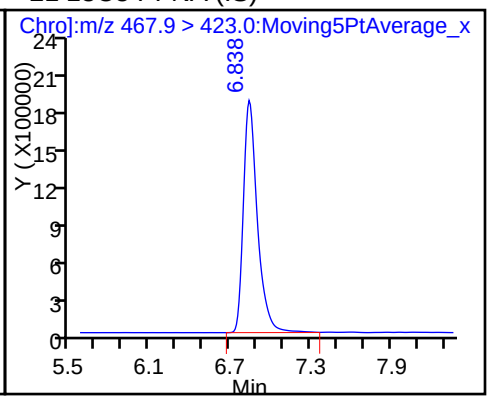
19 Perfluorooctane sulfonic acid



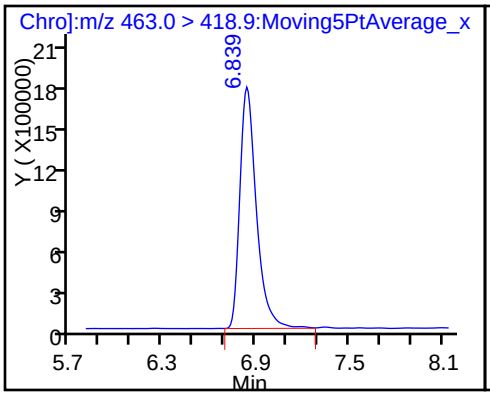
19 Perfluorooctane sulfonic acid



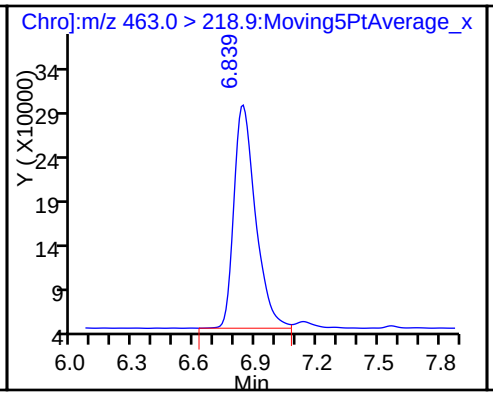
* 21 13C5 PFNA (IS)



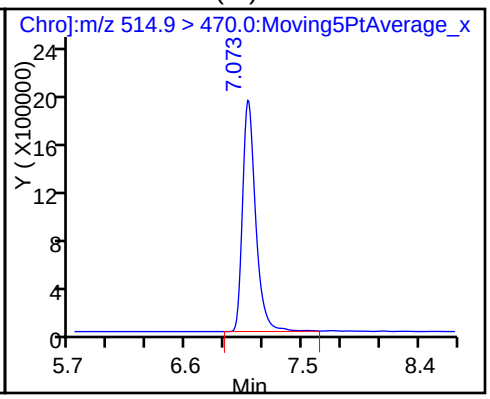
20 Perfluorononanoic acid



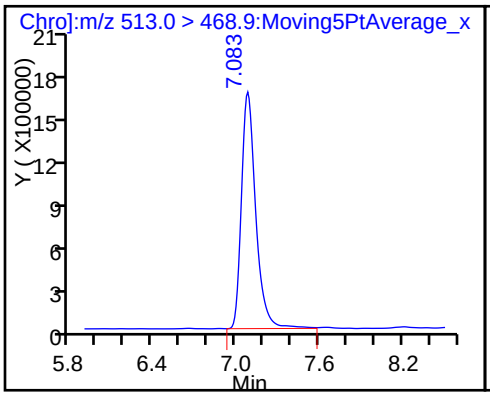
20 Perfluorononanoic acid



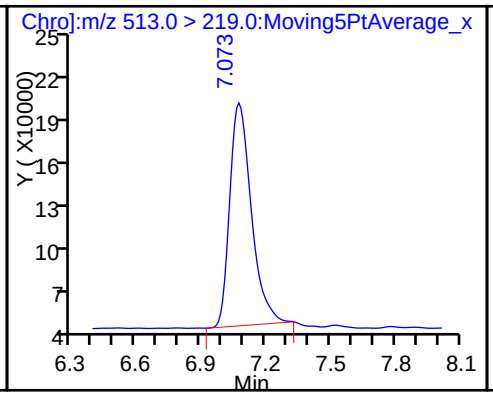
* 22 13C2 PFDA (IS)



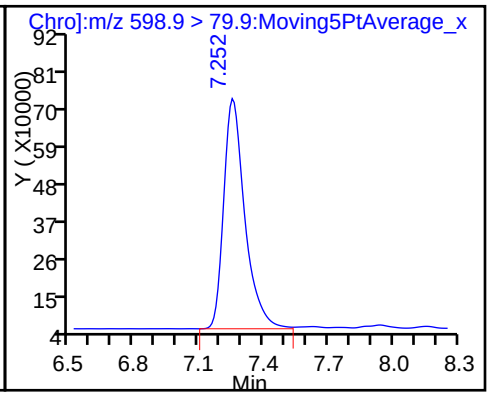
23 Perfluorodecanoic acid



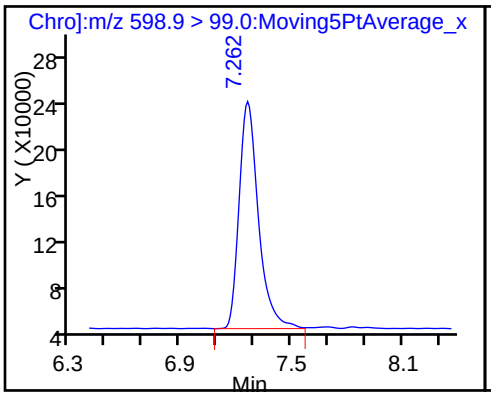
23 Perfluorodecanoic acid



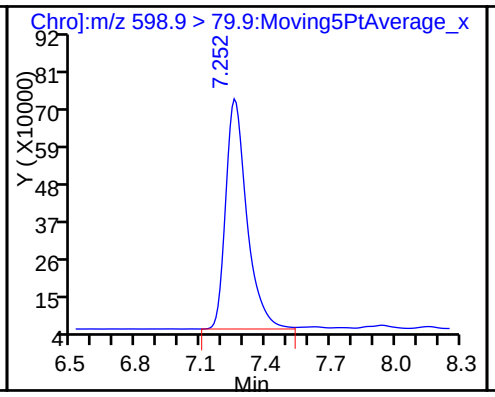
24 Perfluorodecane Sulfonic acid



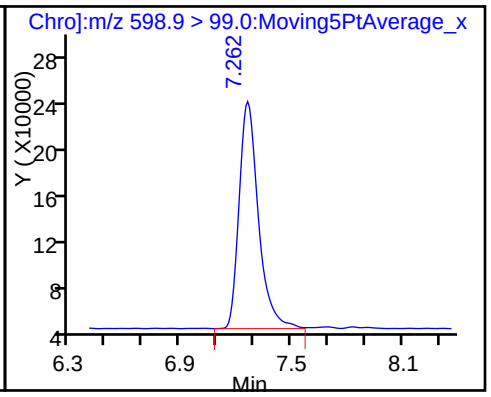
24 Perfluorodecane Sulfonic acid



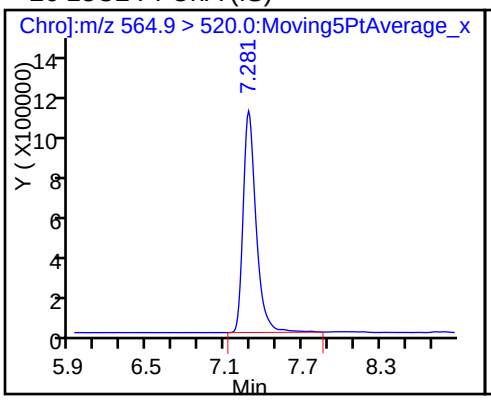
25 Perfluorodecane Sulfonate



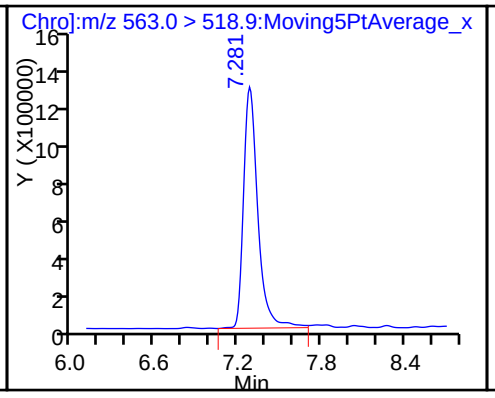
25 Perfluorodecane Sulfonate



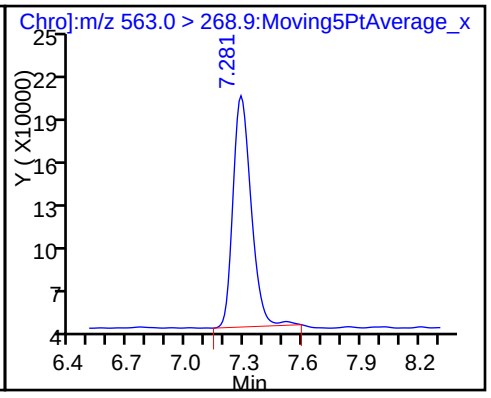
* 26 13C2 PFUnA (IS)



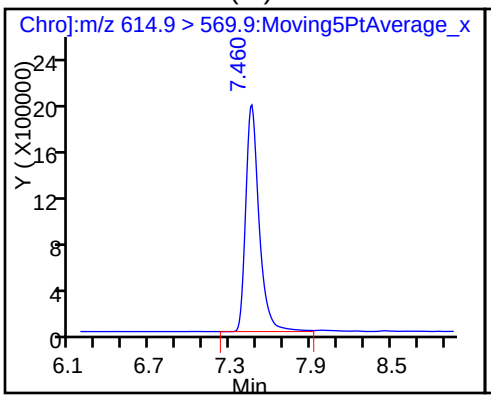
27 Perfluoroundecanoic acid



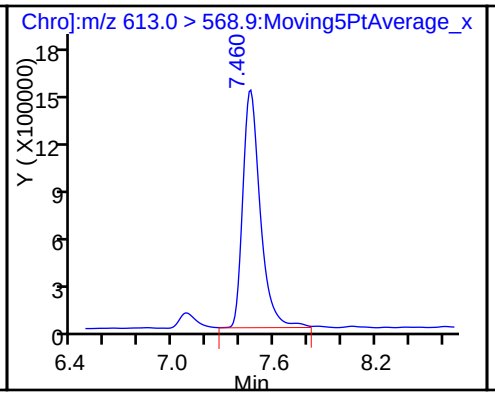
27 Perfluoroundecanoic acid



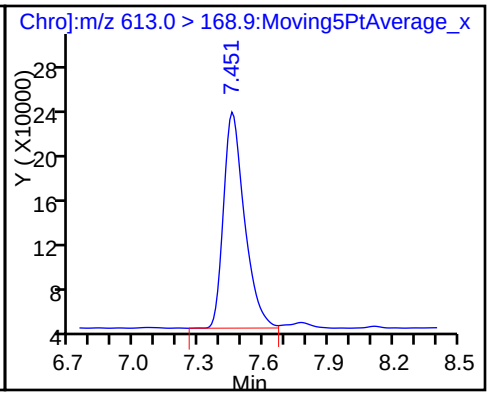
* 28 13C2 PFDoA (IS)



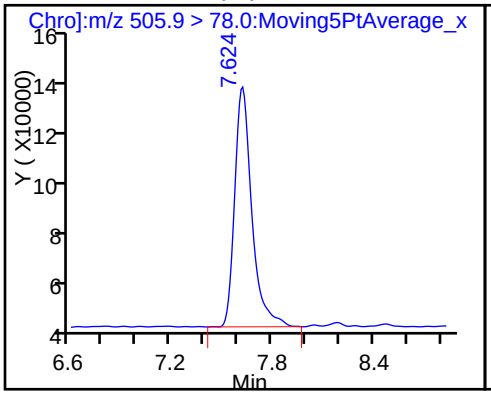
29 Perfluorododecanoic acid



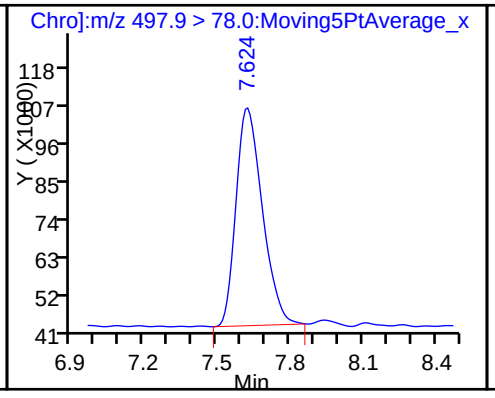
29 Perfluorododecanoic acid



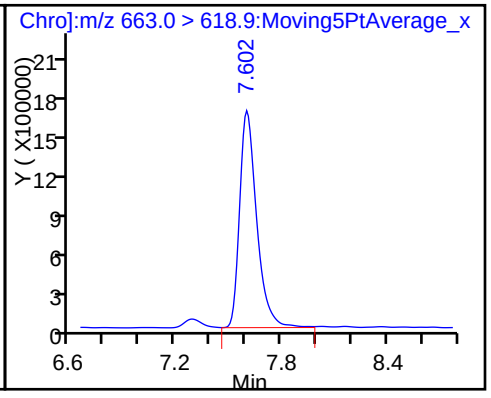
* 31 13C8 FOSA (IS)



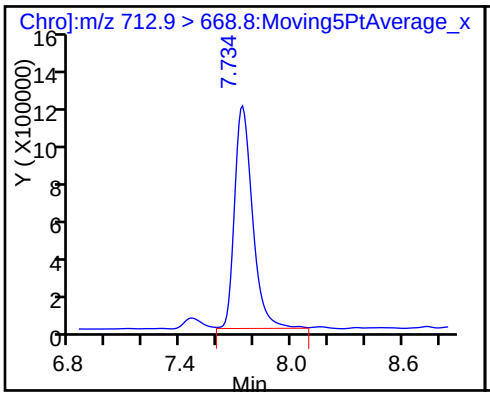
32 Perfluorooctane Sulfonamide



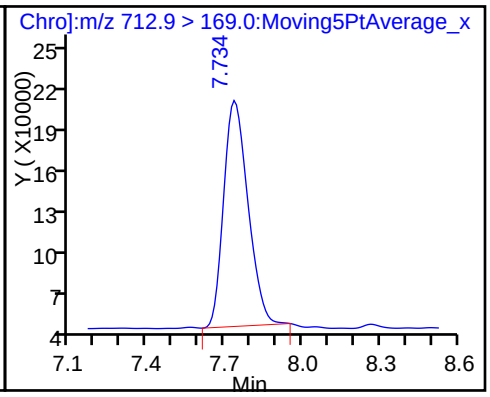
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-340982/3-A

Matrix: Water | Lab File ID: PC516I08009.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/07/2016 17:42

Sample wt/vol: 250(mL) | Date Analyzed: 09/08/2016 11:37

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 341350 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.173		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.231		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.179		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.209		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.202		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.218		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	123		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08009.d
Lims ID: LCSD 280-340982/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 08-Sep-2016 11:37:45 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 280-340982/3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 20:38:36 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK012

First Level Reviewer: fiedlerh Date: 08-Sep-2016 20:34:45

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.830	4.048	-0.218		17973002	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.840	4.049	-0.209	1.003	17898238	10.2			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.014	5.138	-0.124	0.894	13979589	10.4			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.147	5.251	-0.104	0.849	6391385	8.63			
298.9 > 98.9	5.147	5.251	-0.104	0.849	1906885		3.35(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.147	5.251	-0.104	0.849	6391385	8.63			
298.9 > 98.9	5.147	5.251	-0.104	0.849	1906885		3.35(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.610	5.724	-0.114		11805889	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.610	5.724	-0.114	1.000	10228280	9.71			
313.0 > 118.6	5.601	5.724	-0.123	0.998	299329		34.17(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.055	6.159	-0.104	0.945	15801825	11.5			
363.0 > 168.9	6.055	6.159	-0.104	0.945	4101014		3.85(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.064	6.168	-0.104		1723375	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.064	6.168	-0.104	1.000	6034207	8.96			R
398.9 > 98.9	6.064	6.168	-0.104	1.000	2002070		3.01(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.064	6.168	-0.104	1.000	6034207	8.96			
398.9 > 98.9	6.064	6.168	-0.104	1.000	2002070		3.01(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.394	6.508	-0.114	0.958	6187882	9.52			
449.0 > 98.9	6.394	6.508	-0.114	0.958	1763152		3.51(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.394	6.508	-0.114	0.958	6187882	9.52			
449.0 > 98.9	6.394	6.508	-0.114	0.958	1763152		3.51(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.404	6.508	-0.104	1.000	13764973	10.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.404	6.518	-0.114		17032750	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.404	6.508	-0.104	1.000	18345530	10.9			
413.0 > 169.0	6.404	6.508	-0.104	1.000	5756409		3.19(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.676	6.790	-0.114	1.000	3617710	11.4			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.676	6.790	-0.114		6041614	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.686	6.790	-0.104	1.001	6581447	10.1			R
498.9 > 98.9	6.686	6.790	-0.104	1.001	2517205		2.61(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.696	6.810	-0.114		13494012	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.697	6.810	-0.113	1.000	14666502	10.4			
463.0 > 218.9	6.697	6.810	-0.113	1.000	1999321		7.34(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.950	7.054	-0.104		13648165	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.950	7.054	-0.104	1.000	13627953	10.3			
513.0 > 219.0	6.950	7.054	-0.104	1.000	1212247		11.24(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.138	7.243	-0.105	1.069	5079887	7.40			
598.9 > 99.0	7.138	7.243	-0.105	1.069	1463247		3.47(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.138	7.243	-0.105	1.069	5079887	7.40			
598.9 > 99.0	7.138	7.243	-0.105	1.069	1463247		3.47(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.158	7.271	-0.113		7515425	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.158	7.272	-0.114	1.000	10295893	10.3			R
563.0 > 268.9	7.158	7.272	-0.114	1.000	1191053		8.64(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.346	7.450	-0.104		13829641	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.346	7.451	-0.105	1.000	12502843	9.12			
613.0 > 168.9	7.346	7.451	-0.105	1.000	1632985		7.66(5.96-11.06)		
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.462	7.510	-0.048		427793	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.482	7.511	-0.029	1.003	499694	11.5			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.497	7.602	-0.105	1.021	9979729	6.99			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.639	7.734	-0.095	1.040	6625564	6.01			
712.9 > 169.0	7.639	7.734	-0.095	1.040	1261634		5.25(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 08-Sep-2016 20:38:47 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50687.b\PC516I08009.d

Injection Date: 08-Sep-2016 11:37:45 Instrument ID: LC_LCMS5

Lims ID: LCSD 280-340982/3-A

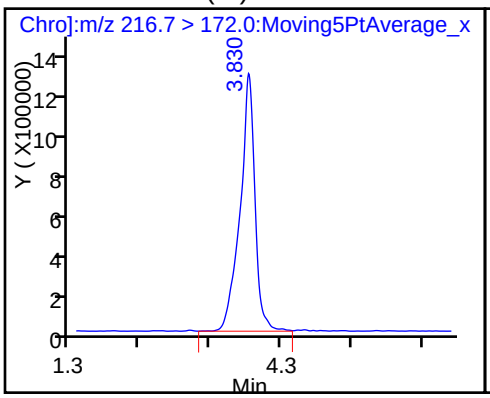
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6

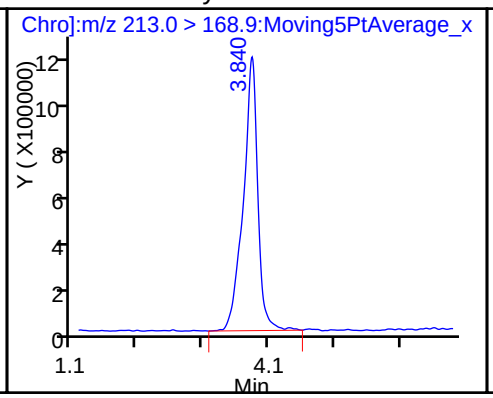
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

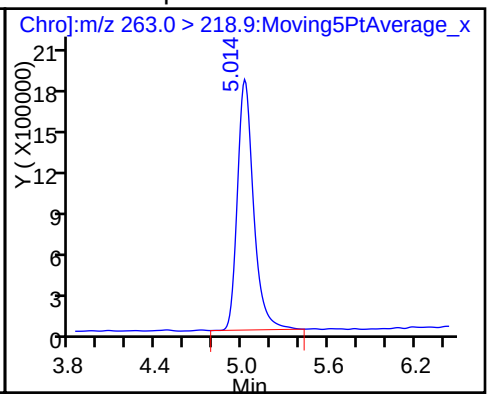
* 1 13C4 PFBA (IS)



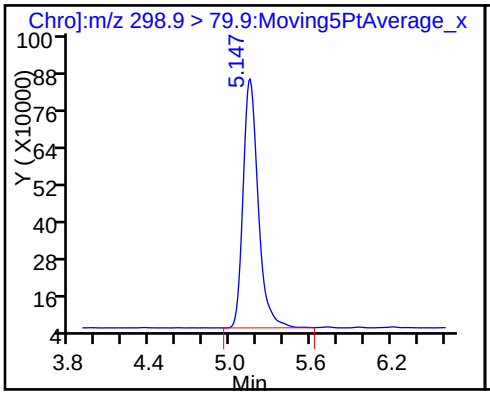
2 Perfluorobutyric acid



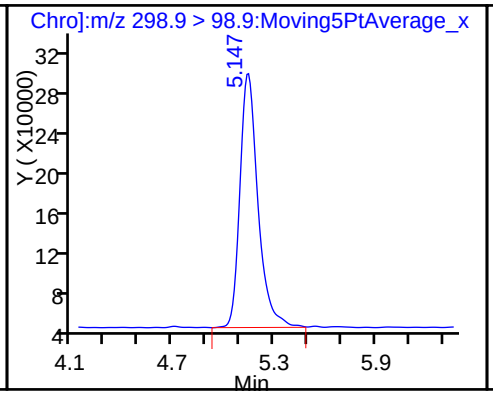
3 Perfluoropentanoic acid



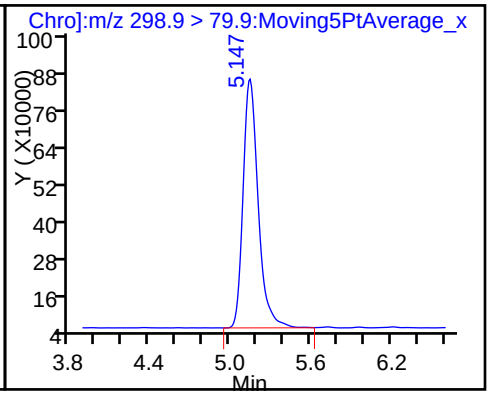
4 Perfluorobutane Sulfonate



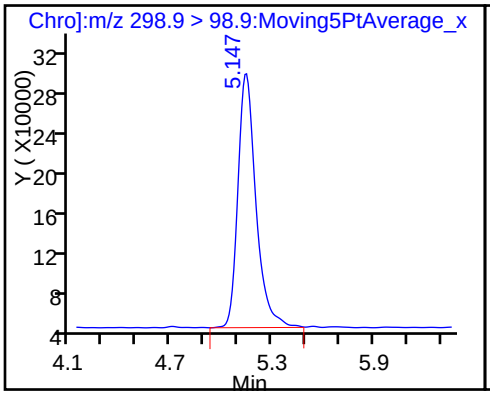
4 Perfluorobutane Sulfonate



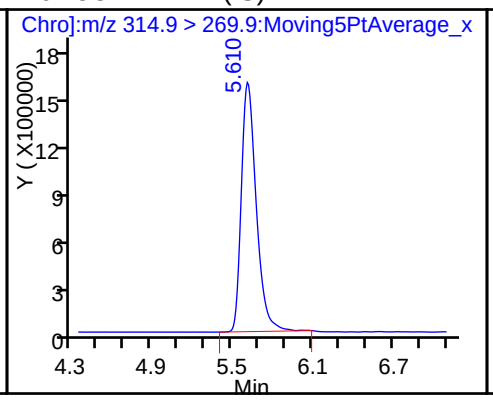
5 Perfluorobutanesulfonic acid



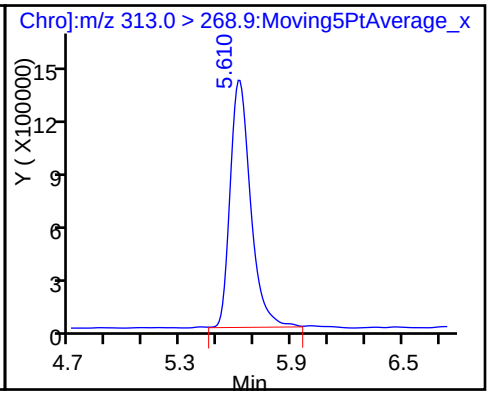
5 Perfluorobutanesulfonic acid



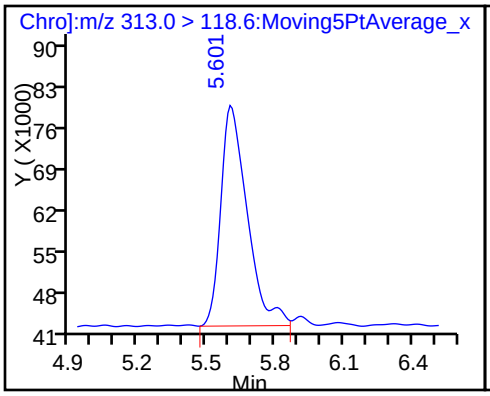
* 6 13C2 PFHxA (IS)



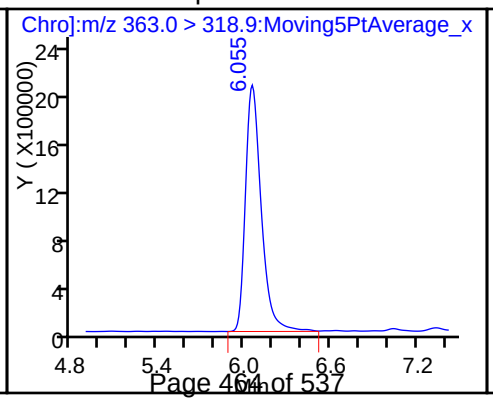
7 Perfluorohexanoic acid



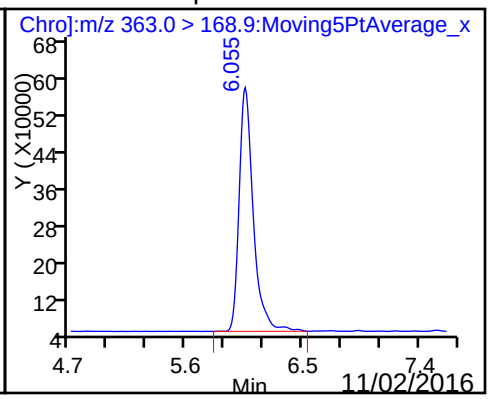
7 Perfluorohexanoic acid



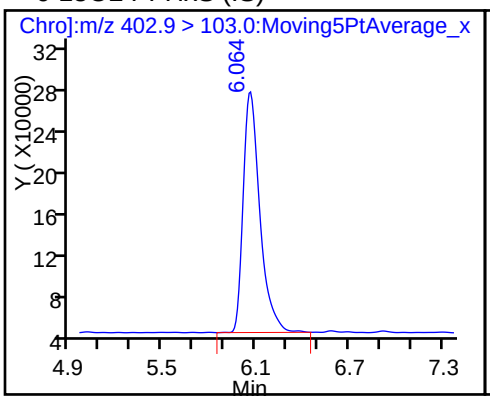
8 Perfluoroheptanoic acid



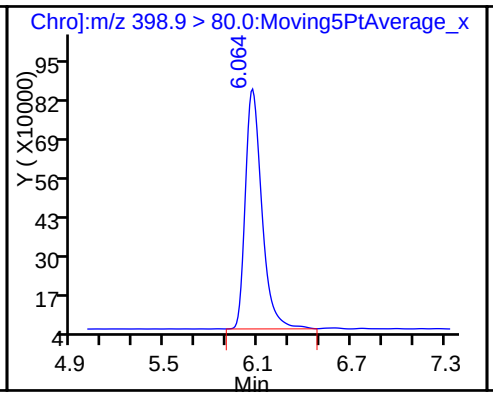
8 Perfluoroheptanoic acid



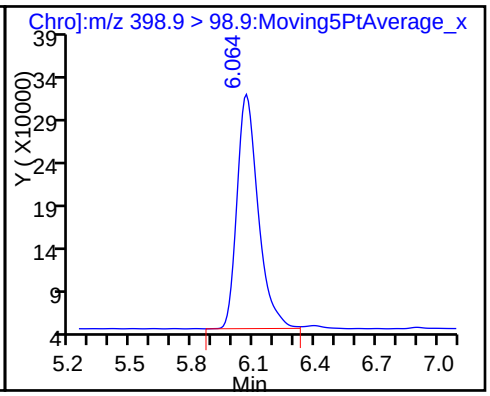
* 9 18O2 PFHxS (IS)



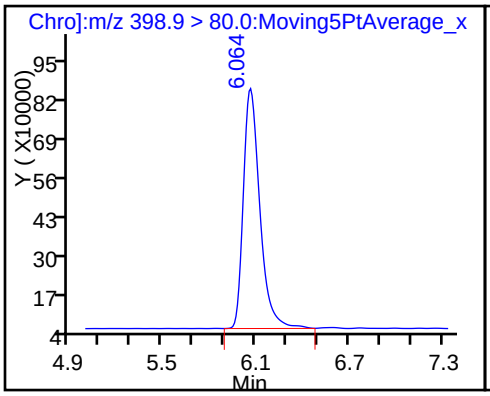
10 Perfluorohexane Sulfonate



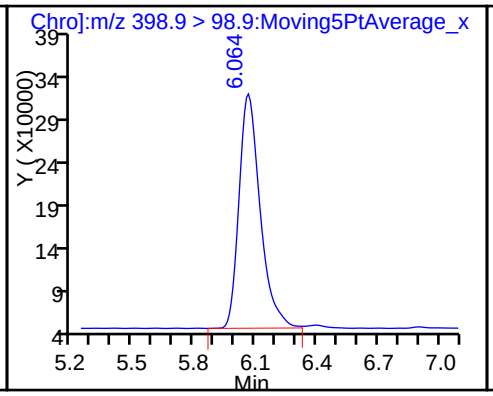
10 Perfluorohexane Sulfonate



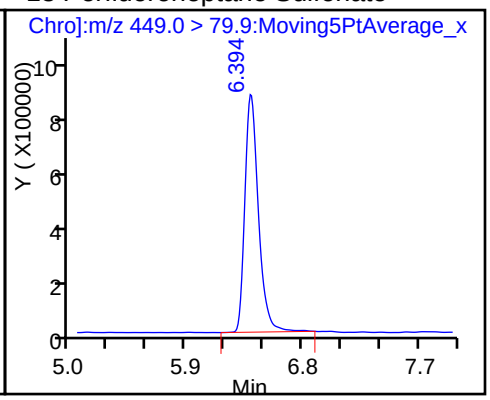
11 Perfluorohexanesulfonic acid



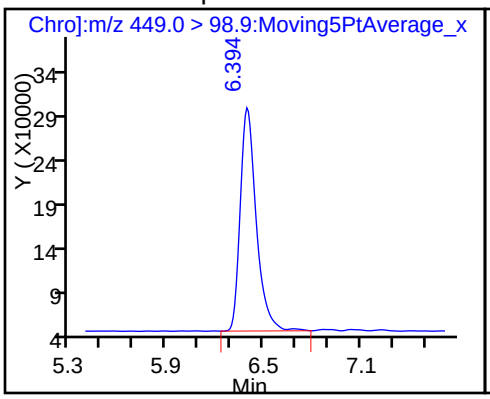
11 Perfluorohexanesulfonic acid



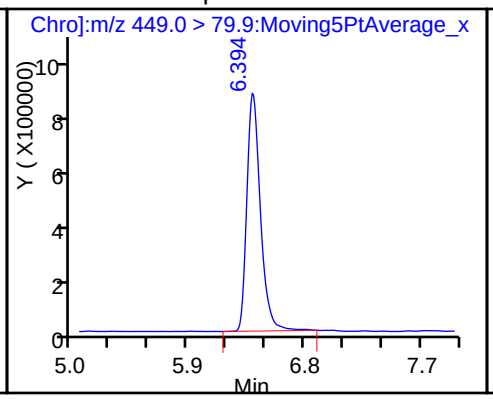
13 Perfluoroheptane Sulfonate



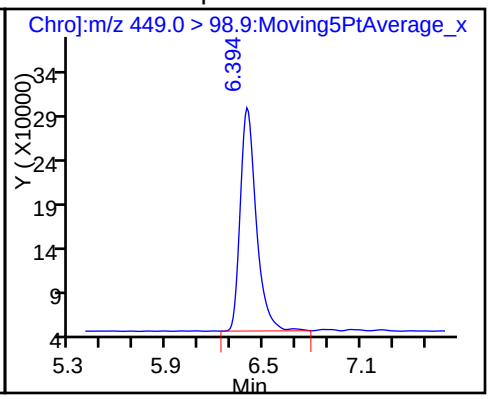
13 Perfluoroheptane Sulfonate



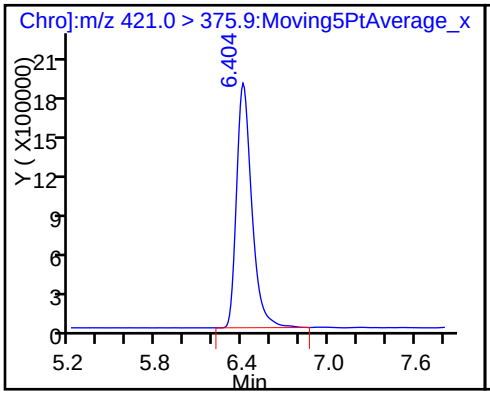
12 Perfluoroheptanesulfonic Acid



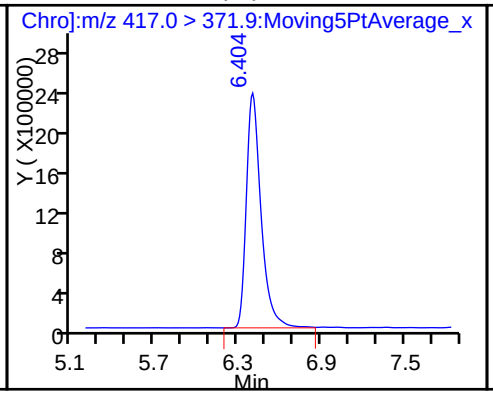
12 Perfluoroheptanesulfonic Acid



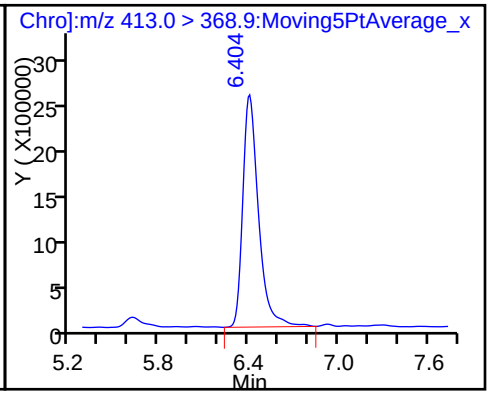
$ 14 13C8 PFOA



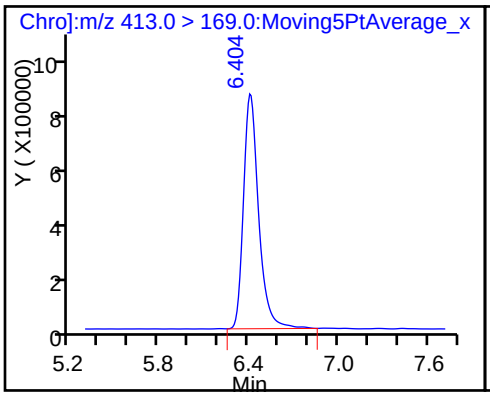
* 15 13C4 PFOA (IS)



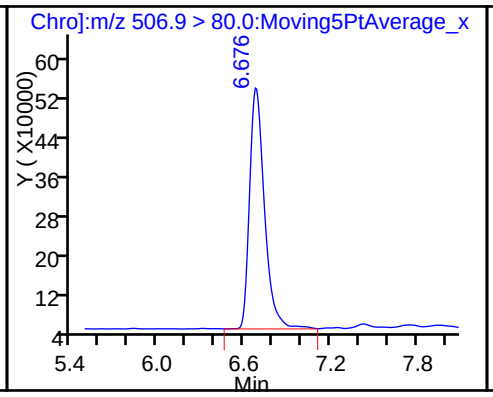
16 Perfluorooctanoic acid



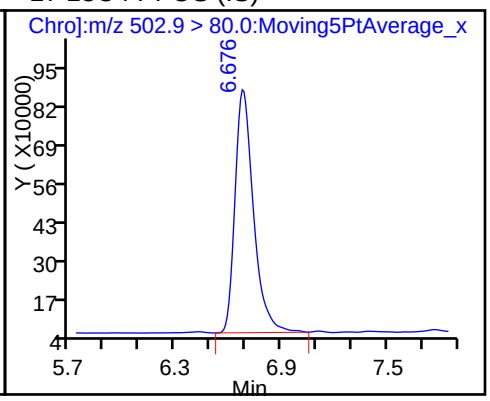
16 Perfluorooctanoic acid



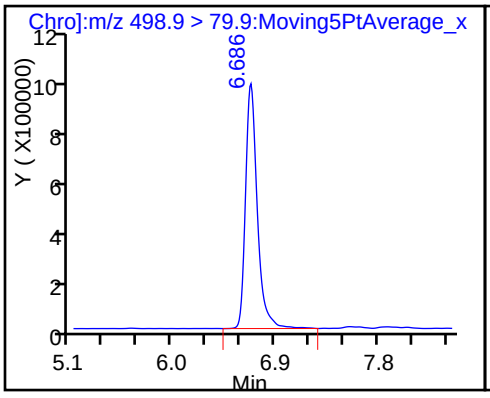
$ 18 13C8 PFOS



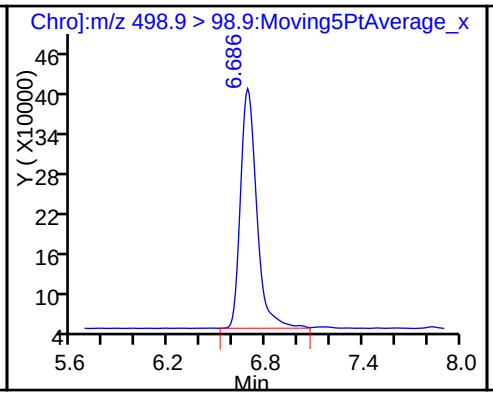
* 17 13C4 PFOS (IS)



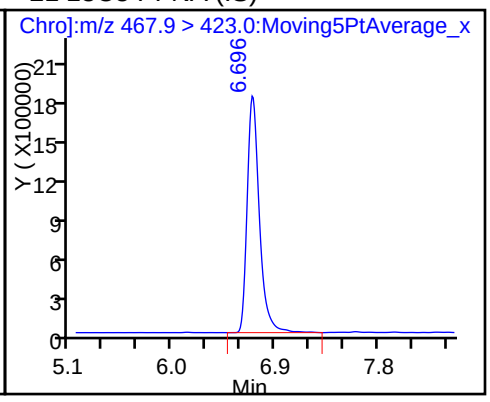
19 Perfluorooctane sulfonic acid



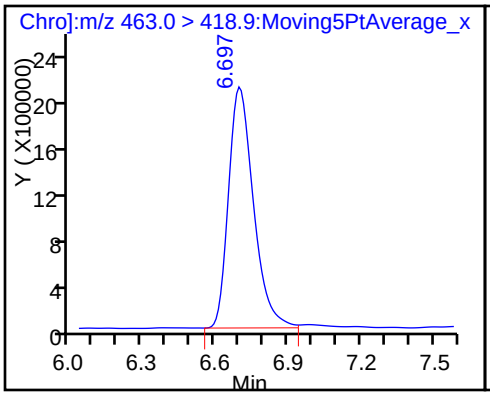
19 Perfluorooctane sulfonic acid



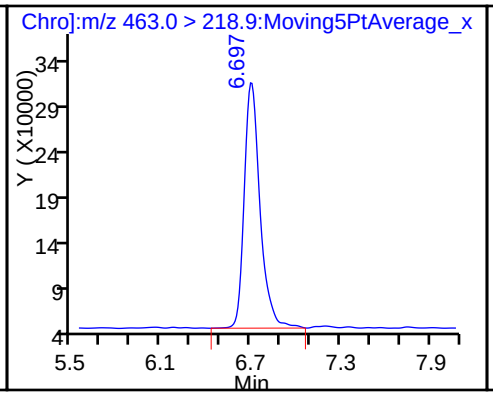
* 21 13C5 PFNA (IS)



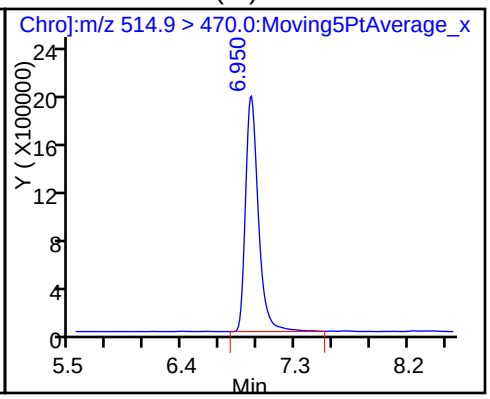
20 Perfluorononanoic acid



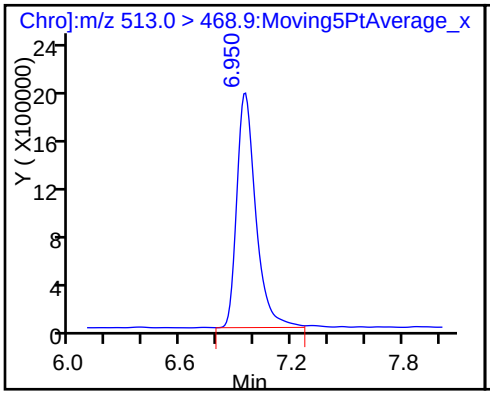
20 Perfluorononanoic acid



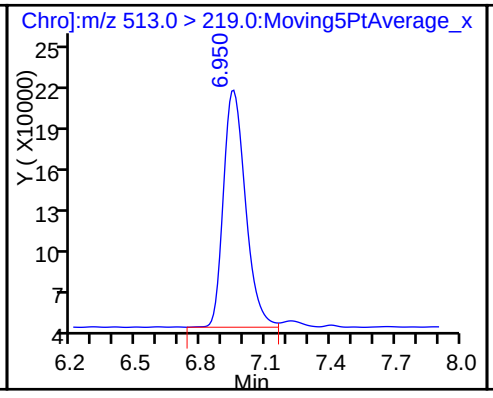
* 22 13C2 PFDA (IS)



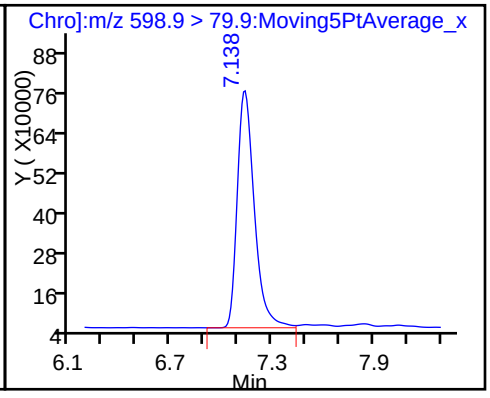
23 Perfluorodecanoic acid



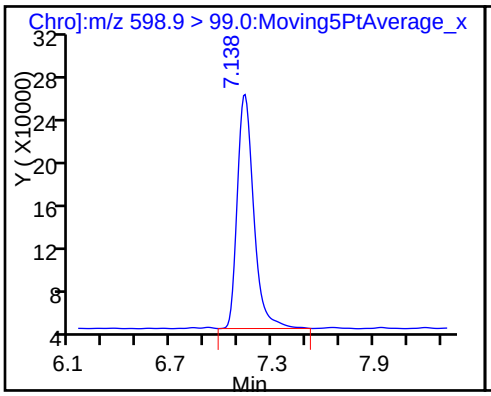
23 Perfluorodecanoic acid



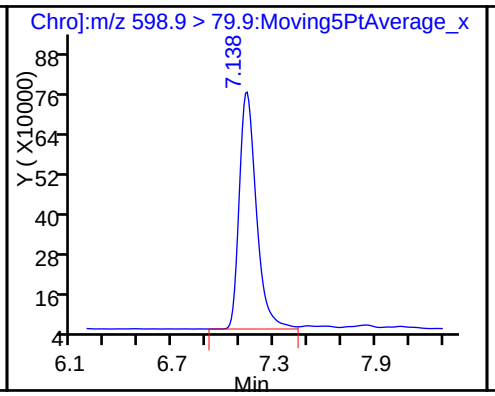
24 Perfluorodecane Sulfonic acid



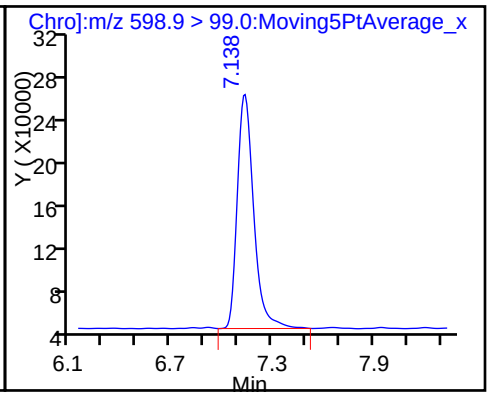
24 Perfluorodecane Sulfonic acid



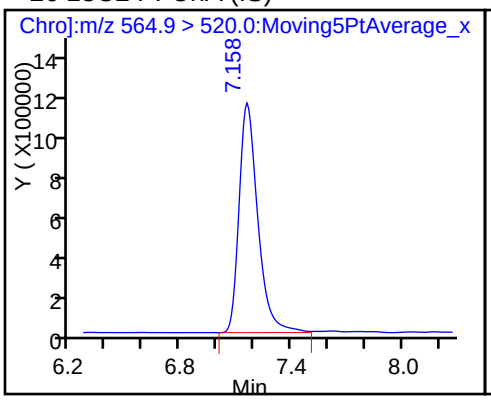
25 Perfluorodecane Sulfonate



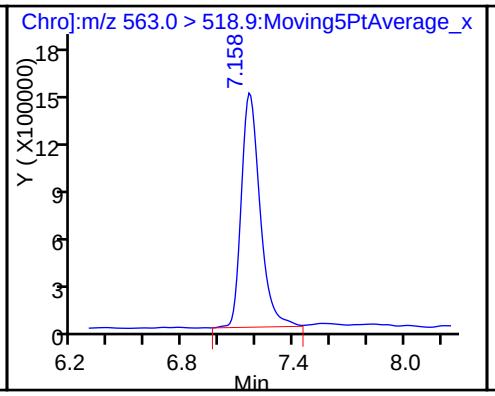
25 Perfluorodecane Sulfonate



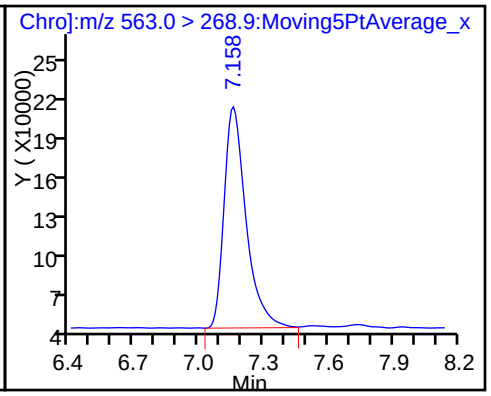
* 26 13C2 PFUnA (IS)



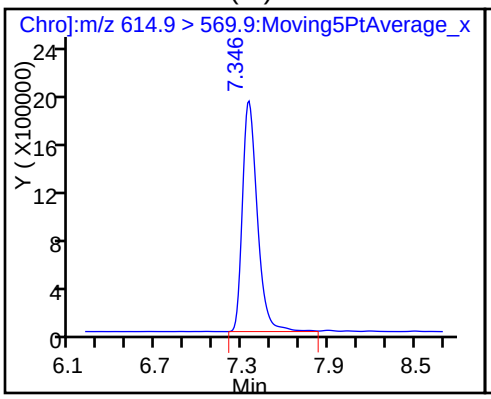
27 Perfluoroundecanoic acid



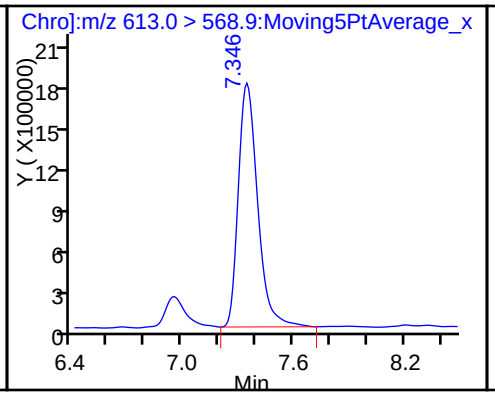
27 Perfluoroundecanoic acid



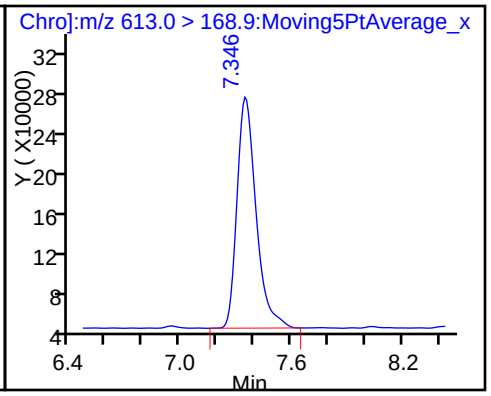
* 28 13C2 PFDoA (IS)



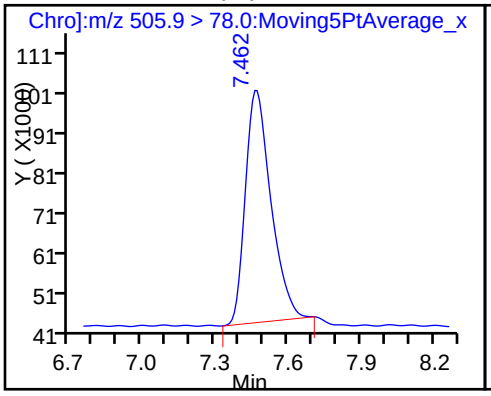
29 Perfluorododecanoic acid



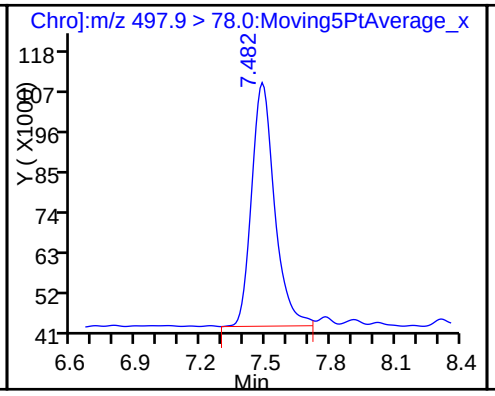
29 Perfluorododecanoic acid



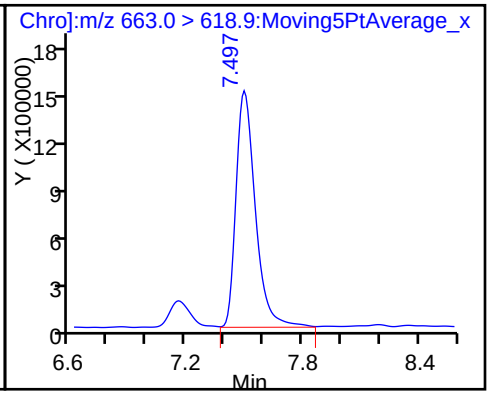
* 31 13C8 FOSA (IS)



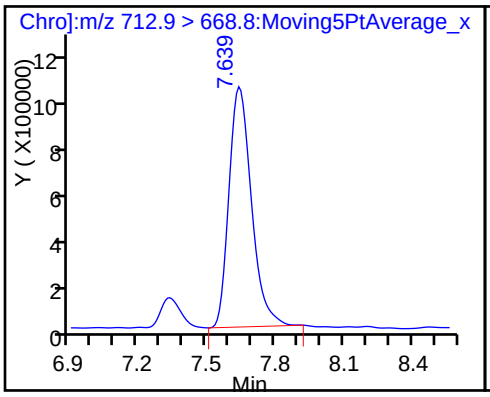
32 Perfluorooctane Sulfonamide



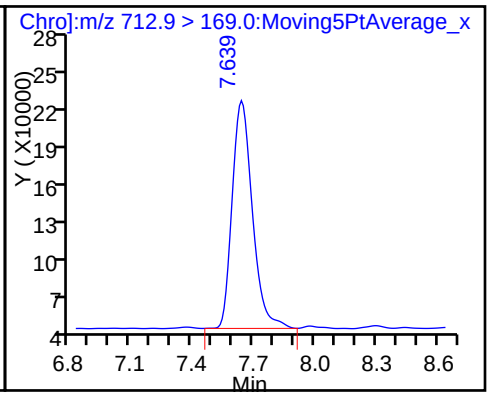
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-341407/3-A

Matrix: Water | Lab File ID: PC516I09107.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/08/2016 22:13

Sample wt/vol: 250(mL) | Date Analyzed: 09/10/2016 02:31

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 341622 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.121		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.165		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.152		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.152		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.138		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.164		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	126		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09107.d
Lims ID: LCSD 280-341407/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 10-Sep-2016 02:31:58 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 280-341407/3-a, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 12-Sep-2016 08:06:07 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK018

First Level Reviewer: fiedlerh Date: 12-Sep-2016 08:01:56

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.755	3.868	-0.113		26803216	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.755	3.869	-0.114	1.000	16507593	6.27			
3 Perfluoropentanoic acid									
263.0 > 218.9	4.948	5.014	-0.066	0.894	13734698	7.74			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.071	5.128	-0.057	0.848	6632800	6.07			R
298.9 > 98.9	5.080	5.128	-0.048	0.850	1899985		3.49(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.071	5.128	-0.057	0.848	6632800	6.07			
298.9 > 98.9	5.080	5.128	-0.048	0.850	1899985		3.49(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.534	5.591	-0.057		15593017	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.535	5.591	-0.057	1.000	11150207	7.99			
313.0 > 118.6	5.544	5.591	-0.047	1.002	377736		29.52(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.978	6.035	-0.057		2539507	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	5.970	6.026	-0.056	0.945	16283206	8.25			
363.0 > 168.9	5.979	6.026	-0.047	0.946	4267625		3.82(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	5.979	6.026	-0.047	1.000	7547850	7.59			R
398.9 > 98.9	5.988	6.026	-0.038	1.002	2314009		3.26(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	5.979	6.026	-0.047	1.000	7547850	7.59			
398.9 > 98.9	5.988	6.026	-0.038	1.002	2314009		3.26(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.318	6.365	-0.047	0.957	6205458	6.13			
449.0 > 98.9	6.318	6.365	-0.047	0.957	1878722		3.30(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.318	6.365	-0.047	0.957	6205458	6.13			
449.0 > 98.9	6.318	6.365	-0.047	0.957	1878722		3.30(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.328	6.375	-0.047	1.001	19644728	9.96			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.319	6.376	-0.057		24486090	10.0			
16 Perfluorooctanoic acid									R
413.0 > 368.9	6.328	6.376	-0.048	1.002	19892856	8.21			R
413.0 > 169.0	6.328	6.376	-0.048	1.002	7209466		2.76(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.601	6.648	-0.047		9404525	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.601	6.639	-0.038	1.000	7009119	6.89			R
498.9 > 98.9	6.610	6.639	-0.029	1.001	2593625		2.70(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.610	6.638	-0.028	1.001	5740408	11.7			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.621	6.658	-0.037		21273477	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.621	6.659	-0.038	1.000	16853217	7.59			
463.0 > 218.9	6.621	6.659	-0.038	1.000	2268216		7.43(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.865	6.903	-0.038		19914256	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.865	6.903	-0.038	1.000	15105000	7.85			R
513.0 > 219.0	6.865	6.903	-0.038	1.000	1641180		9.20(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.053	7.091	-0.038	1.069	5361122	5.01			
598.9 > 99.0	7.053	7.091	-0.038	1.069	1802220		2.97(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.053	7.091	-0.038	1.069	5361122	5.01			
598.9 > 99.0	7.053	7.091	-0.038	1.069	1802220		2.97(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.082	7.110	-0.028		11702618	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.073	7.111	-0.038	0.999	11188667	7.18			R
563.0 > 268.9	7.082	7.111	-0.029	1.000	1223933		9.14(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.261	7.289	-0.028		18848175	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.252	7.289	-0.037	0.999	13659703	7.30			
613.0 > 168.9	7.252	7.289	-0.037	0.999	1589115		8.60(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.412	7.450	-0.038	1.021	11937714	6.13			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.434	7.462	-0.028		438079	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.425	7.463	-0.038	0.999	306195	6.87			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.554	7.582	-0.028	1.040	10298967	6.86			
712.9 > 169.0	7.554	7.582	-0.028	1.040	1780021		5.79(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 12-Sep-2016 08:06:19 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160912-50766.b\PC516I09107.d

Injection Date: 10-Sep-2016 02:31:58 Instrument ID: LC_LCMS5

Lims ID: LCSD 280-341407/3-A

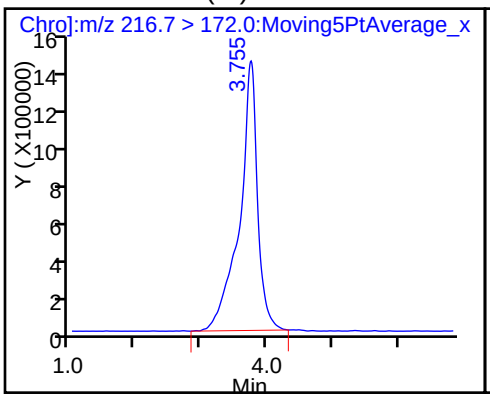
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6

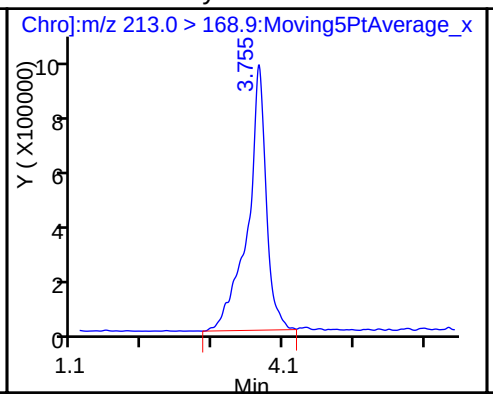
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

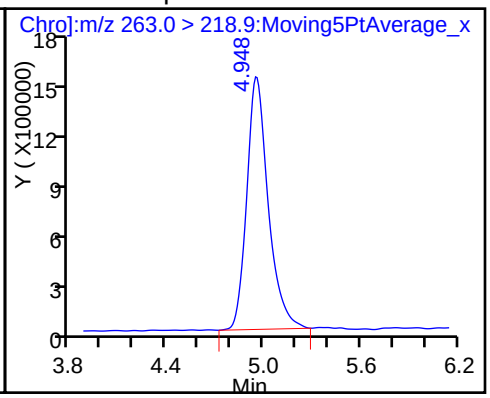
* 1 13C4 PFBA (IS)



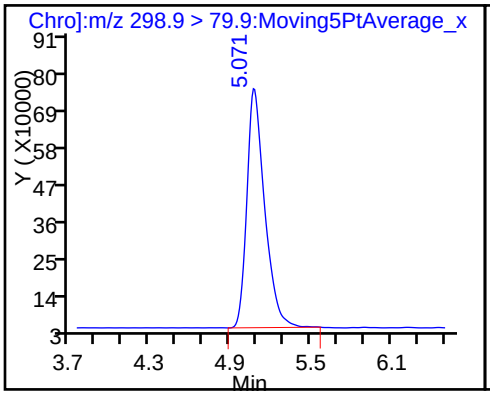
2 Perfluorobutyric acid



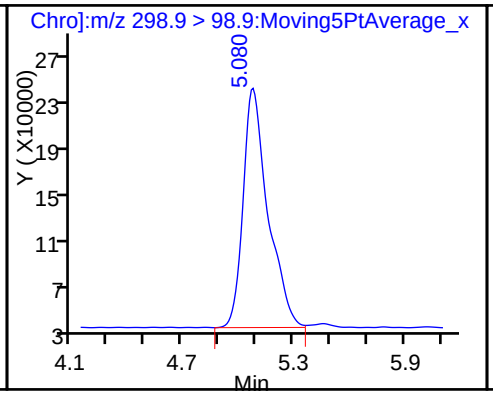
3 Perfluoropentanoic acid



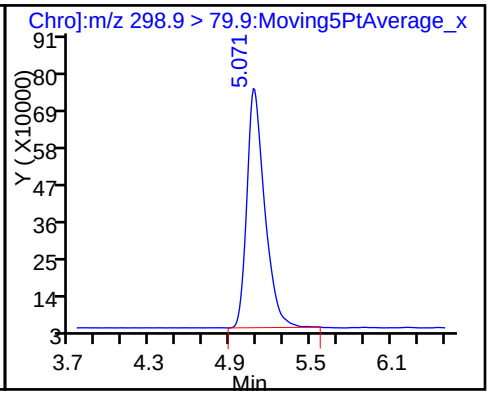
4 Perfluorobutane Sulfonate



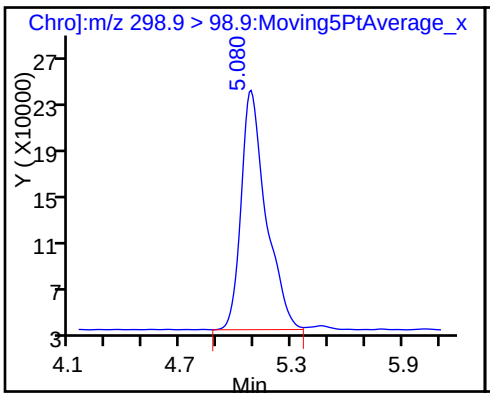
4 Perfluorobutane Sulfonate



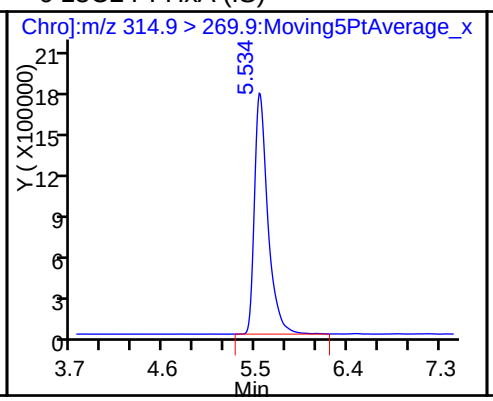
5 Perfluorobutanesulfonic acid



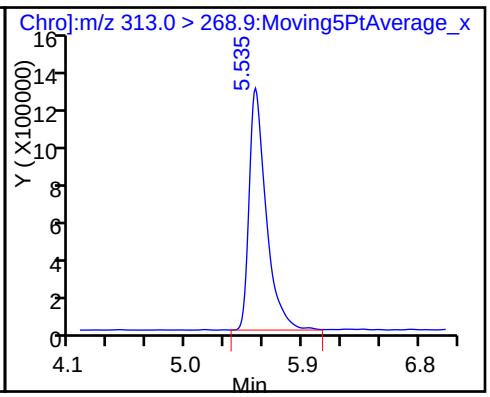
5 Perfluorobutanesulfonic acid



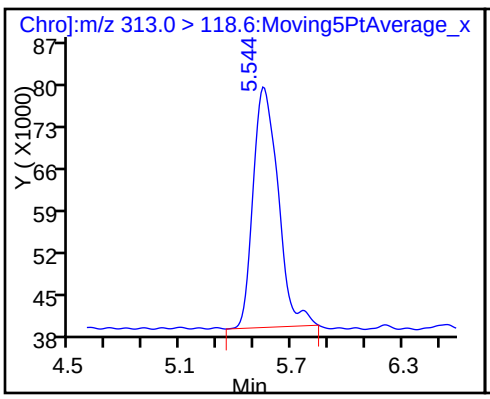
* 6 13C2 PFHxA (IS)



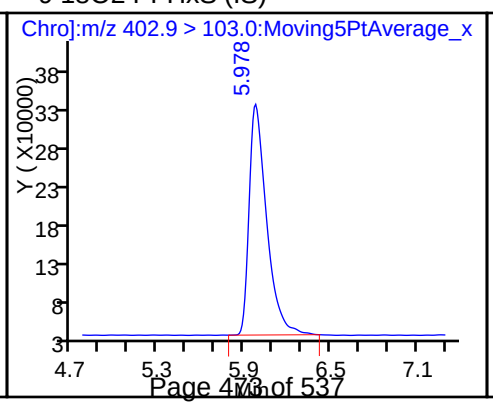
7 Perfluorohexanoic acid



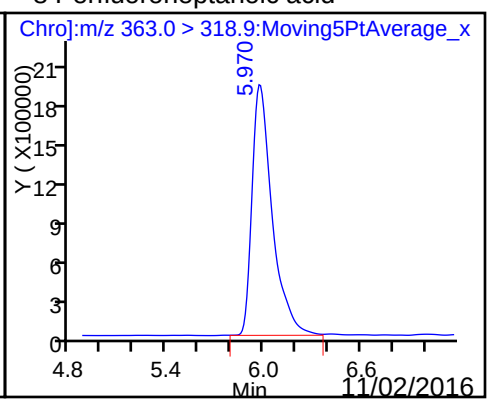
7 Perfluorohexanoic acid



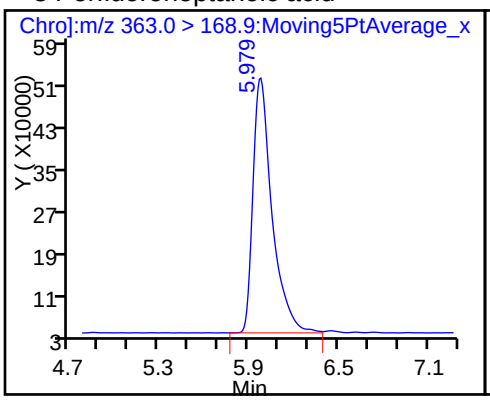
* 9 18O2 PFHxS (IS)



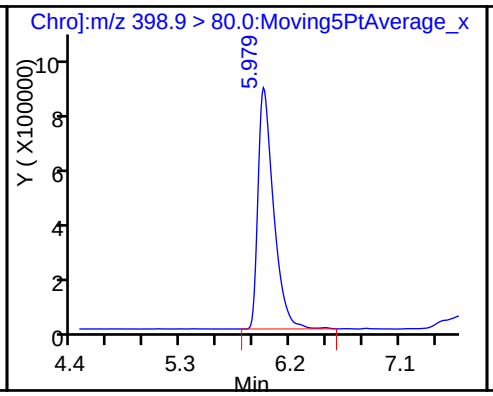
8 Perfluoroheptanoic acid



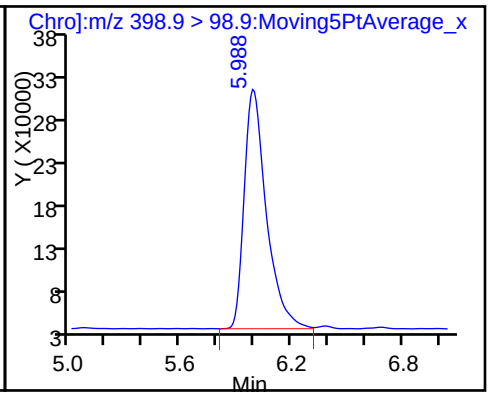
8 Perfluoroheptanoic acid



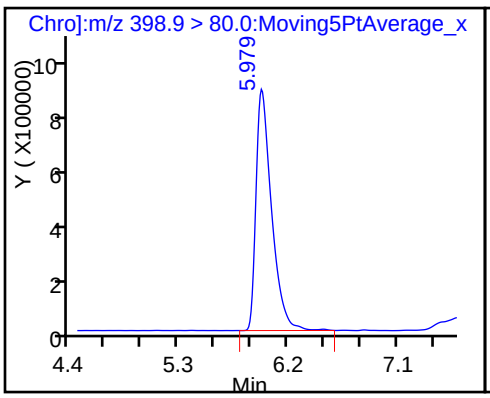
10 Perfluorohexane Sulfonate



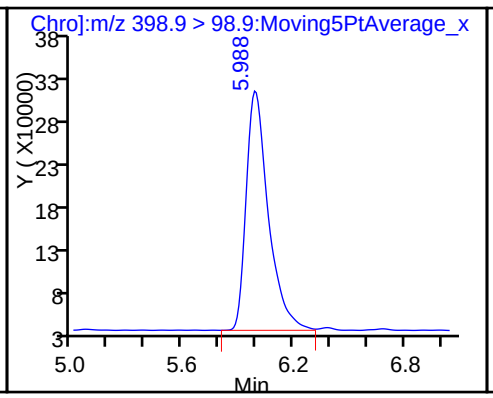
10 Perfluorohexane Sulfonate



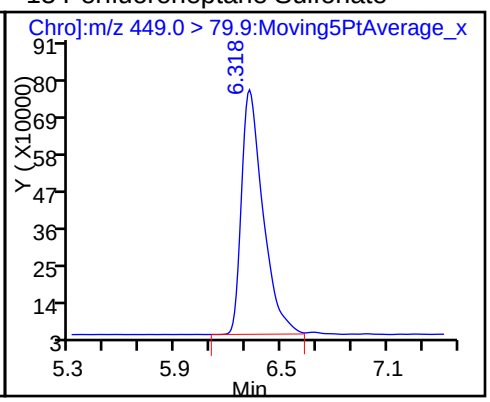
11 Perfluorohexanesulfonic acid



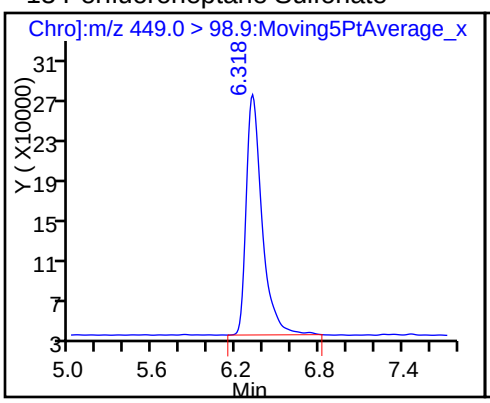
11 Perfluorohexanesulfonic acid



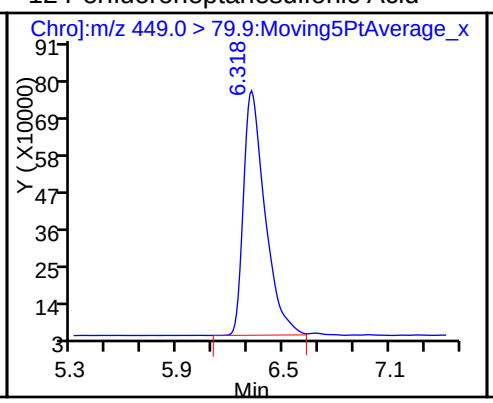
13 Perfluoroheptane Sulfonate



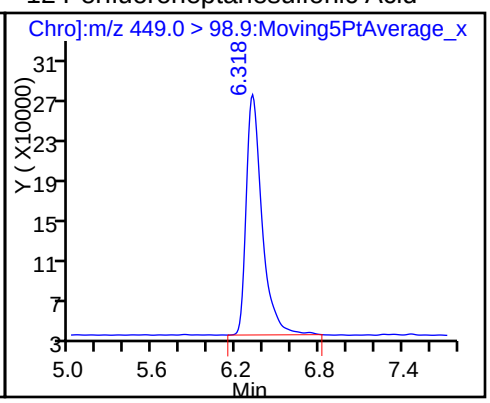
13 Perfluoroheptane Sulfonate



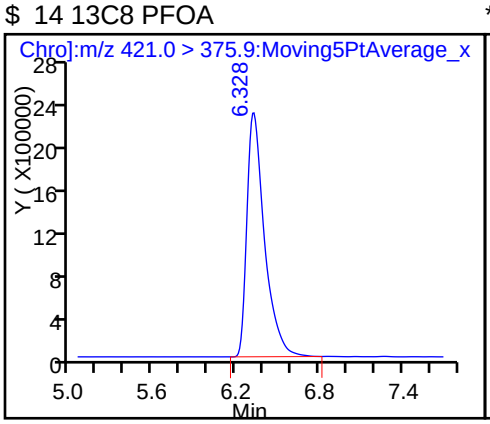
12 Perfluoroheptanesulfonic Acid



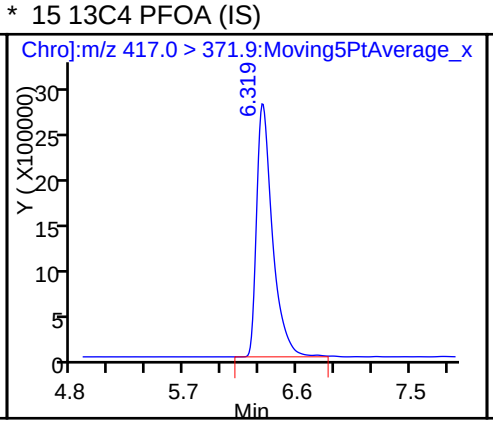
12 Perfluoroheptanesulfonic Acid



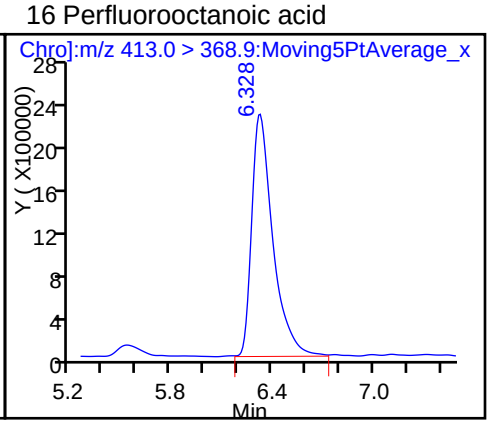
$ 14 13C8 PFOA



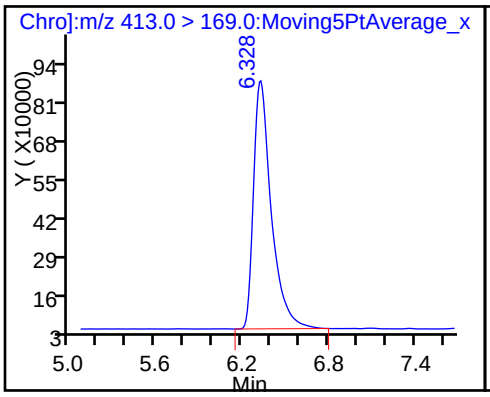
* 15 13C4 PFOA (IS)



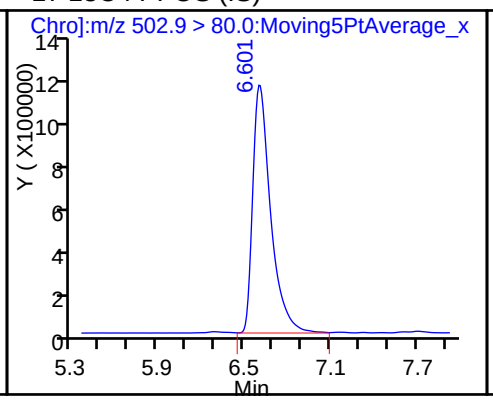
16 Perfluorooctanoic acid



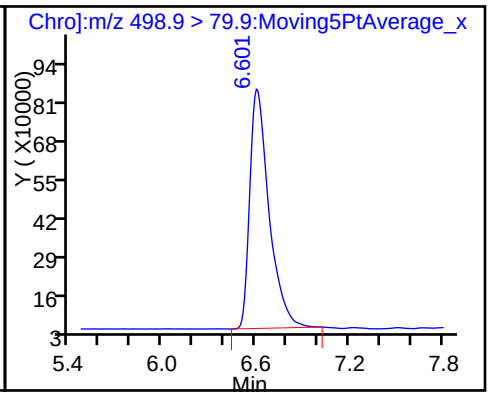
16 Perfluorooctanoic acid



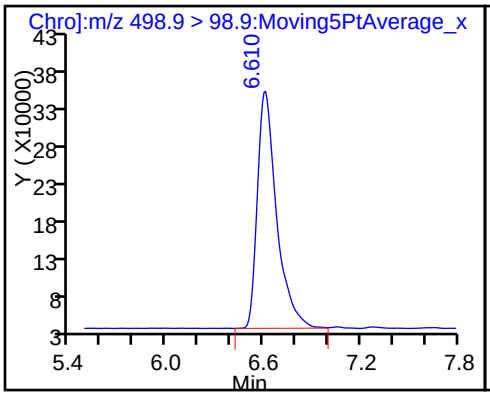
* 17 13C4 PFOS (IS)



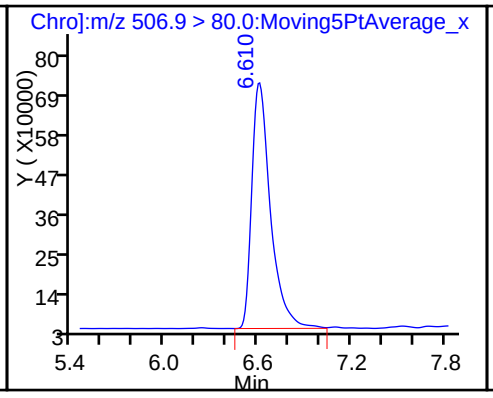
19 Perfluorooctane sulfonic acid



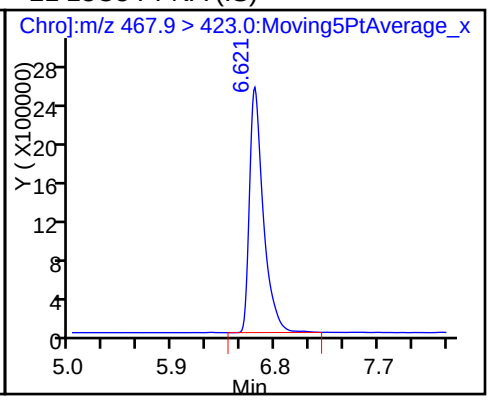
19 Perfluorooctane sulfonic acid



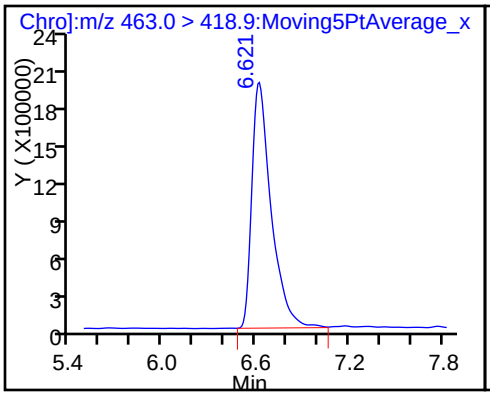
$ 18 13C8 PFOS



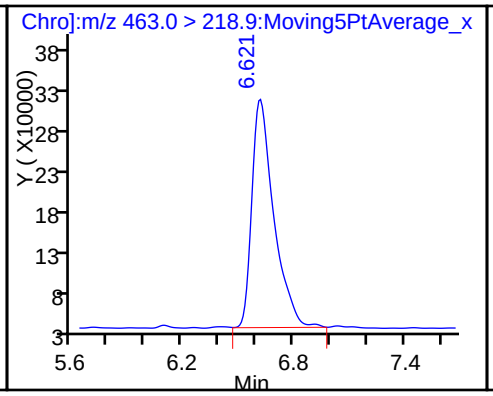
* 21 13C5 PFNA (IS)



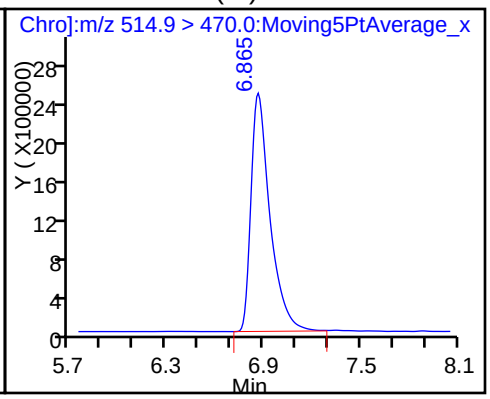
20 Perfluorononanoic acid



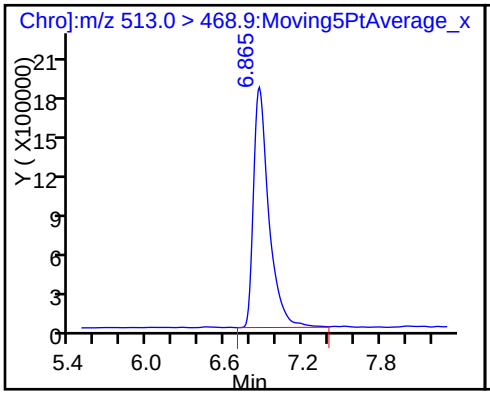
20 Perfluorononanoic acid



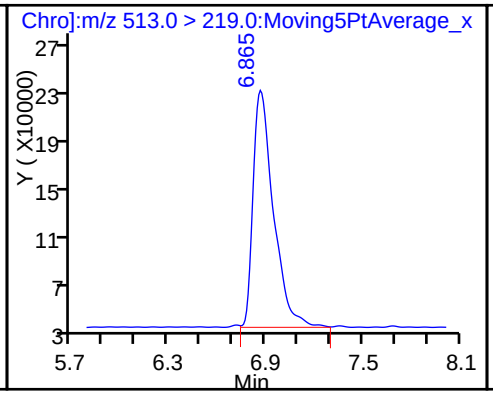
* 22 13C2 PFDA (IS)



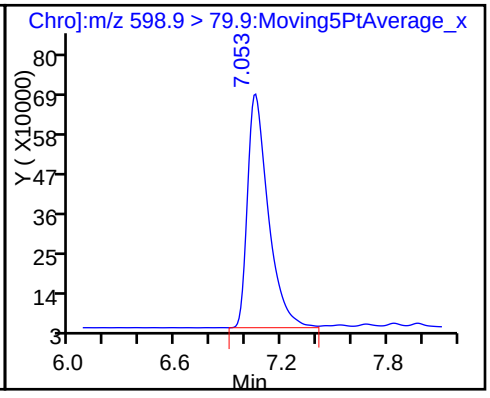
23 Perfluorodecanoic acid



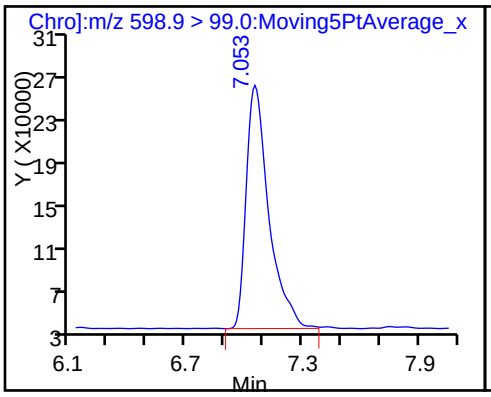
23 Perfluorodecanoic acid



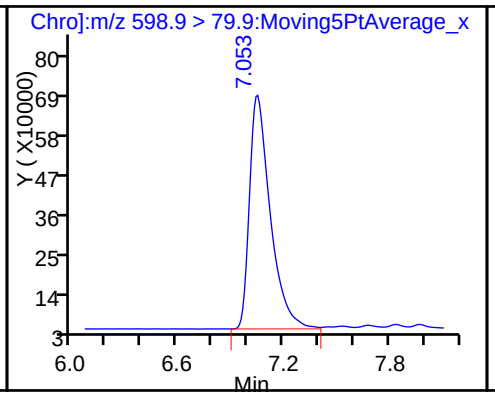
24 Perfluorodecane Sulfonic acid



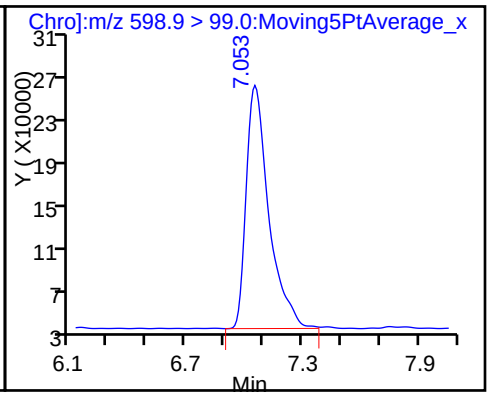
24 Perfluorodecane Sulfonic acid



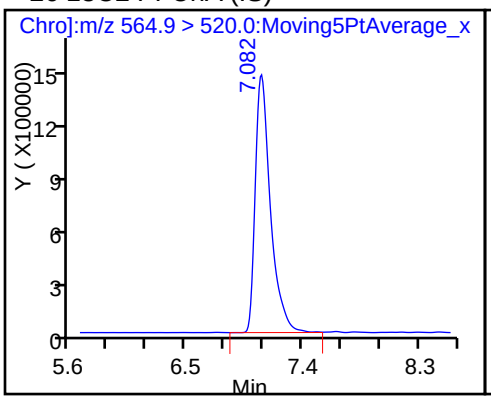
25 Perfluorodecane Sulfonate



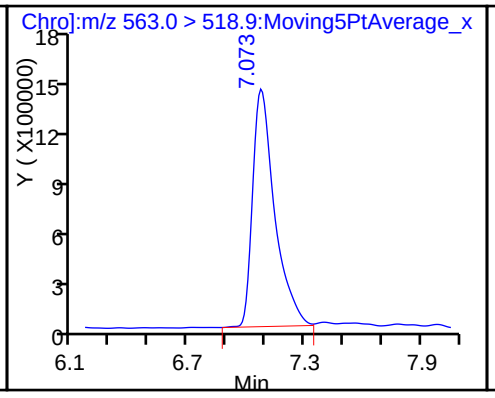
25 Perfluorodecane Sulfonate



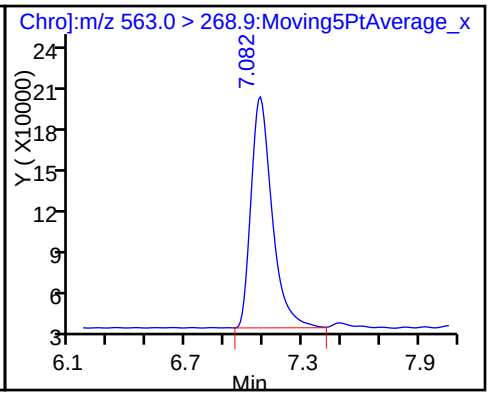
* 26 13C2 PFUnA (IS)



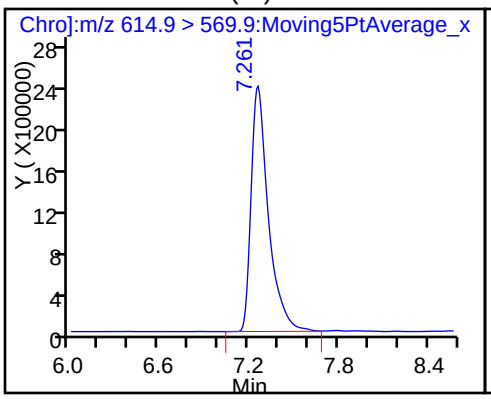
27 Perfluoroundecanoic acid



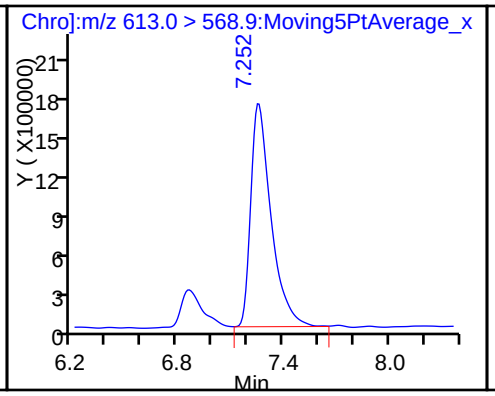
27 Perfluoroundecanoic acid



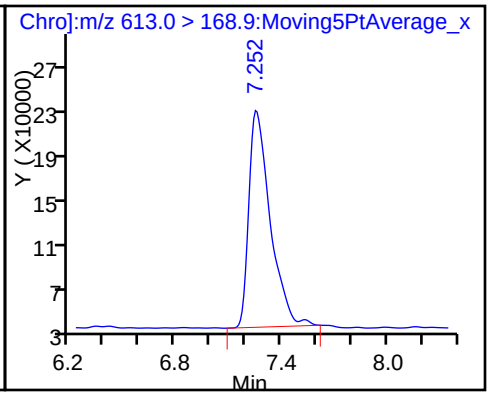
* 28 13C2 PFDoA (IS)



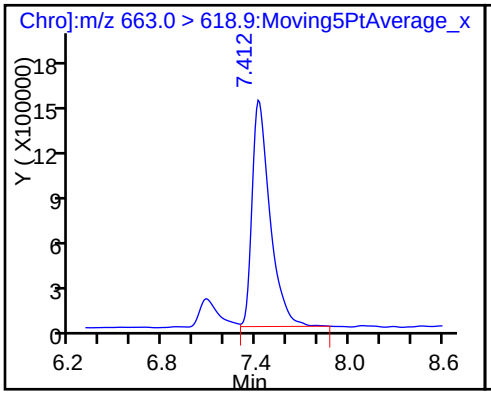
29 Perfluorododecanoic acid



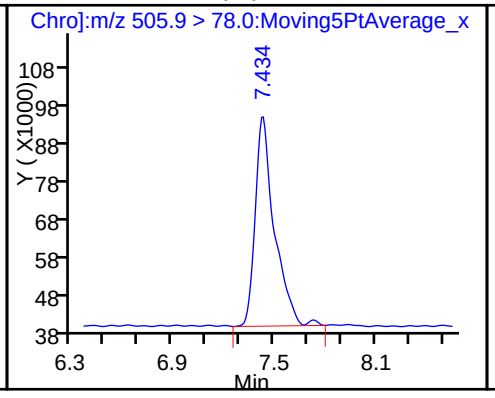
29 Perfluorododecanoic acid



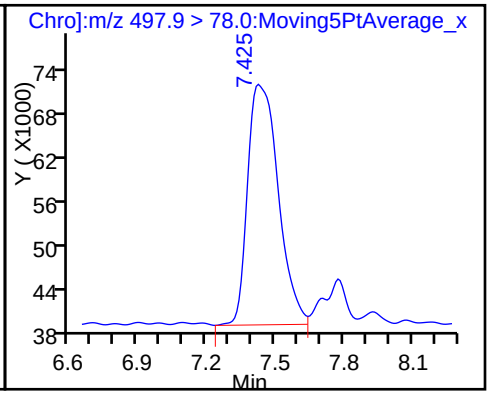
30 Perfluorotridecanoic acid



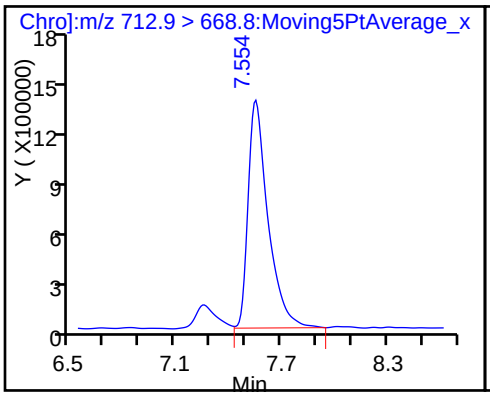
* 31 13C8 FOSA (IS)



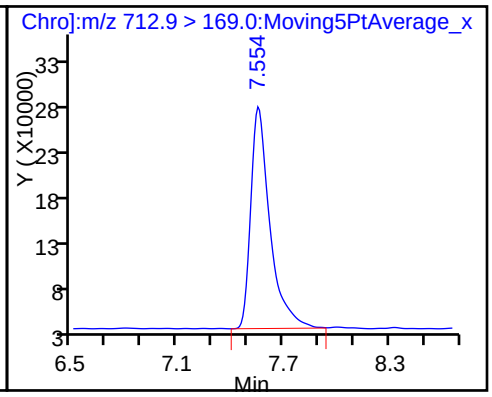
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: DLCK 280-340408/14

Matrix: Water | Lab File ID: PC516I01027.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 09/01/2016 13:10

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340408 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.546		0.35	0.10
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.527		0.35	0.10
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.586		0.35	0.10
375-95-1	Perfluorononanoic acid (PFNA)	0.486		0.35	0.10
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.583		0.35	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.467		0.35	0.10

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	75		60-155
STL01054	13C8 PFOS	107		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01027.d
Lims ID: DLCK L2
Client ID:
Sample Type: DLCK
Inject. Date: 01-Sep-2016 13:10:46 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: DLCK L2, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 02-Sep-2016 11:52:36 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK024

First Level Reviewer: meyera Date: 02-Sep-2016 10:43:24

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.086	4.058	0.028		13030540	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.096	4.068	0.028	1.002	534115	0.4268			
3 Perfluoropentanoic acid									M
263.0 > 218.9	5.119	5.100	0.019	0.899	727211	0.6370			M
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.251	5.222	0.029	0.857	347424	0.5459			R
298.9 > 98.9	5.241	5.222	0.019	0.855	86598		4.01(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.251	5.232	0.019	0.857	347424	0.5459			
298.9 > 98.9	5.241	5.232	0.009	0.855	86598		4.01(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.695	5.686	0.009		9393393	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.686	0.0	0.998	550626	0.6148			
313.0 > 118.6	5.667	5.686	-0.019	0.995	23287		23.65(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.121	6.112	0.009	0.947	702863	0.5269			
363.0 > 168.9	6.121	6.112	0.009	0.947	184586		3.81(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.130	6.120	0.010		1348439	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.121	6.111	0.010	0.998	336454	0.5855			
398.9 > 98.9	6.130	6.111	0.019	1.000	87213		3.86(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.121	0.0	0.998	336454	0.5855			R
398.9 > 98.9	6.130	6.121	0.009	1.000	87213		3.86(1.30-2.41)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.451	0.0	0.957	298518	0.6135			
449.0 > 98.9	6.460	6.451	0.009	0.958	111460		2.68(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.451	0.0	0.957	298518	0.6135			
449.0 > 98.9	6.460	6.451	0.009	0.958	111460		2.68(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.461	0.0	1.000	635657	0.3744			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.461	0.0		15470974	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.471	6.461	0.010	1.002	830905	0.4674			
413.0 > 169.0	6.461	6.461	0.0	1.000	274219		3.03(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.743	6.733	0.010		4522509	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.743	6.724	0.019	1.000	247683	0.5825			R
498.9 > 98.9	6.734	6.724	0.010	0.999	81394		3.04(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.733	0.0	0.999	164005	0.5113			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.753	0.0		11919948	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.753	6.753	0.0	1.000	598040	0.4855			R
463.0 > 218.9	6.763	6.753	0.010	1.001	56474		10.59(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	6.997	0.0		10465958	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.998	6.998	0.0	1.000	511144	0.4891			R
513.0 > 219.0	7.007	6.998	0.009	1.001	62334		8.20(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.167	0.019	1.066	224083	0.4341			
598.9 > 99.0	7.186	7.167	0.019	1.066	61243		3.66(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.176	0.010	1.066	224083	0.4341			
598.9 > 99.0	7.186	7.176	0.010	1.066	61243		3.66(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.205	0.010		6264106	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.205	0.010	1.000	486616	0.5177			R
563.0 > 268.9	7.224	7.205	0.019	1.001	63010		7.72(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.384	7.384	0.0		14186021	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.384	7.384	0.0	1.000	673753	0.4888			
613.0 > 168.9	7.375	7.384	-0.009	0.999	94055		7.16(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.530	0.0	1.000	755304	0.4277			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.022	1007696	0.5143			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.529	0.0		16451357	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.677	0.0	1.040	809972	0.5423			
712.9 > 169.0	7.677	7.677	0.0	1.040	124711		6.49(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	25.00	Units: uL

Report Date: 02-Sep-2016 11:52:41 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01027.d

Injection Date: 01-Sep-2016 13:10:46 Instrument ID: LC_LCMS5

Lims ID: DLCK L2

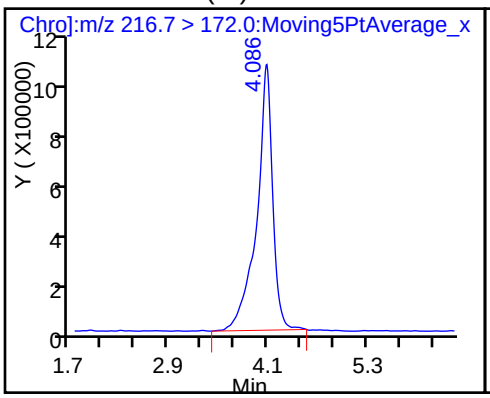
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 14

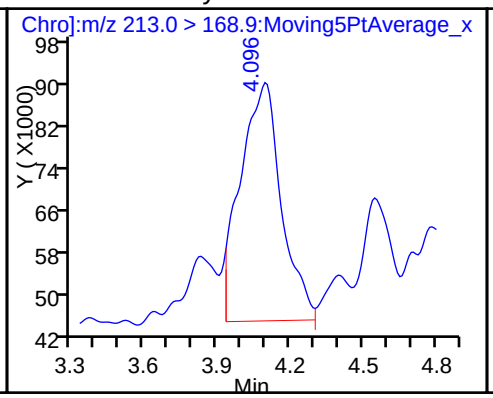
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

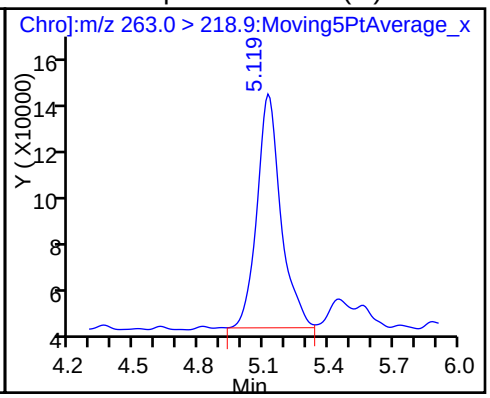
* 1 13C4 PFBA (IS)



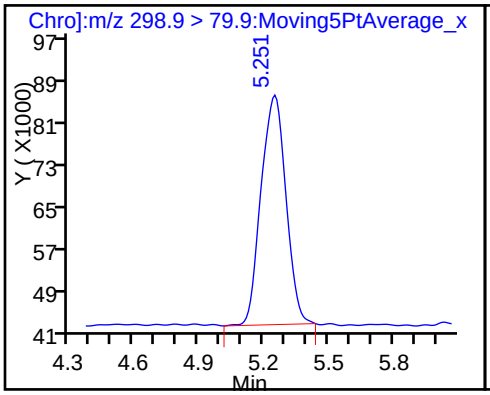
2 Perfluorobutyric acid



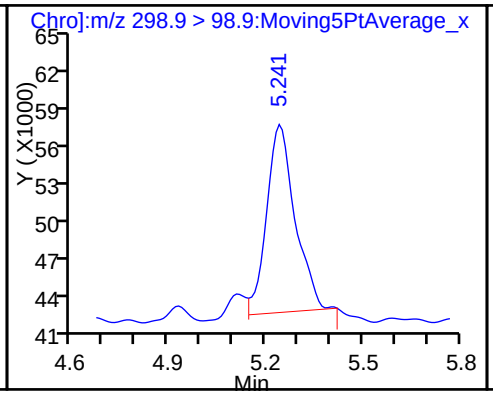
3 Perfluoropentanoic acid (M)



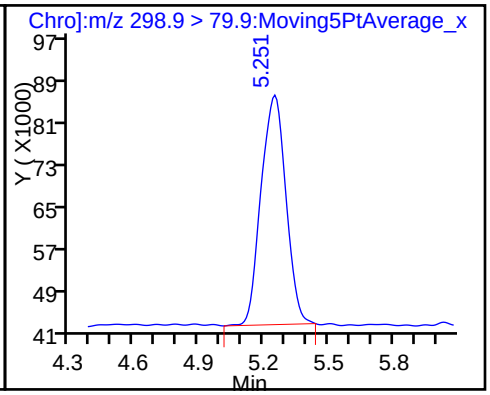
4 Perfluorobutane Sulfonate



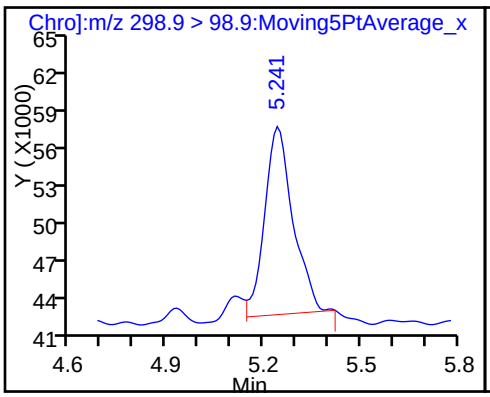
4 Perfluorobutane Sulfonate



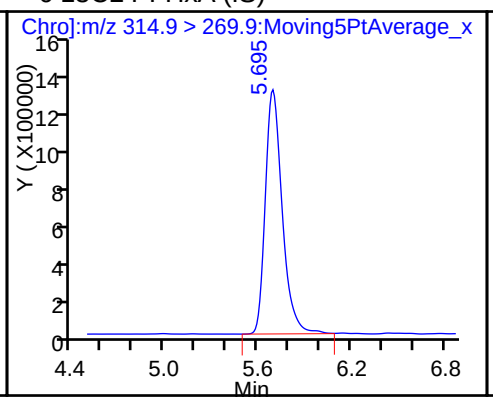
5 Perfluorobutanesulfonic acid



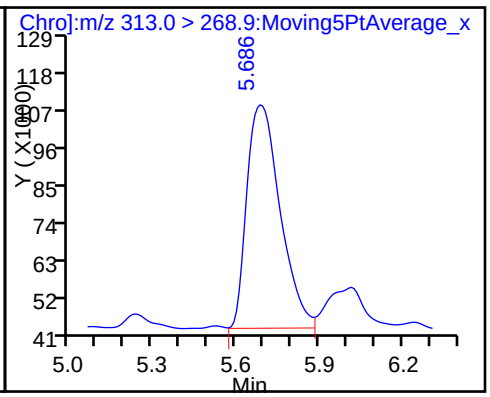
5 Perfluorobutanesulfonic acid



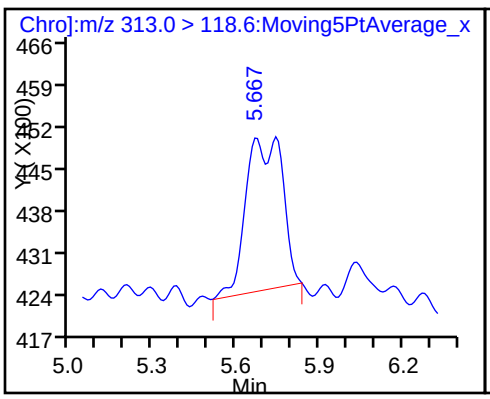
* 6 13C2 PFHxA (IS)



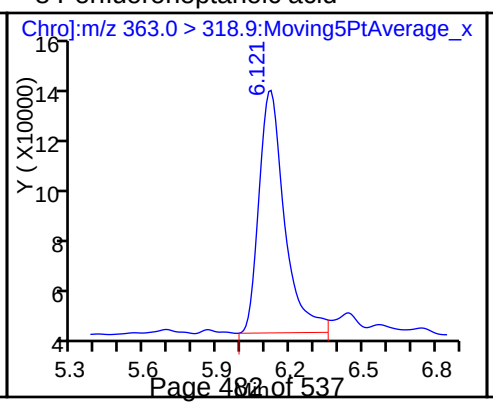
7 Perfluorohexanoic acid



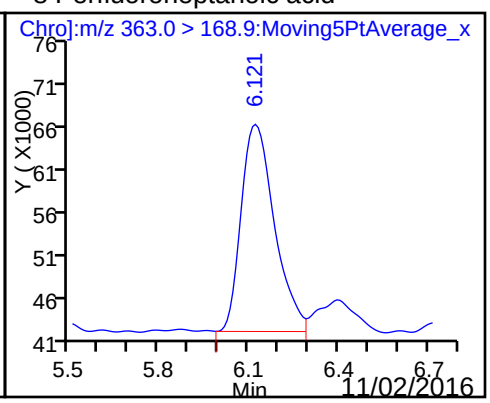
7 Perfluorohexanoic acid



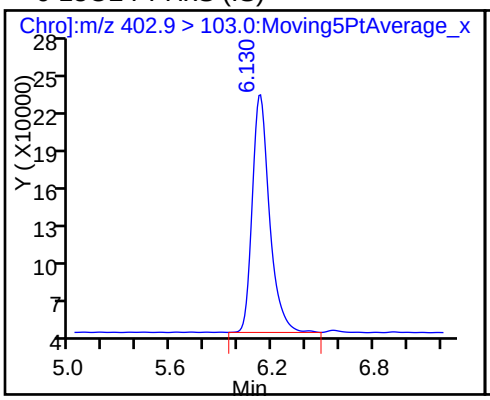
8 Perfluoroheptanoic acid



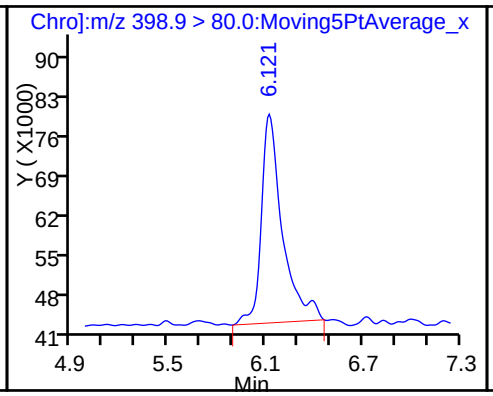
8 Perfluoroheptanoic acid



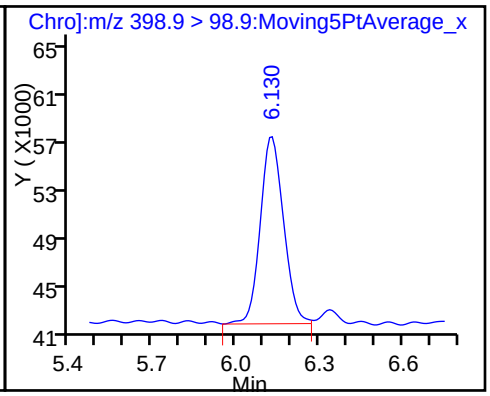
* 9 18O2 PFHxS (IS)



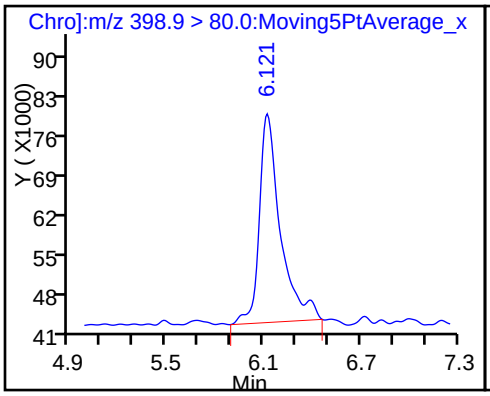
11 Perfluorohexanesulfonic acid



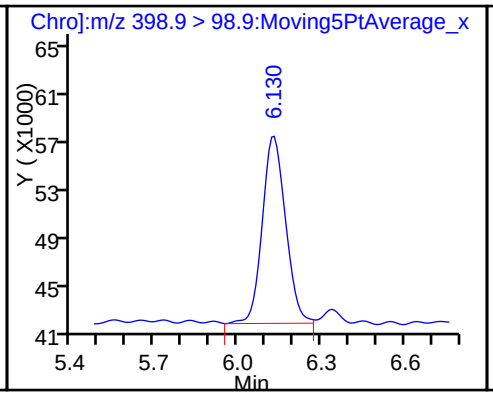
11 Perfluorohexanesulfonic acid



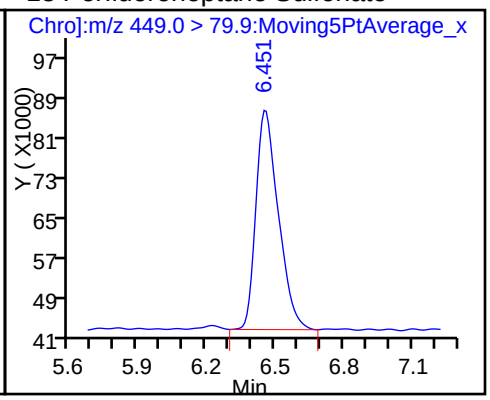
10 Perfluorohexane Sulfonate



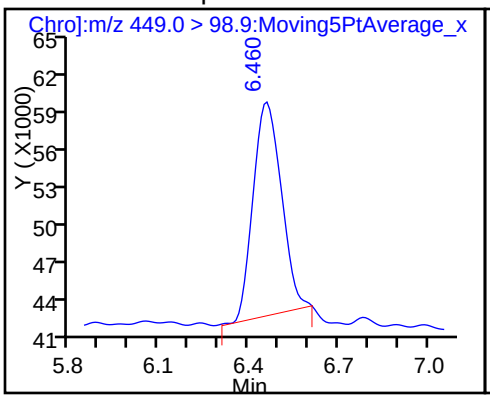
10 Perfluorohexane Sulfonate



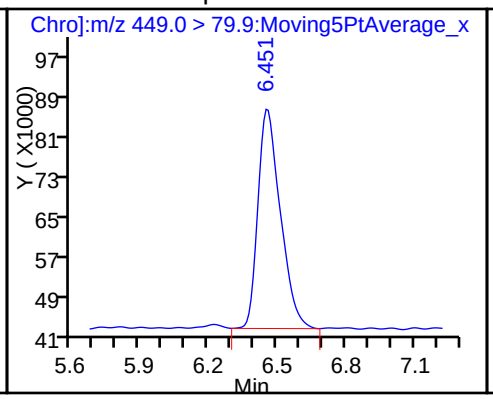
13 Perfluoroheptane Sulfonate



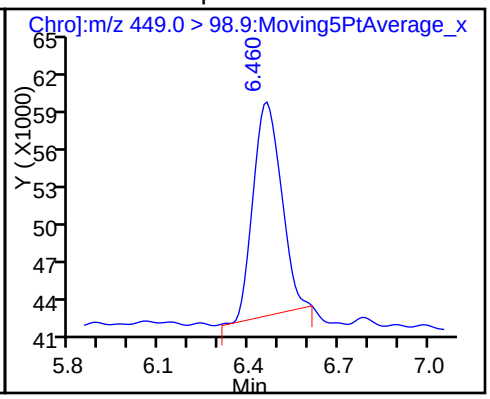
13 Perfluoroheptane Sulfonate



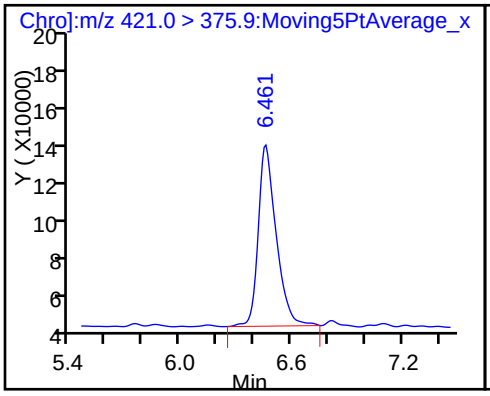
12 Perfluoroheptanesulfonic Acid



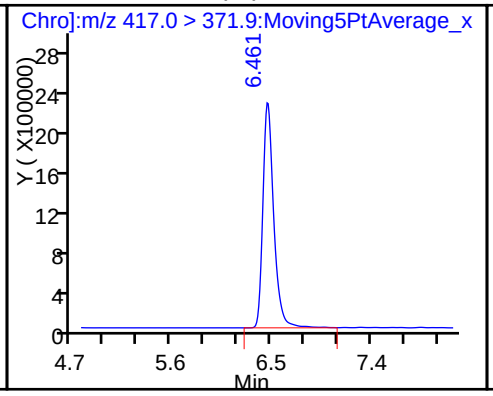
12 Perfluoroheptanesulfonic Acid



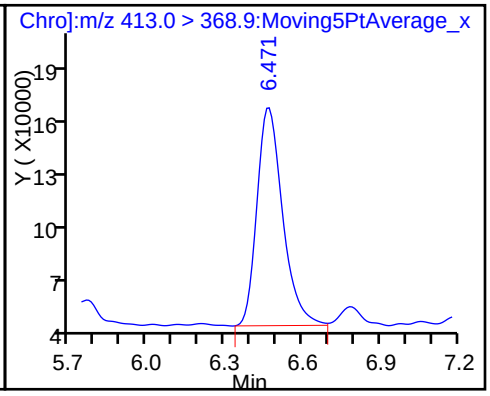
$ 14 13C8 PFOA



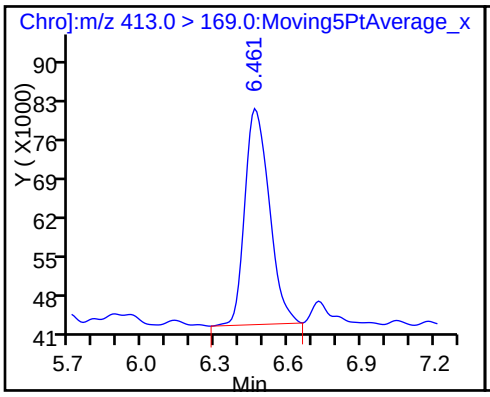
* 15 13C4 PFOA (IS)



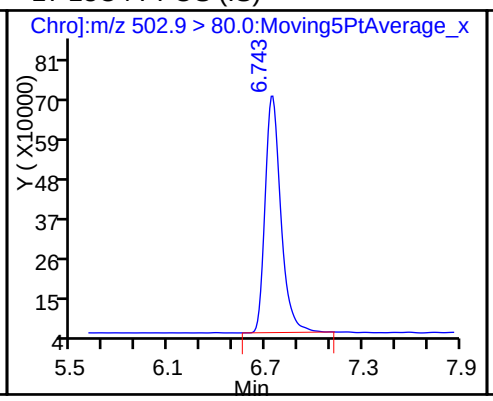
16 Perfluorooctanoic acid



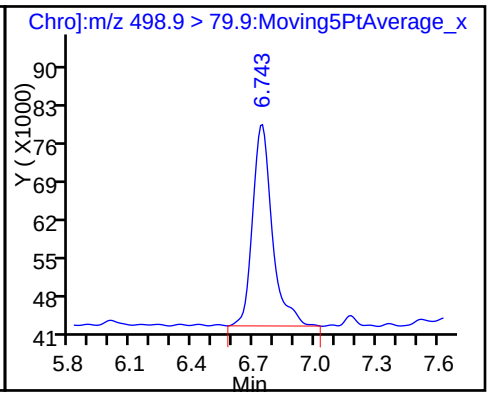
16 Perfluorooctanoic acid



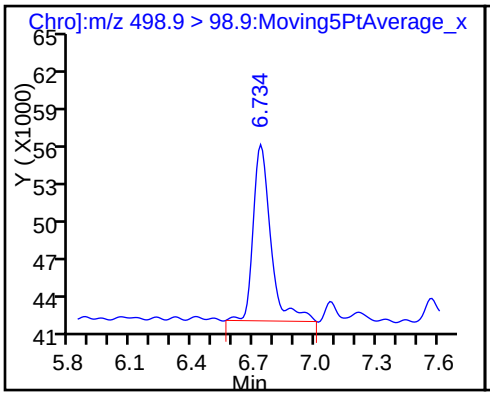
* 17 13C4 PFOS (IS)



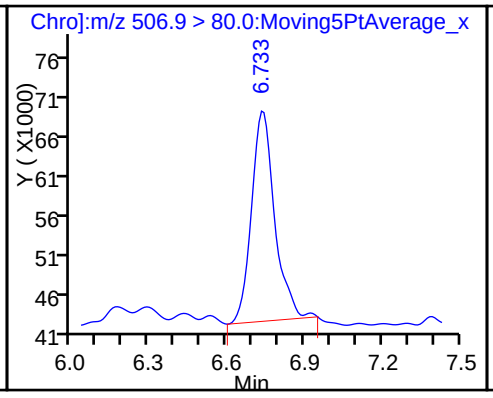
19 Perfluorooctane sulfonic acid



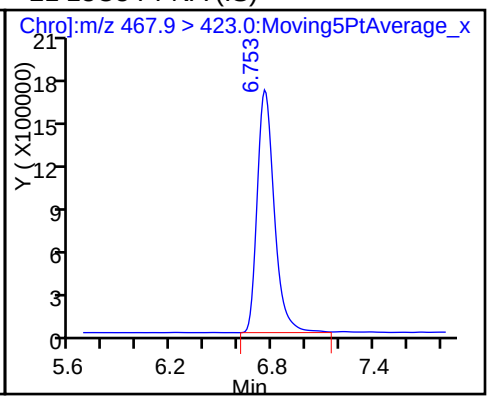
19 Perfluorooctane sulfonic acid



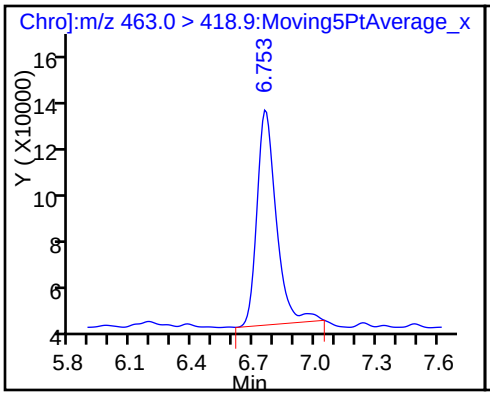
$ 18 13C8 PFOS



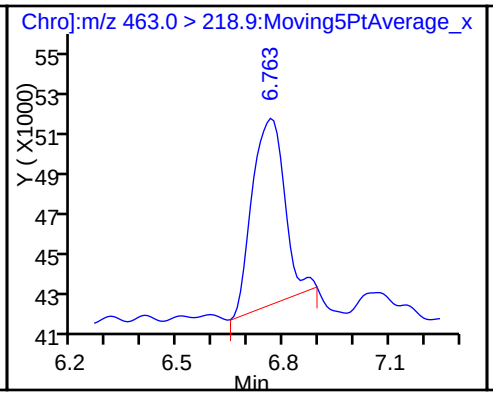
* 21 13C5 PFNA (IS)



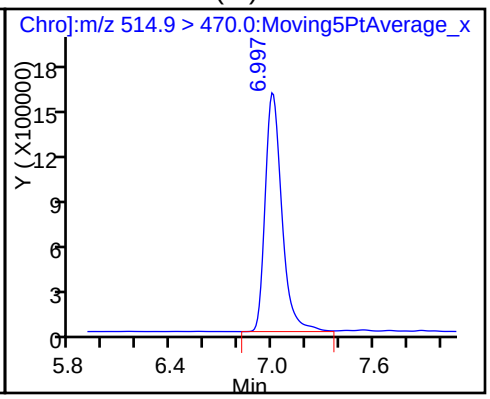
20 Perfluorononanoic acid



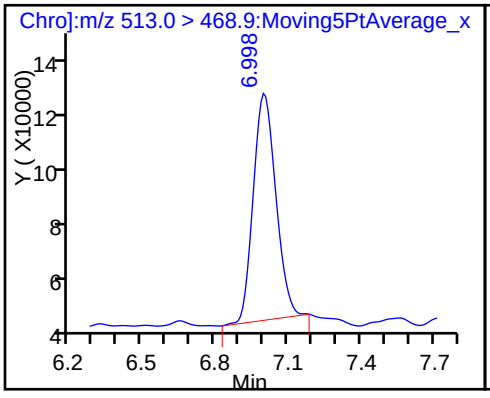
20 Perfluorononanoic acid



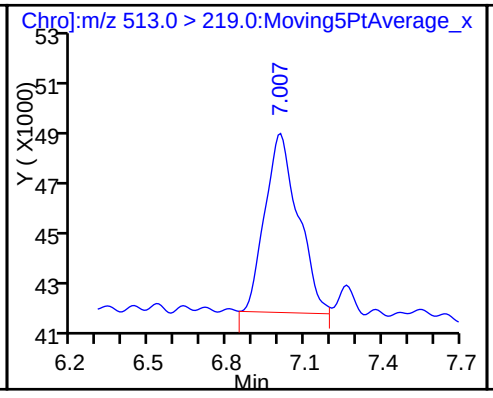
* 22 13C2 PFDA (IS)



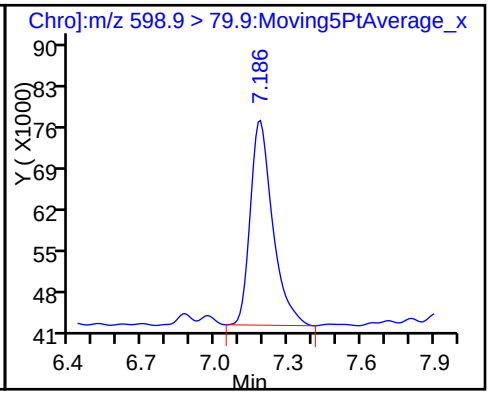
23 Perfluorodecanoic acid



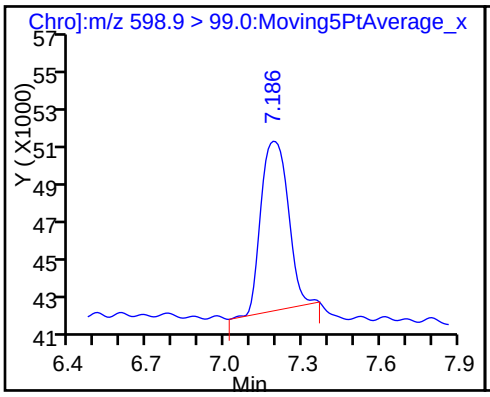
23 Perfluorodecanoic acid



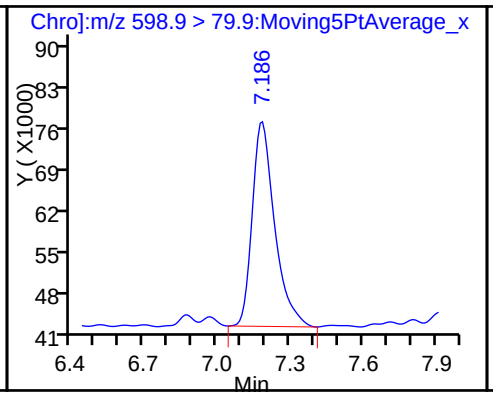
24 Perfluorodecane Sulfonic acid



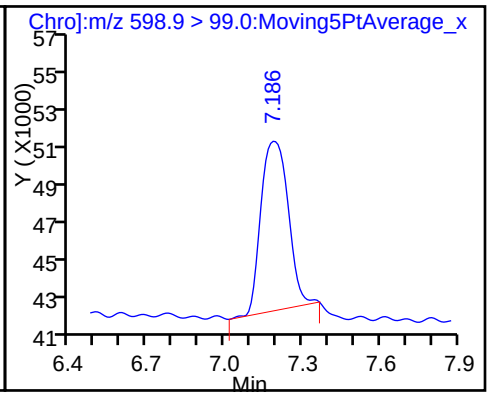
24 Perfluorodecane Sulfonic acid



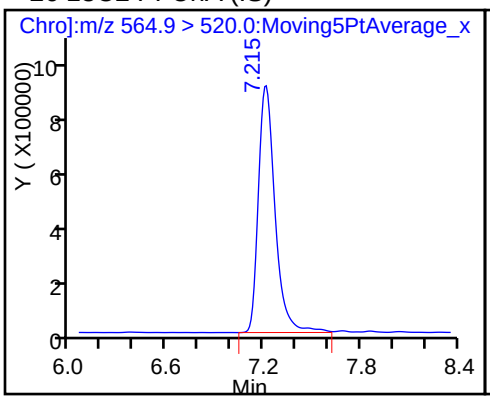
25 Perfluorodecane Sulfonate



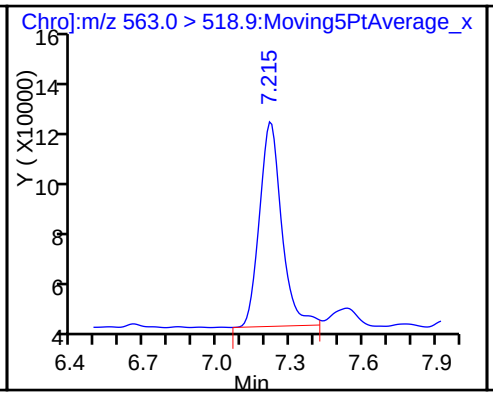
25 Perfluorodecane Sulfonate



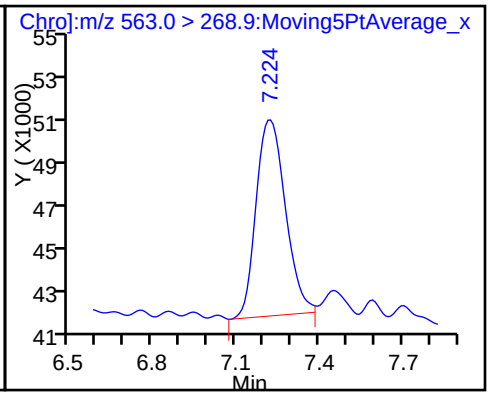
* 26 13C2 PFUnA (IS)



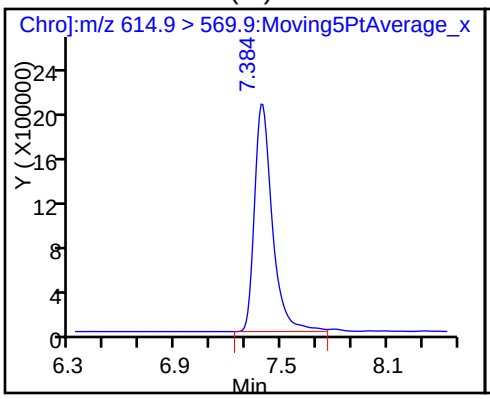
27 Perfluoroundecanoic acid



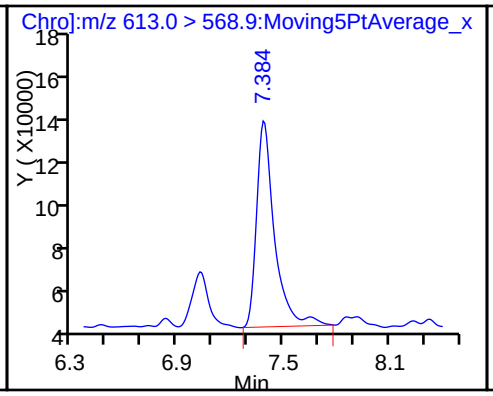
27 Perfluoroundecanoic acid



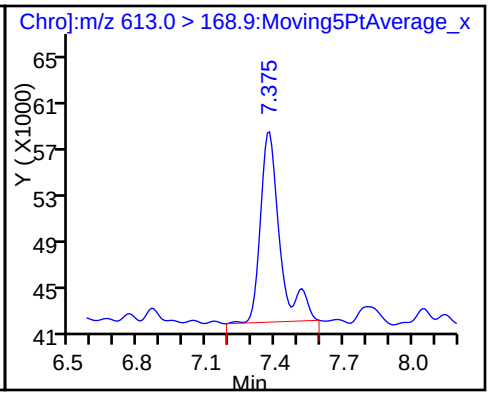
* 28 13C2 PFDoA (IS)



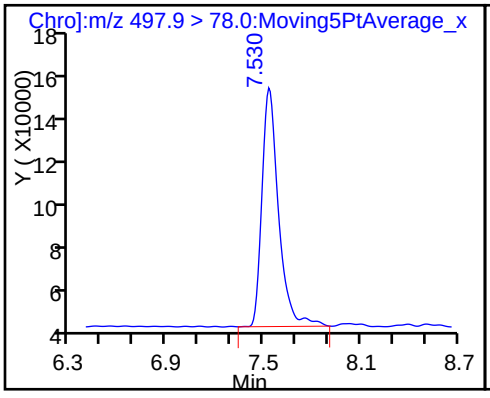
29 Perfluorododecanoic acid



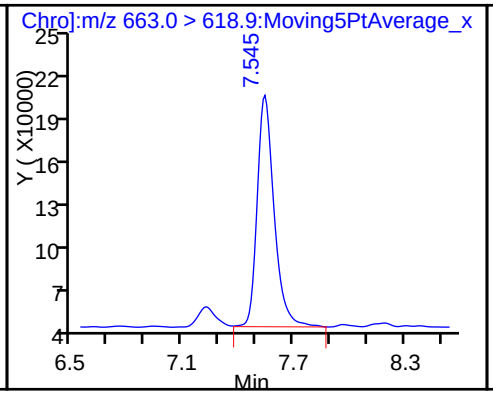
29 Perfluorododecanoic acid



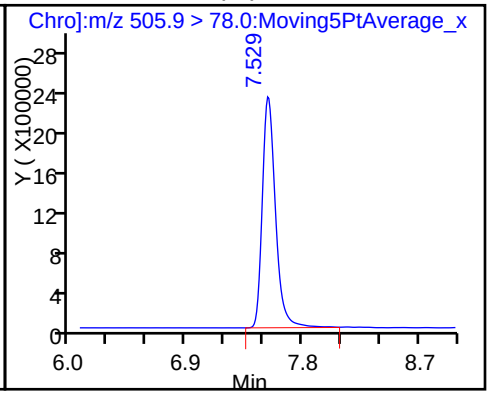
32 Perfluorooctane Sulfonamide



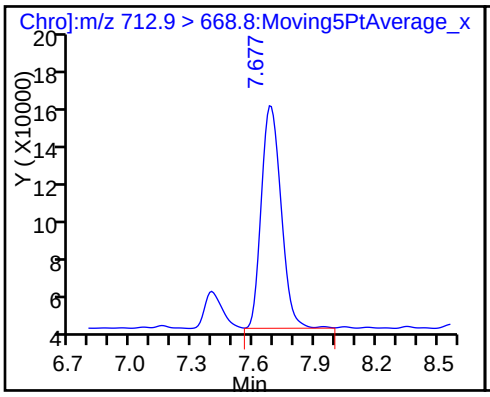
30 Perfluorotridecanoic acid



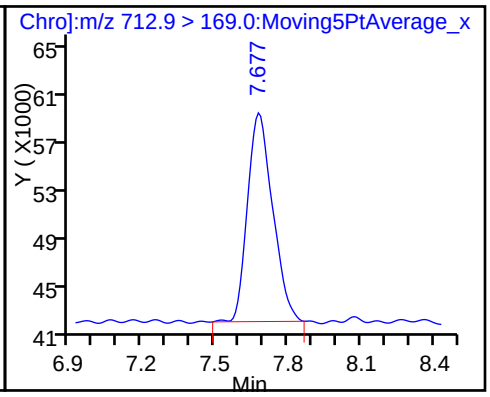
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: | Lab Sample ID: DLCK 280-341287/14

Matrix: Water | Lab File ID: PC516I07017.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 09/07/2016 15:21

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 341287 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.507		0.35	0.10
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.457		0.35	0.10
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.569		0.35	0.10
375-95-1	Perfluorononanoic acid (PFNA)	0.495		0.35	0.10
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.554		0.35	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.447		0.35	0.10

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	108		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07017.d
Lims ID: DLCK L2
Client ID:
Sample Type: DLCK
Inject. Date: 07-Sep-2016 15:21:46 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: DLCK L2, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 08-Sep-2016 09:39:46 Calib Date: 07-Sep-2016 14:44:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK051

First Level Reviewer: fiedlerh Date: 08-Sep-2016 09:13:55

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	3.982	0.010		16336502	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.992	3.982	0.010	1.000	910406	0.4737			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.090	5.071	0.019	0.897	620894	0.4197			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.194	0.019	0.852	347143	0.5070			
298.9 > 98.9	5.213	5.194	0.019	0.852	118578		2.93(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.213	5.194	0.019	0.852	347143	0.5070			
298.9 > 98.9	5.213	5.194	0.019	0.852	118578		2.93(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.677	5.658	0.019	1.000	509945	0.4003			
313.0 > 118.6	5.639	5.658	-0.019	0.993	1875		271.97(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.667	0.009		11534689	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.111	0.009		1563772	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.102	0.0	0.944	752188	0.4573			
363.0 > 168.9	6.121	6.102	0.019	0.947	203101		3.70(3.35-6.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	0.998	397960	0.5692			R
398.9 > 98.9	6.121	6.111	0.010	1.000	104068		3.82(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	0.998	397960	0.5692			
398.9 > 98.9	6.121	6.111	0.010	1.000	104068		3.82(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.441	0.010	0.958	350232	0.5274			
449.0 > 98.9	6.451	6.441	0.010	0.958	128118		2.73(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.441	0.010	0.958	350232	0.5274			
449.0 > 98.9	6.451	6.441	0.010	0.958	128118		2.73(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.451	0.010	1.000	809866	0.5122			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.451	0.010		18197619	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.452	0.009	1.000	930026	0.4468			
413.0 > 169.0	6.471	6.452	0.019	1.002	284035		3.27(2.86-5.31)		
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.743	6.715	0.028	1.001	375759	0.5538			R
498.9 > 98.9	6.752	6.715	0.037	1.003	143459		2.62(1.31-2.43)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.733	6.724	0.009		5971958	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.723	0.0	0.999	191418	0.5180			
20 Perfluorononanoic acid									
463.0 > 418.9	6.753	6.744	0.009	1.000	728599	0.4946			
463.0 > 218.9	6.763	6.744	0.019	1.001	88584		8.22(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.744	0.009		13148607	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	6.997	0.0		12717440	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.998	6.988	0.010	1.000	717166	0.5626			
513.0 > 219.0	6.979	6.988	-0.009	0.997	53247		13.47(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.176	0.010	1.067	346705	0.5053			
598.9 > 99.0	7.176	7.176	0.0	1.066	104273		3.32(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.176	0.010	1.067	346705	0.5053			
598.9 > 99.0	7.176	7.176	0.0	1.066	104273		3.32(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.205	0.010		7921223	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.215	7.205	0.010	1.000	593142	0.4402			R
563.0 > 268.9	7.196	7.205	-0.009	0.997	41579		14.27(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.403	7.384	0.019		17488494	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.403	7.384	0.019	1.000	972142	0.5154			
613.0 > 168.9	7.403	7.384	0.019	1.000	128077		7.59(5.96-11.06)		
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.511	0.019	1.001	1009040	0.5286			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.519	7.510	0.009		18225084	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.554	7.545	0.009	1.020	1037897	0.5598			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.696	7.677	0.019	1.040	749327	0.5273			
712.9 > 169.0	7.686	7.677	0.009	1.038	84866		8.83(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	25.00	Units: uL

Report Date: 08-Sep-2016 09:39:50 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160908-50677.b\PC516I07017.d

Injection Date: 07-Sep-2016 15:21:46 Instrument ID: LC_LCMS5

Lims ID: DLCK L2

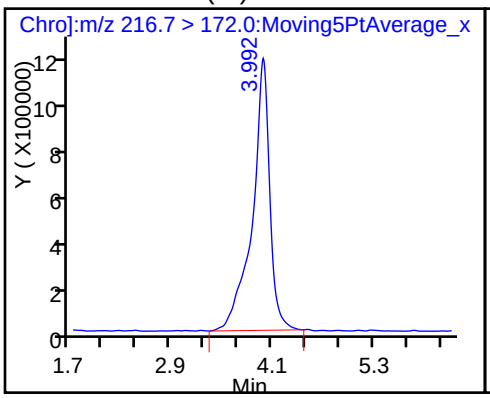
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 14

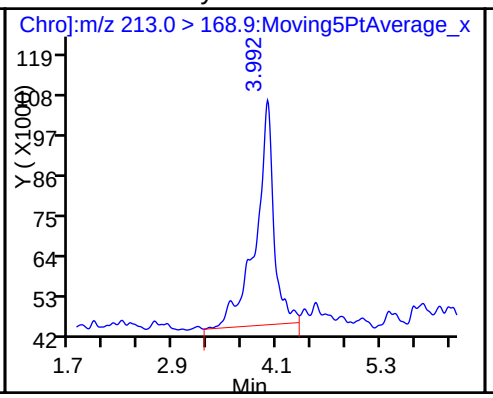
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

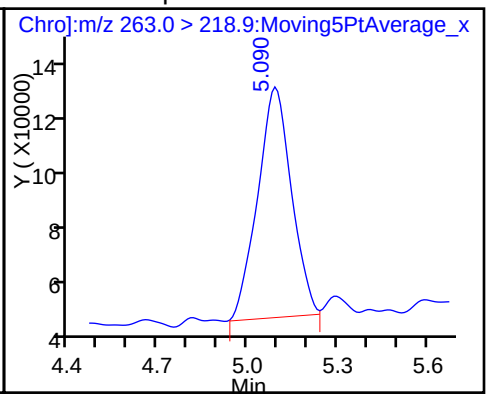
* 1 13C4 PFBA (IS)



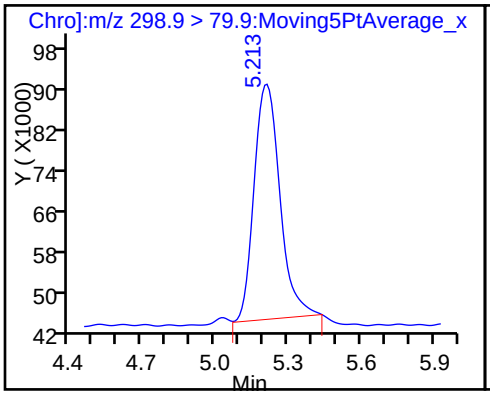
2 Perfluorobutyric acid



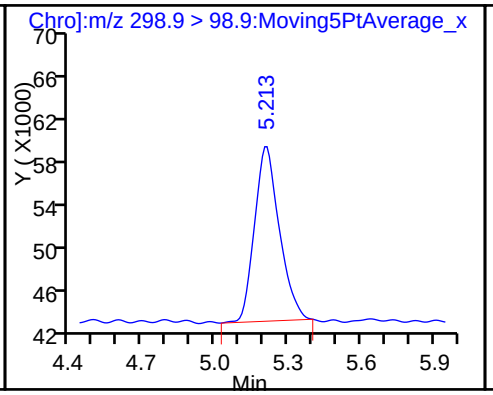
3 Perfluoropentanoic acid



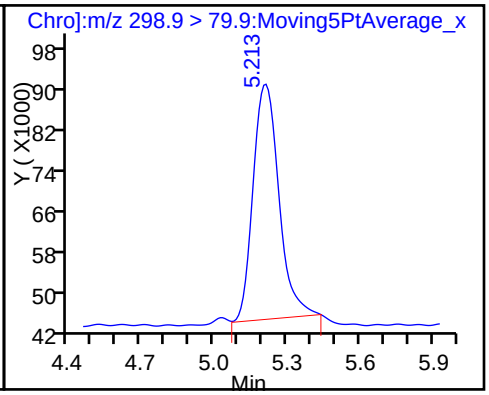
4 Perfluorobutane Sulfonate



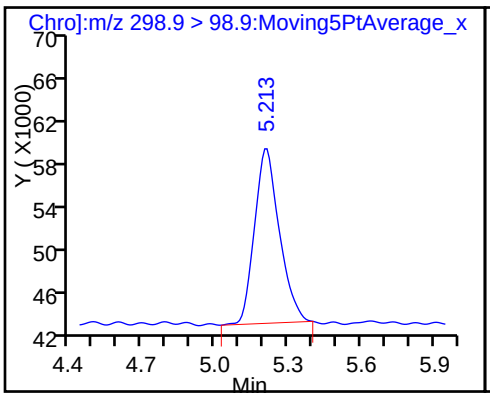
4 Perfluorobutane Sulfonate



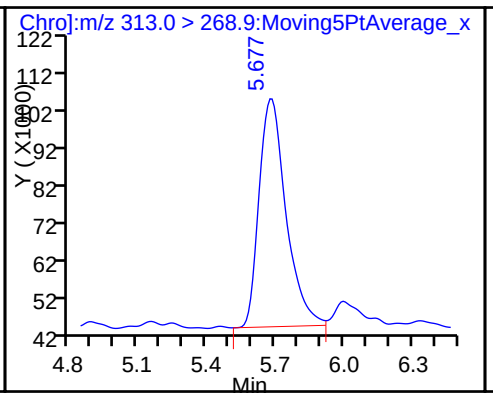
5 Perfluorobutanesulfonic acid



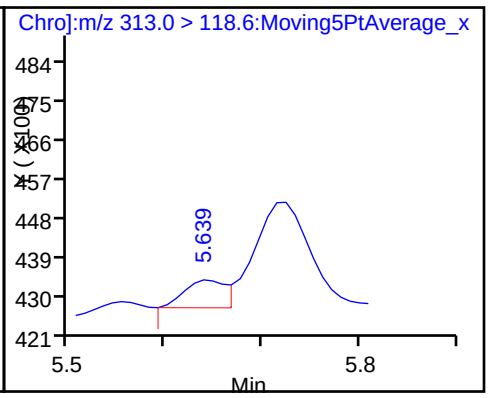
5 Perfluorobutanesulfonic acid



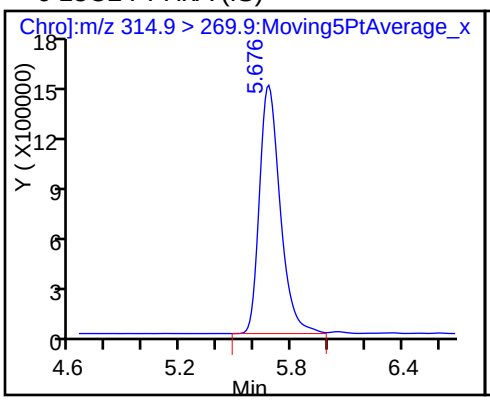
7 Perfluorohexanoic acid



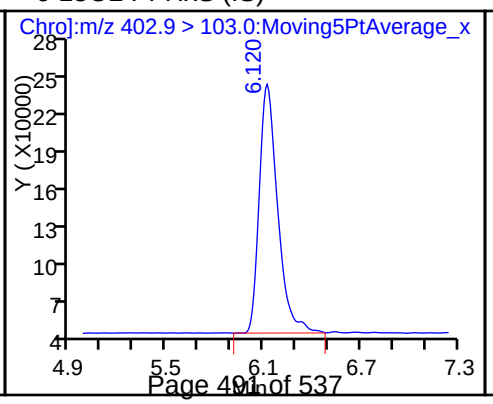
7 Perfluorohexanoic acid



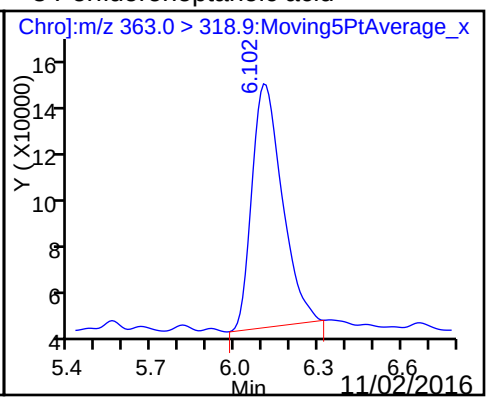
* 6 13C2 PFHxA (IS)



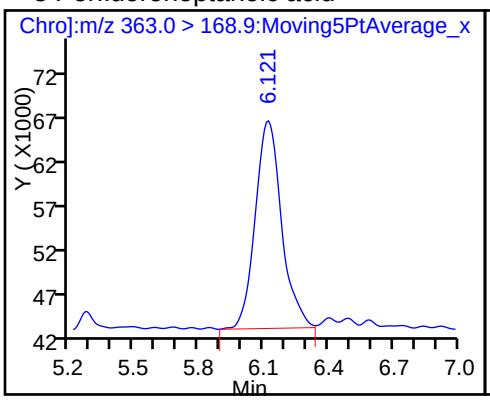
* 9 18O2 PFHxS (IS)



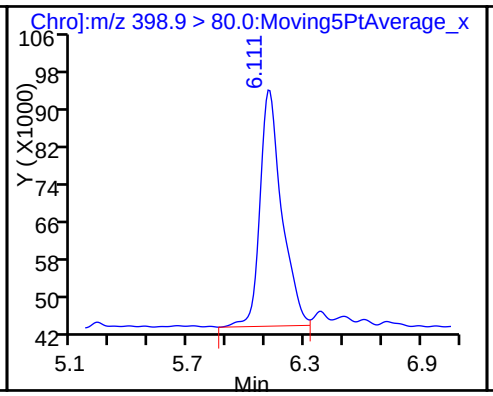
8 Perfluoroheptanoic acid



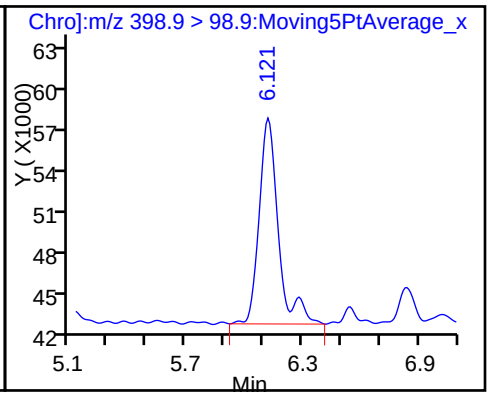
8 Perfluoroheptanoic acid



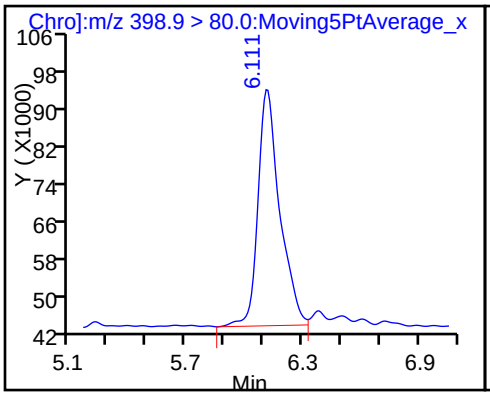
10 Perfluorohexane Sulfonate



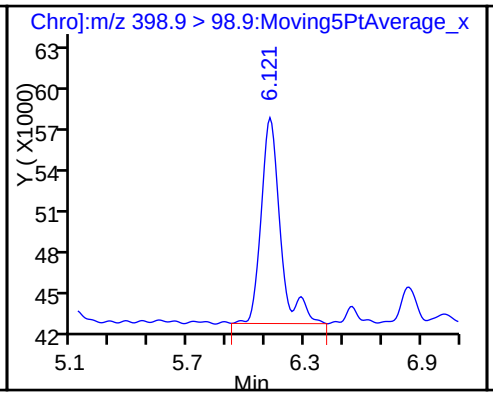
10 Perfluorohexane Sulfonate



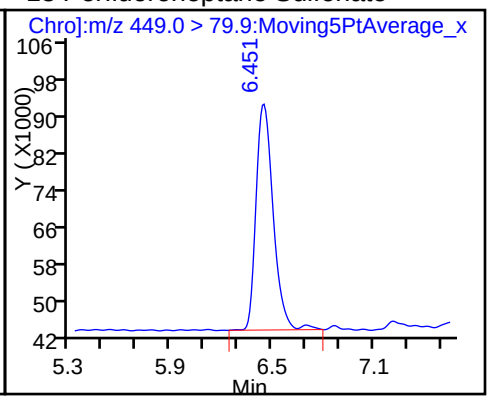
11 Perfluorohexanesulfonic acid



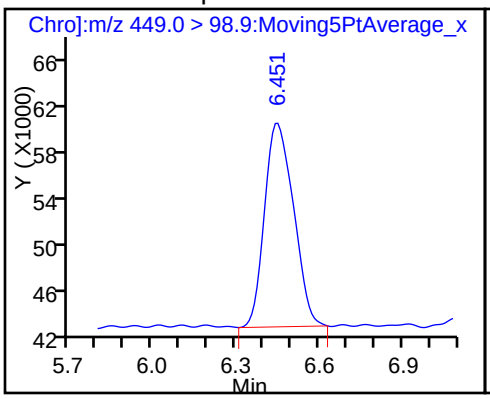
11 Perfluorohexanesulfonic acid



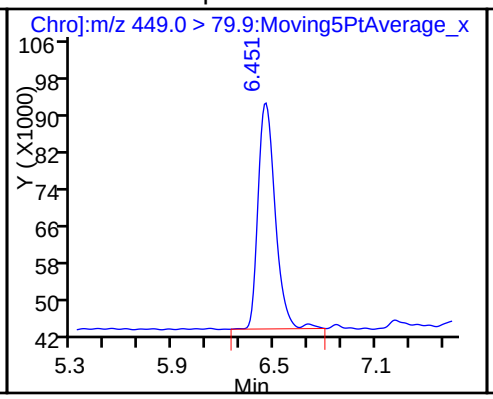
13 Perfluoroheptane Sulfonate



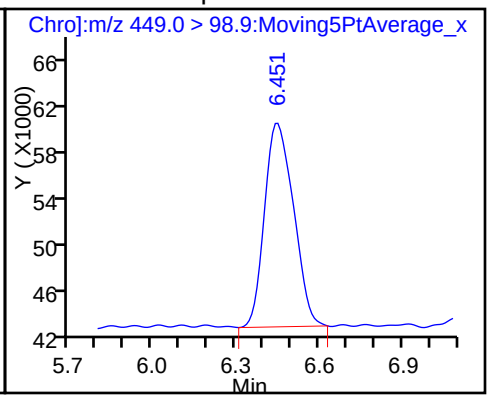
13 Perfluoroheptane Sulfonate



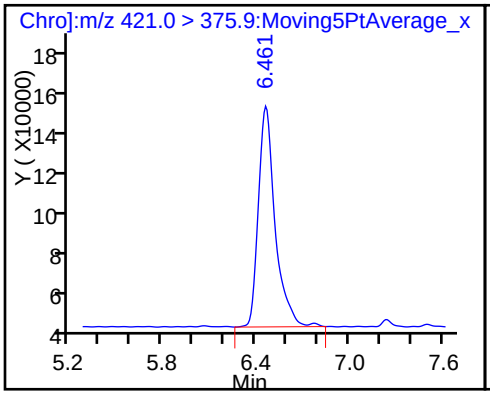
12 Perfluoroheptanesulfonic Acid



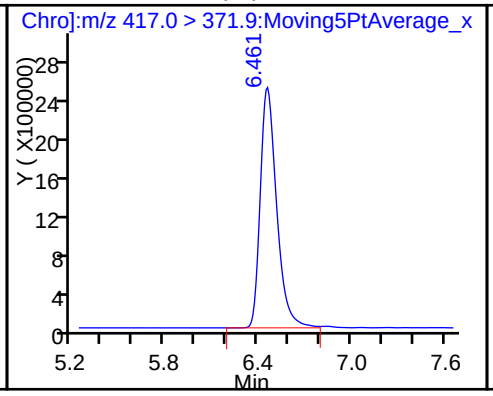
12 Perfluoroheptanesulfonic Acid



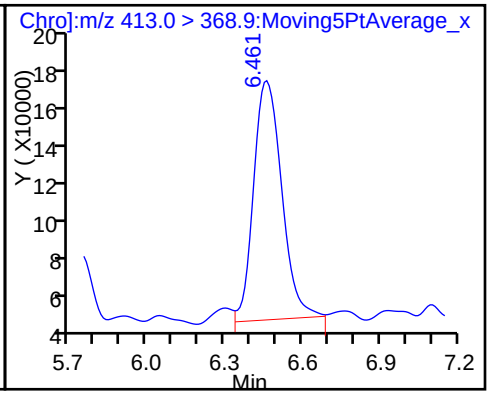
$ 14 13C8 PFOA



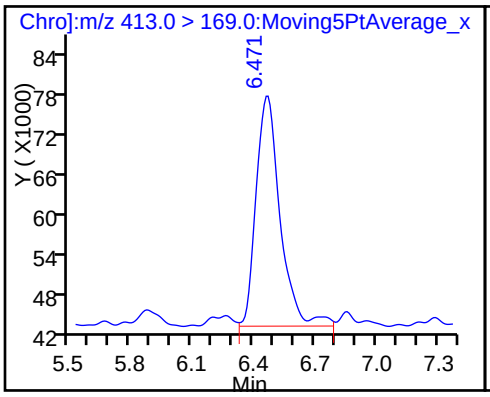
* 15 13C4 PFOA (IS)



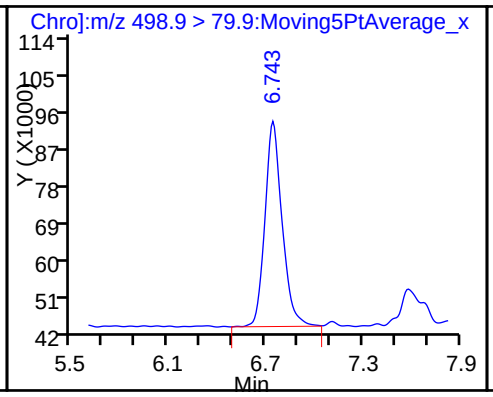
16 Perfluorooctanoic acid



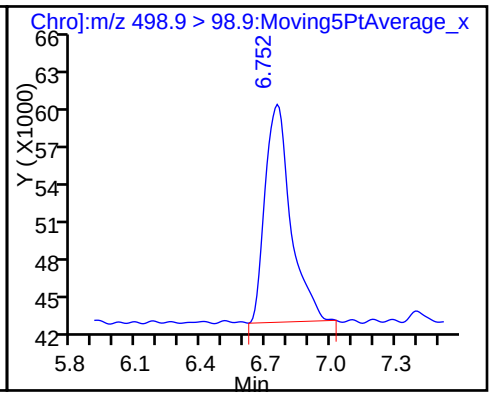
16 Perfluorooctanoic acid



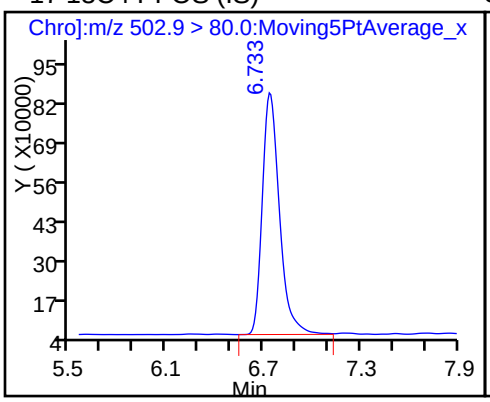
19 Perfluorooctane sulfonic acid



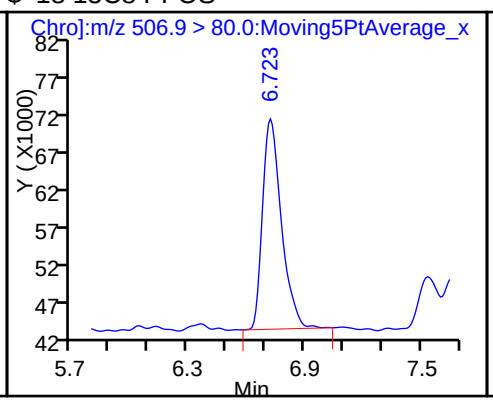
19 Perfluorooctane sulfonic acid



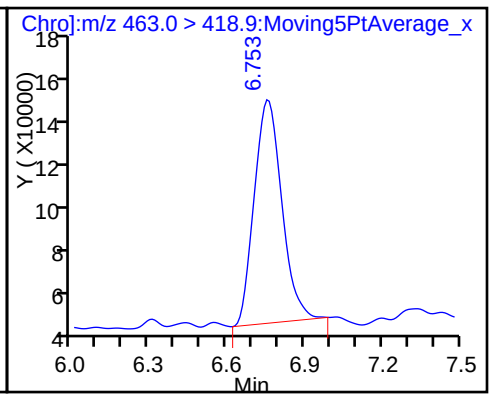
* 17 13C4 PFOS (IS)



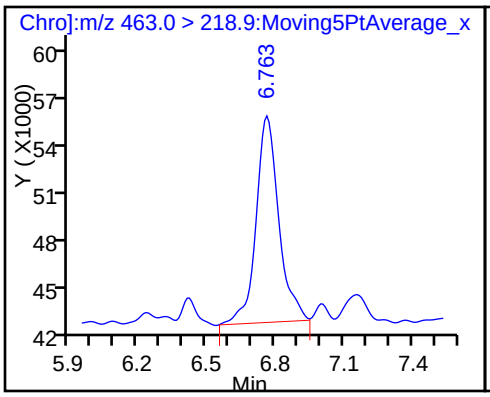
$ 18 13C8 PFOS



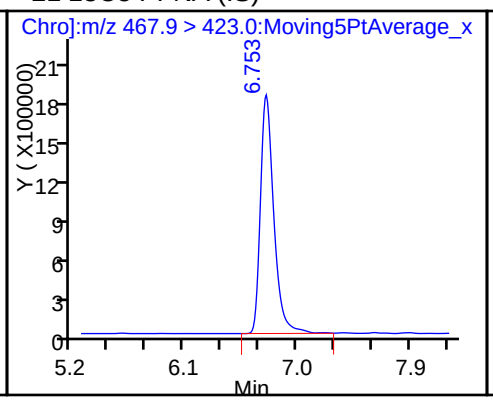
20 Perfluorononanoic acid



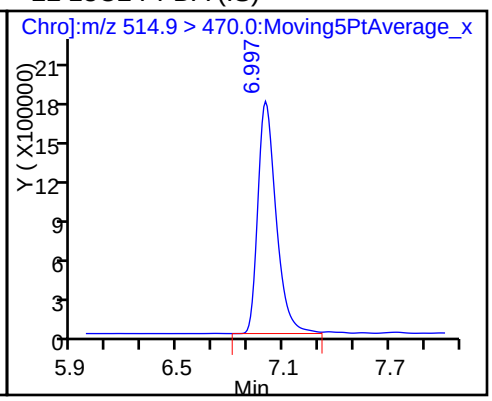
20 Perfluorononanoic acid



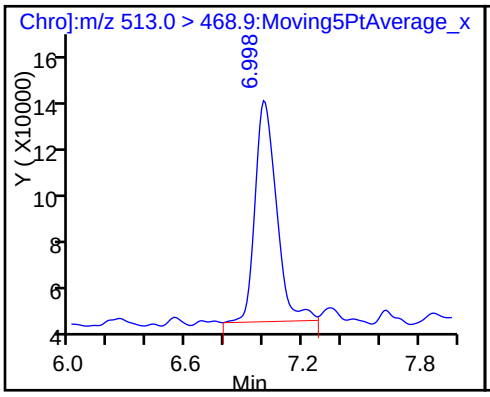
* 21 13C5 PFNA (IS)



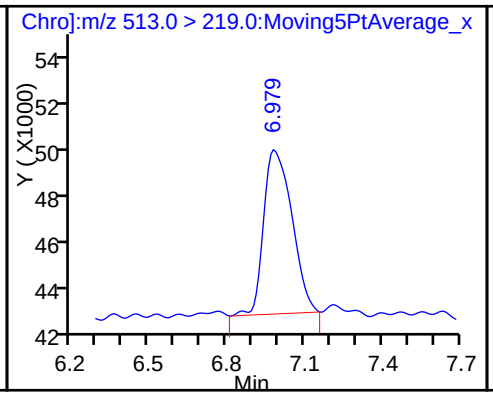
* 22 13C2 PFDA (IS)



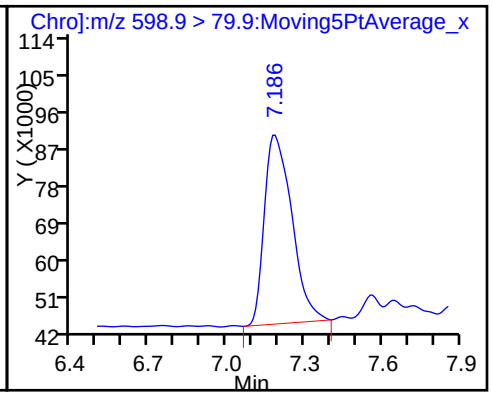
23 Perfluorodecanoic acid



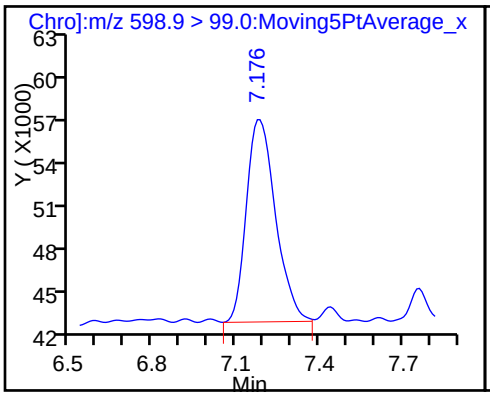
23 Perfluorodecanoic acid



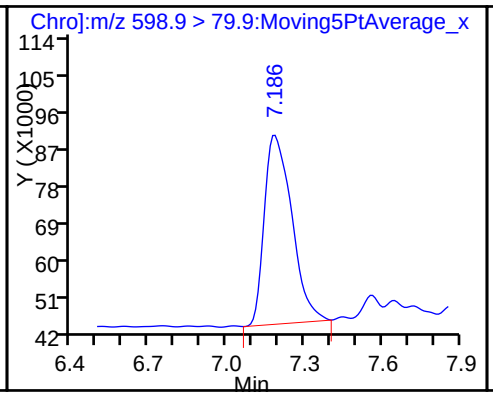
24 Perfluorodecane Sulfonic acid



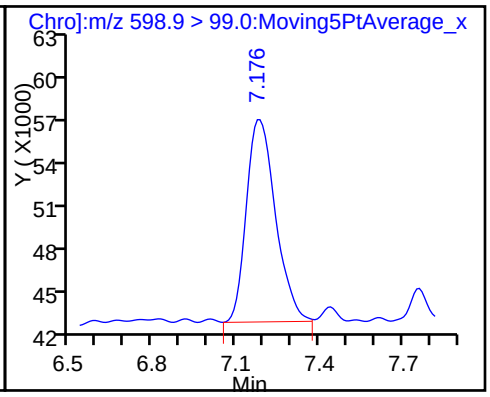
24 Perfluorodecane Sulfonic acid



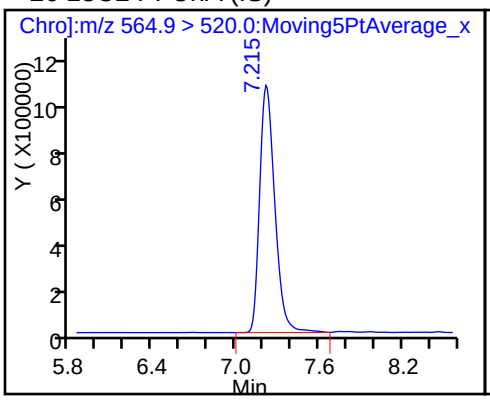
25 Perfluorodecane Sulfonate



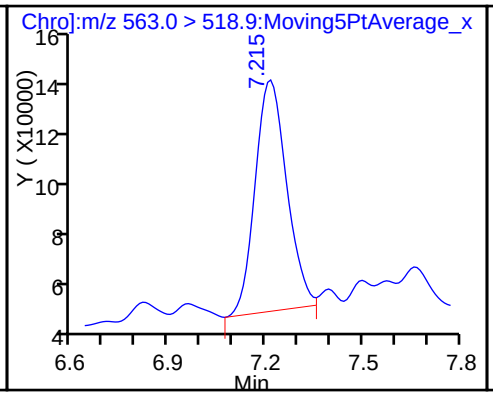
25 Perfluorodecane Sulfonate



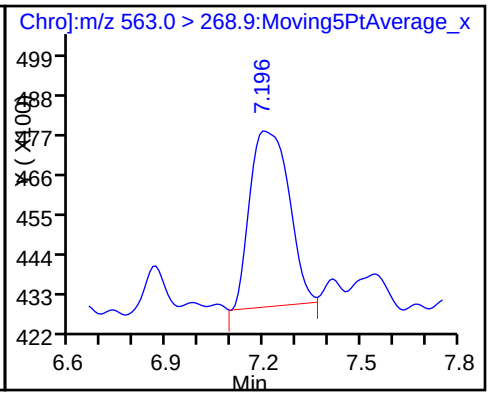
* 26 13C2 PFUnA (IS)



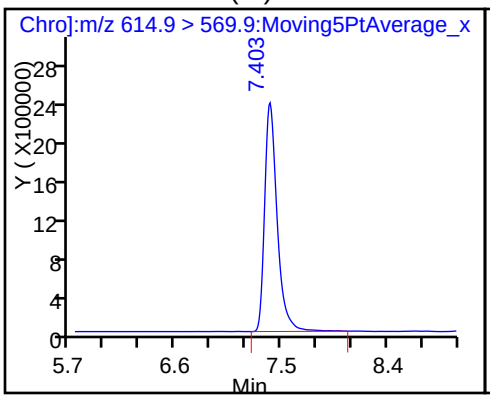
27 Perfluoroundecanoic acid



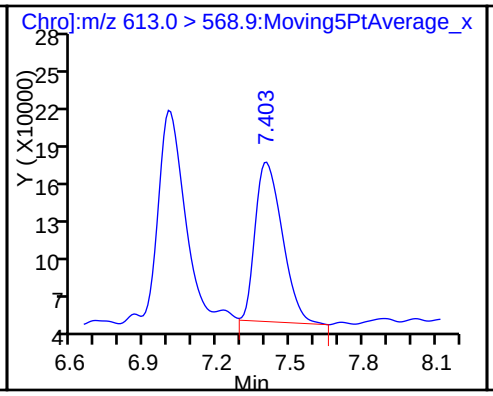
27 Perfluoroundecanoic acid



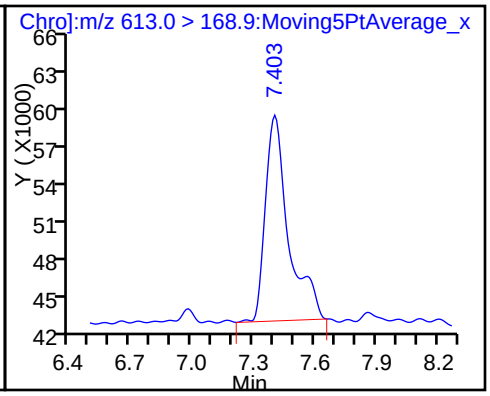
* 28 13C2 PFDoA (IS)



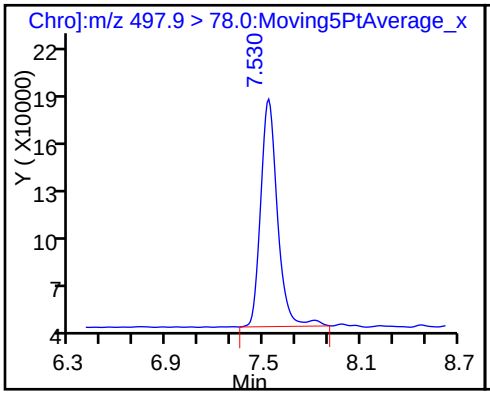
29 Perfluorododecanoic acid



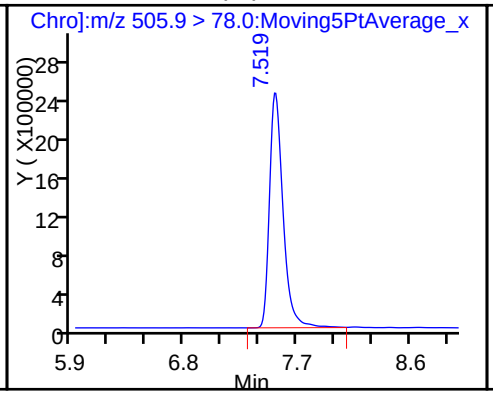
29 Perfluorododecanoic acid



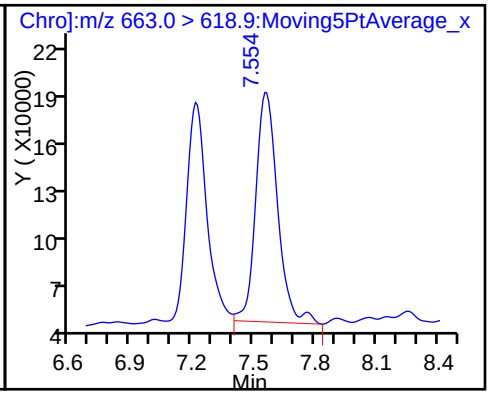
32 Perfluorooctane Sulfonamide



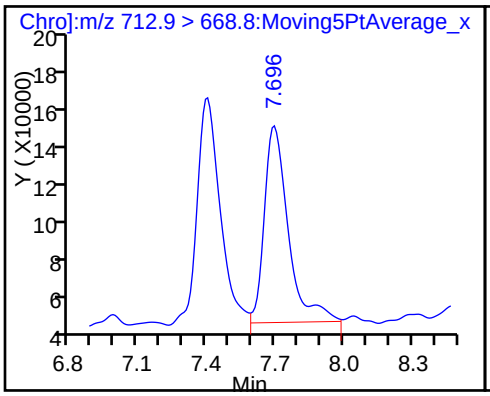
* 31 13C8 FOSA (IS)



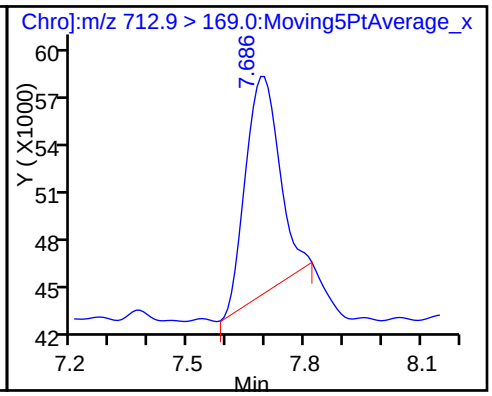
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: SB-PFC-MW4-3.0 MS | Lab Sample ID: 280-87416-7 MS

Matrix: Solid | Lab File ID: PC516I02068.d

Analysis Method: DV-LC-0012 | Date Collected: 08/24/2016 08:45

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.00(g) | Date Analyzed: 09/03/2016 00:02

Con. Extract Vol.: 20.4(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 6.4 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	16.87		0.87	0.15
375-85-9	Perfluoroheptanoic acid (PFHpA)	21.48		0.87	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	19.44		0.87	0.31
375-95-1	Perfluorononanoic acid (PFNA)	20.17		0.87	0.24
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19.39		0.87	0.15
335-67-1	Perfluorooctanoic acid (PFOA)	21.17		0.87	0.25

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	121		57-153
STL01054	13C8 PFOS	105		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02068.d
Lims ID: 280-87416-A-7-B MS
Client ID: SB-PFC-MW4-3.0
Sample Type: MS
Inject. Date: 03-Sep-2016 00:02:53 ALS Bottle#: 0 Worklist Smp#: 56
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-7-B MS, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:34:27 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 08:15:20

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.181	4.266	-0.085		14503727	9.80			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.181	4.266	-0.085	1.000	12505126	8.77			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.242	5.308	-0.066	0.899	10825780	9.83			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.355	5.421	-0.066	0.855	5265661	7.74			R
298.9 > 98.9	5.355	5.421	-0.066	0.855	1395031		3.77(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.355	5.421	-0.066	0.855	5265661	7.74			
298.9 > 98.9	5.355	5.421	-0.066	0.855	1395031		3.77(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.828	5.885	-0.057		9906449	9.80			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.828	5.885	-0.057	1.000	8730796	9.73			
313.0 > 118.6	5.819	5.885	-0.066	0.998	236556		36.91(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.253	6.310	-0.057	0.999	5504633	8.92			R
398.9 > 98.9	6.253	6.310	-0.057	0.999	1570433		3.51(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.253	6.310	-0.057	0.999	5504633	8.92			
398.9 > 98.9	6.253	6.310	-0.057	0.999	1570433		3.51(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.254	6.311	-0.057	0.948	13228679	9.86			
363.0 > 168.9	6.254	6.311	-0.057	0.948	3447987		3.84(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.300	-0.037		1431149	9.27			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.583	6.631	-0.048	0.959	5430178	8.64			
449.0 > 98.9	6.583	6.631	-0.048	0.959	1590962		3.41(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.583	6.631	-0.048	0.959	5430178	8.64			
449.0 > 98.9	6.583	6.631	-0.048	0.959	1590962		3.41(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.593	6.631	-0.038	1.000	12741547	11.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.631	-0.038		15668998	9.80			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.594	6.632	-0.038	1.000	15206178	9.71			
413.0 > 169.0	6.594	6.632	-0.038	1.000	5138619		2.96(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.894	-0.029	1.000	3137873	9.52			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.894	-0.028		5374480	9.37			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.866	6.895	-0.029	1.000	5195586	8.90			R
498.9 > 98.9	6.866	6.895	-0.029	1.000	1976945		2.63(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.886	6.914	-0.028		12022859	9.80			
20 Perfluorononanoic acid									
463.0 > 418.9	6.886	6.914	-0.028	1.000	12003126	9.25			
463.0 > 218.9	6.886	6.914	-0.028	1.000	1798418		6.67(5.59-10.38)		
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.130	7.159	-0.029	1.000	11274433	9.76			R
513.0 > 219.0	7.130	7.159	-0.029	1.000	1077379		10.46(10.49-19.48)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.149	-0.019		11927193	9.80			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.337	-0.028	1.065	5415213	9.52			
598.9 > 99.0	7.309	7.337	-0.028	1.065	1688924		3.21(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.337	-0.028	1.065	5415213	9.52			
598.9 > 99.0	7.309	7.337	-0.028	1.065	1688924		3.21(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.357	-0.019		7421719	9.80			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.338	7.366	-0.028	1.000	8580573	8.71			R
563.0 > 268.9	7.338	7.366	-0.028	1.000	1099841		7.80(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.517	7.536	-0.019		15384211	9.80			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.517	7.536	-0.019	1.000	14937091	9.79			
613.0 > 168.9	7.517	7.536	-0.019	1.000	1680434		8.89(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.677	7.696	-0.019	1.021	17035915	8.58			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.624	-0.019		17815670	9.80			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.605	7.624	-0.019	1.000	16977818	9.04			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.800	7.819	-0.019	1.038	12251415	8.02			
712.9 > 169.0	7.800	7.819	-0.019	1.038	2222513		5.51(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Report Date: 06-Sep-2016 08:34:41 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02068.d

Injection Date: 03-Sep-2016 00:02:53 Instrument ID: LC_LCMS5

Lims ID: 280-87416-A-7-B MS

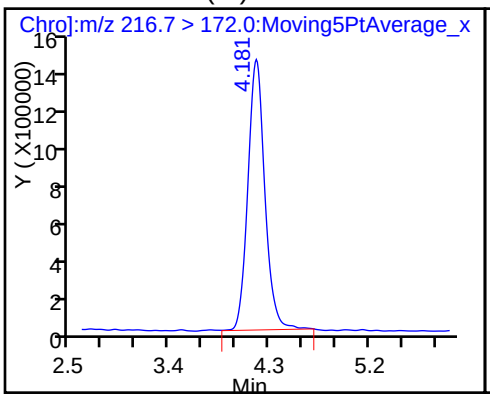
Client ID: SB-PFC-MW4-3.0

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 56

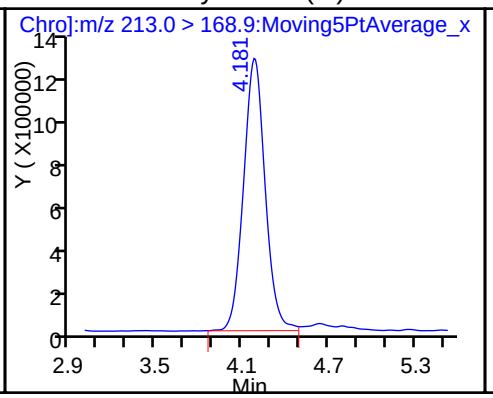
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

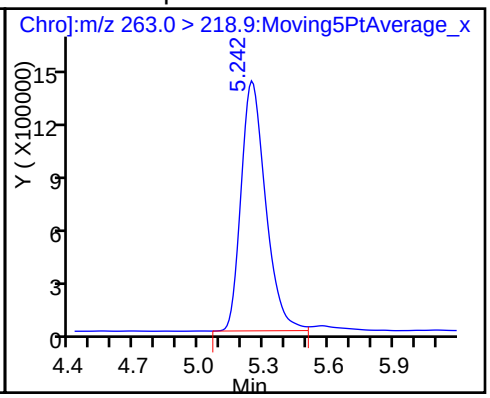
* 1 13C4 PFBA (IS)



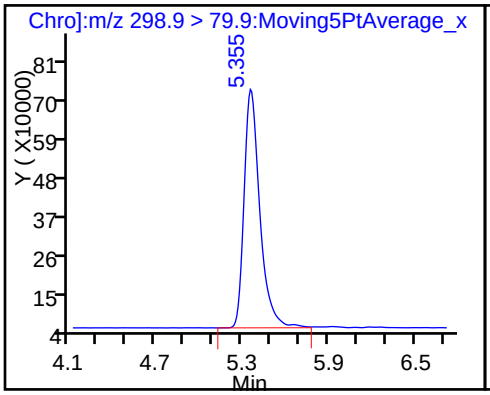
2 Perfluorobutyric acid (M)



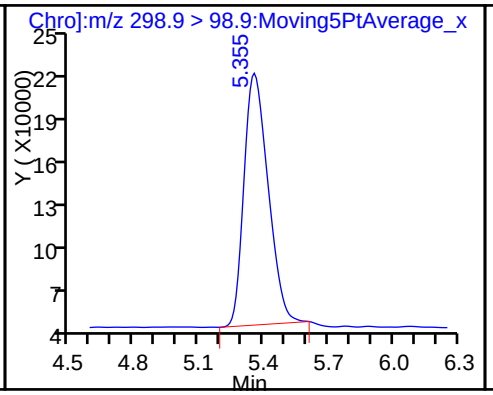
3 Perfluoropentanoic acid



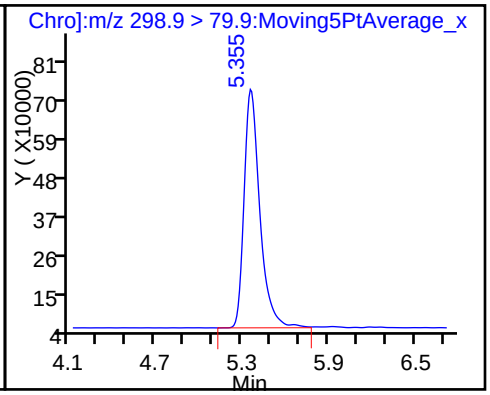
4 Perfluorobutane Sulfonate



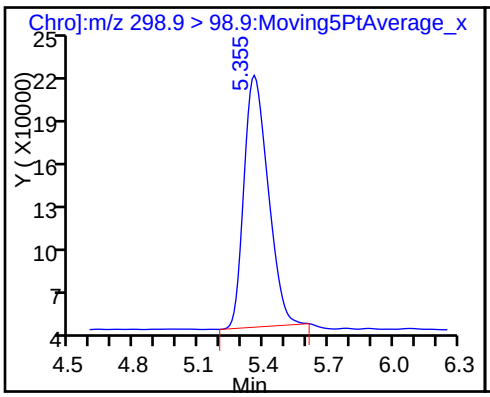
4 Perfluorobutane Sulfonate



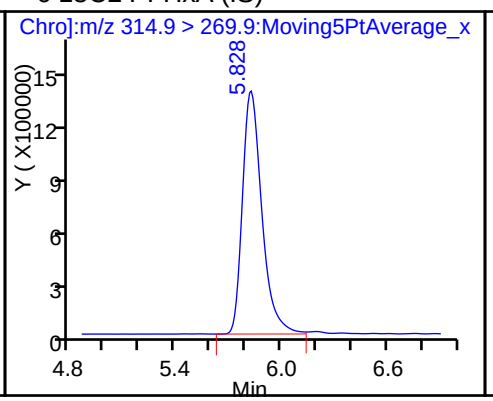
5 Perfluorobutanesulfonic acid



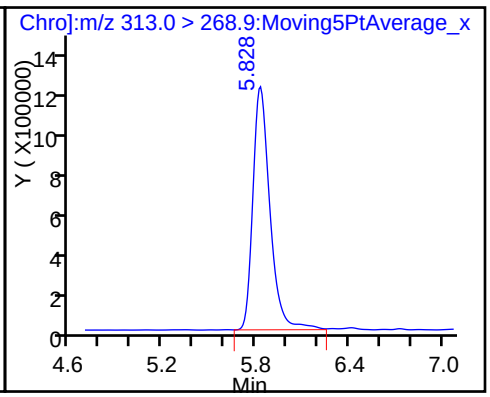
5 Perfluorobutanesulfonic acid



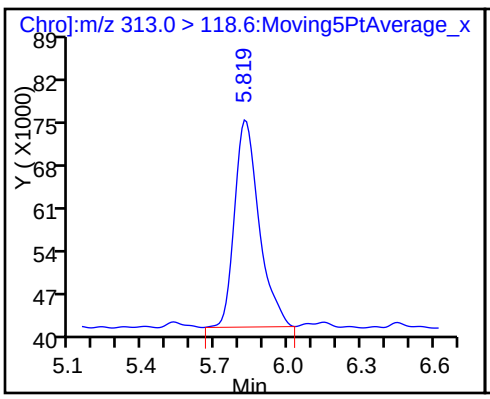
* 6 13C2 PFHxA (IS)



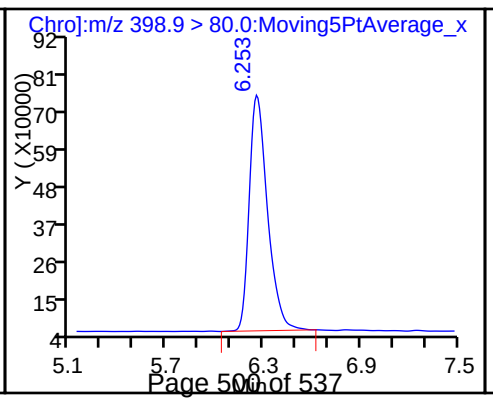
7 Perfluorohexanoic acid



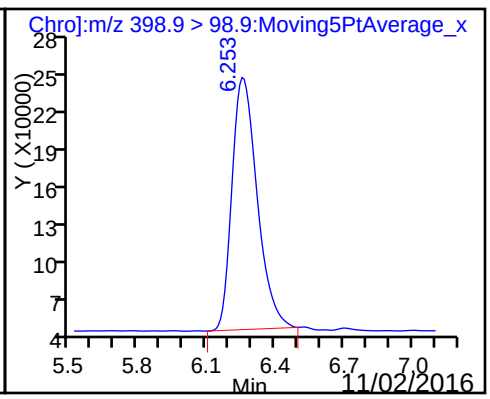
7 Perfluorohexanoic acid



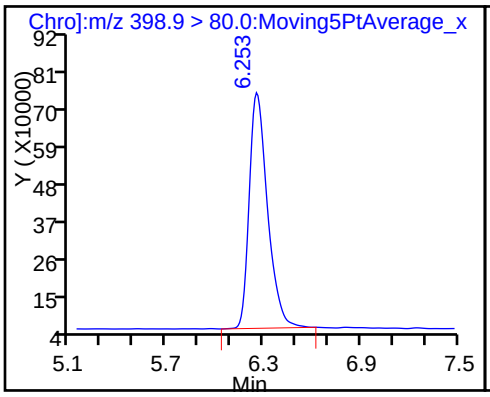
10 Perfluorohexane Sulfonate



10 Perfluorohexane Sulfonate



11 Perfluorohexanesulfonic acid



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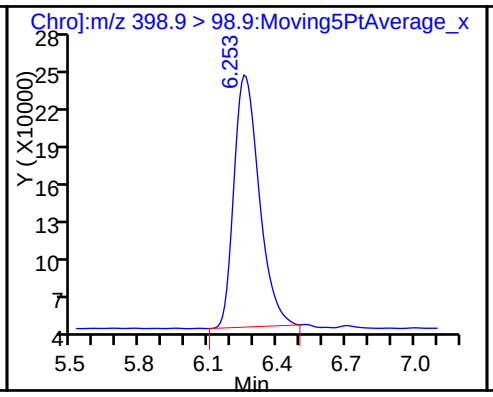
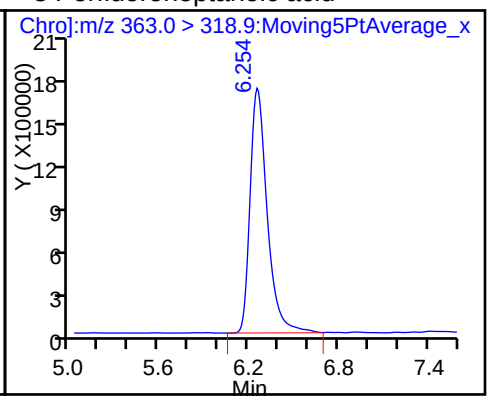
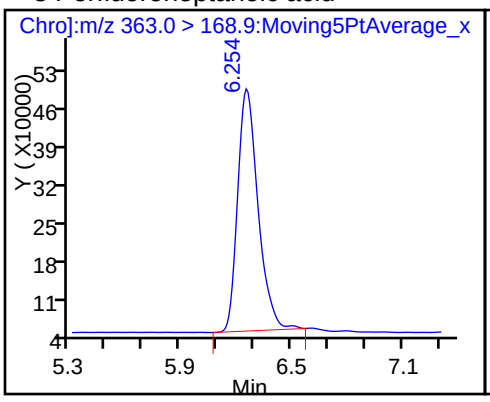


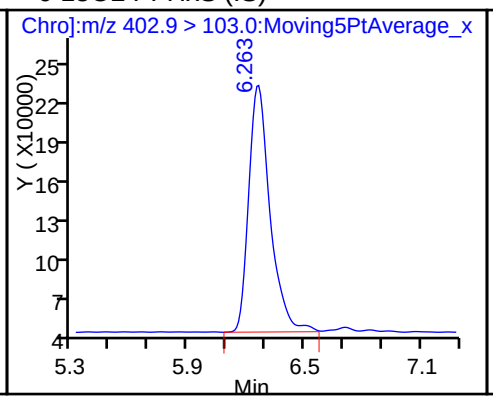
8 Perfluoroheptanoic acid



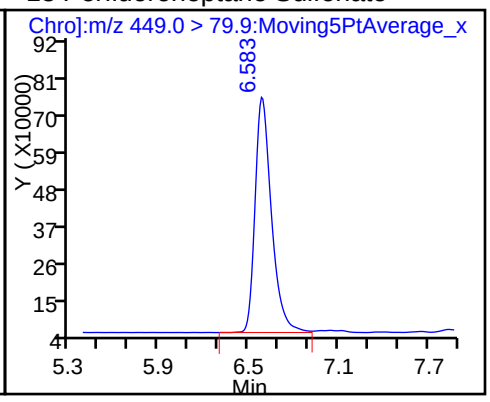
8 Perfluoroheptanoic acid



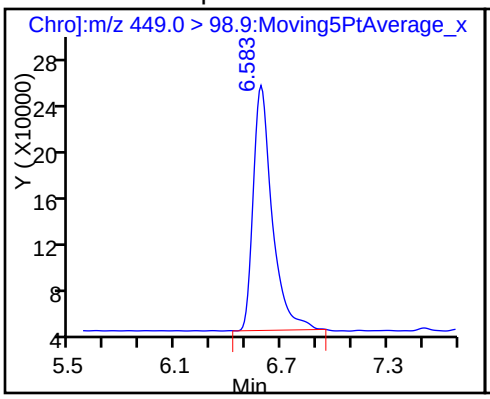
* 9 18O2 PFHxS (IS)



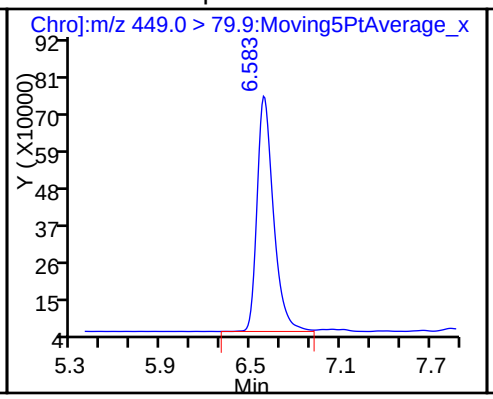
13 Perfluoroheptane Sulfonate



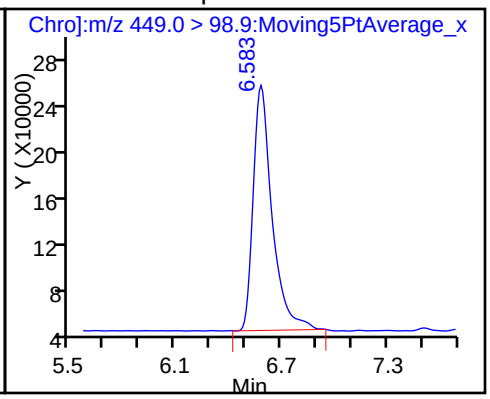
13 Perfluoroheptane Sulfonate



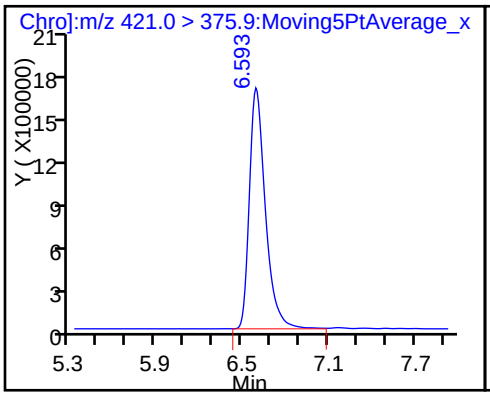
12 Perfluoroheptanesulfonic Acid



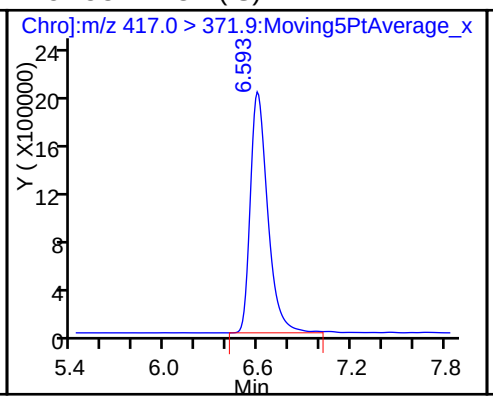
12 Perfluoroheptanesulfonic Acid



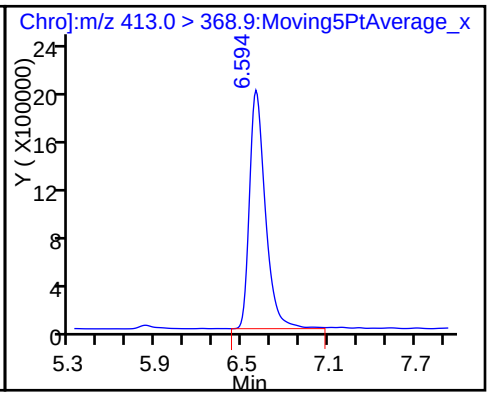
$ 14 13C8 PFOA



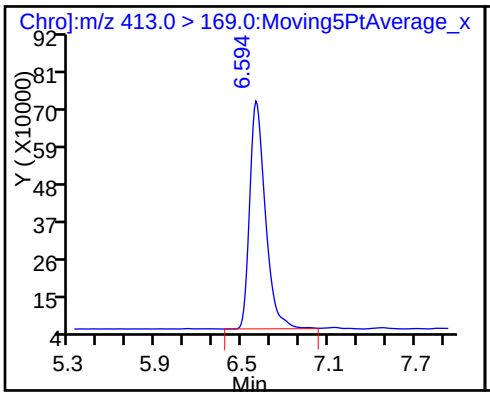
* 15 13C4 PFOA (IS)



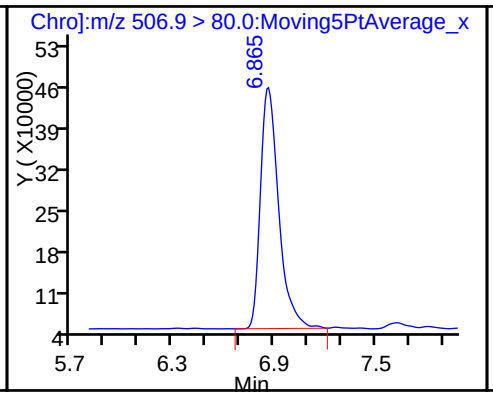
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid



$ 18 13C8 PFOS



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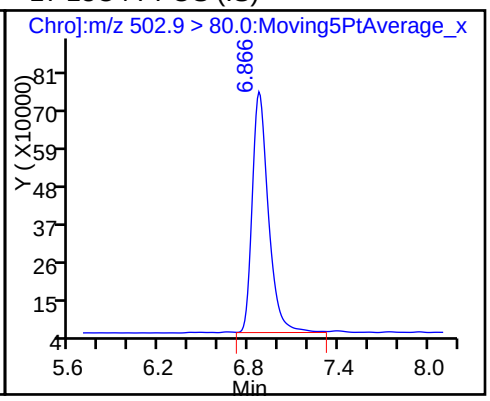
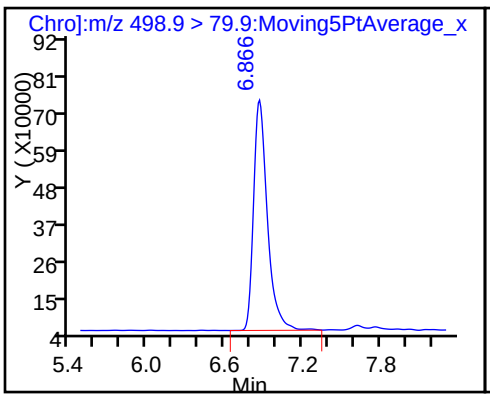
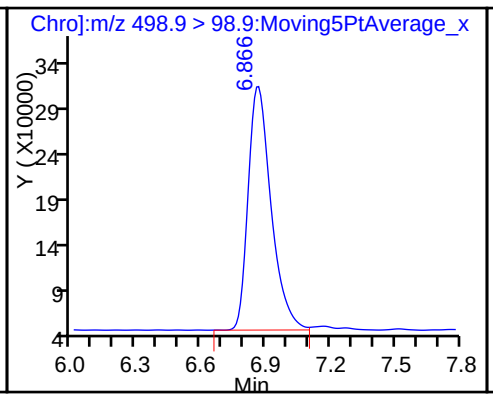


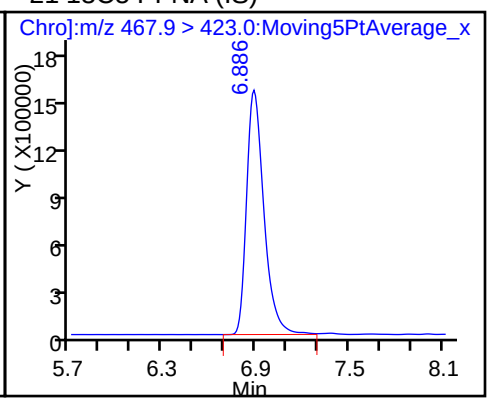
19 Perfluorooctane sulfonic acid



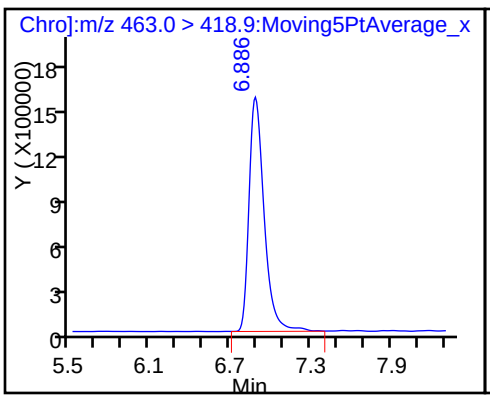
19 Perfluorooctane sulfonic acid



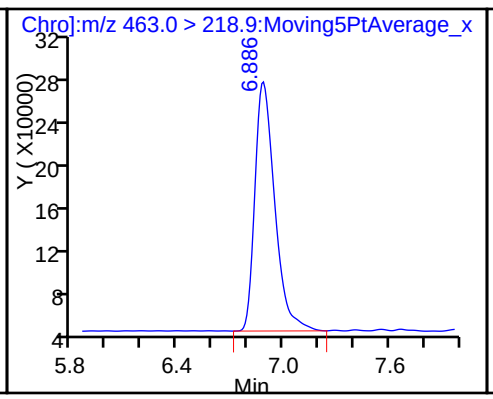
* 21 13C5 PFNA (IS)



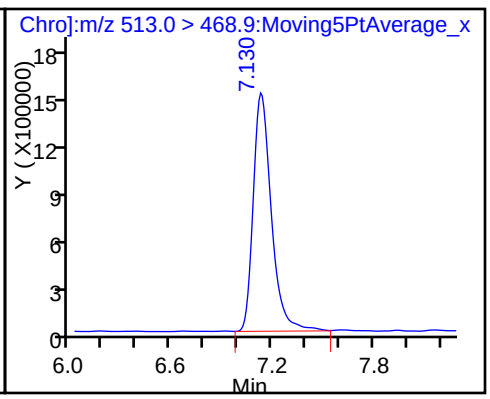
20 Perfluorononanoic acid



20 Perfluorononanoic acid



23 Perfluorodecanoic acid



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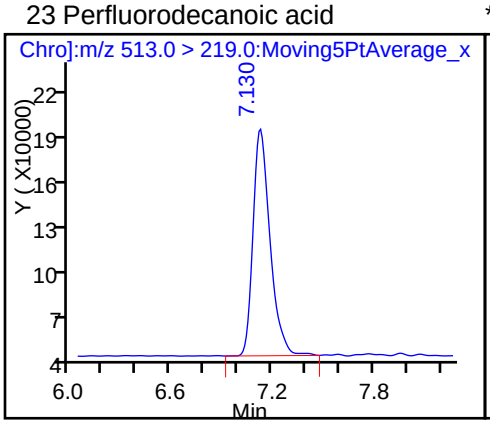
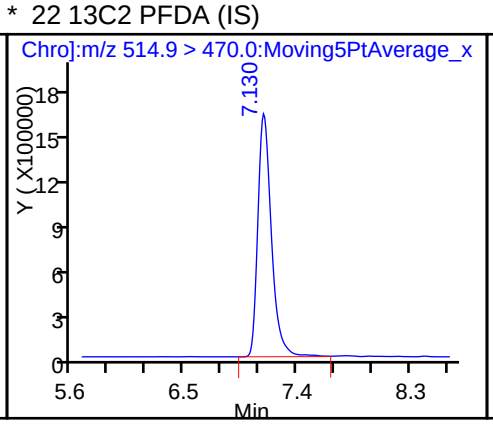
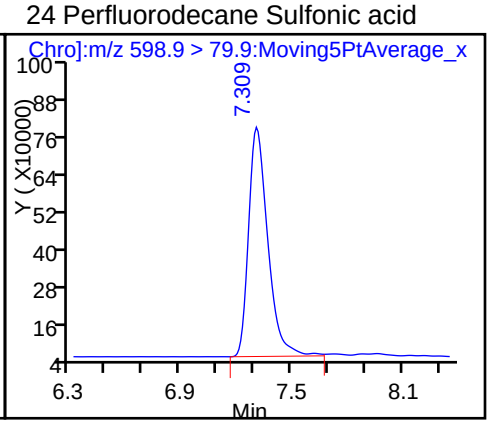


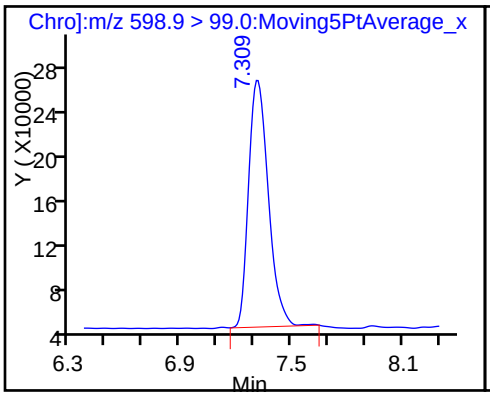
* 22 13C2 PFDA (IS)



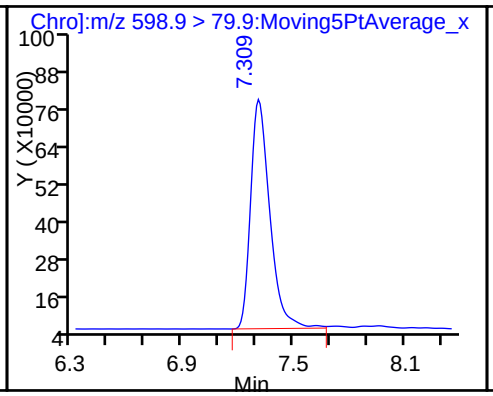
24 Perfluorodecane Sulfonic acid



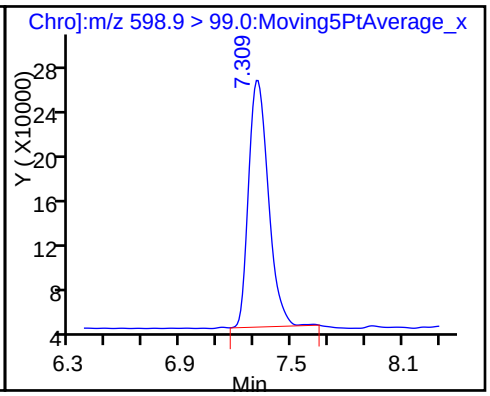
24 Perfluorodecane Sulfonic acid



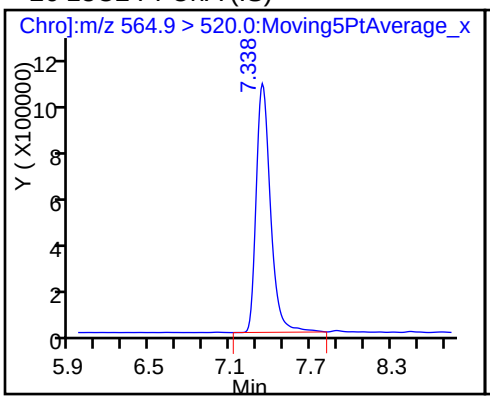
25 Perfluorodecane Sulfonate



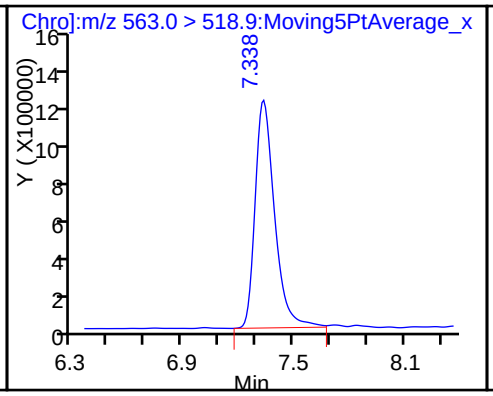
25 Perfluorodecane Sulfonate



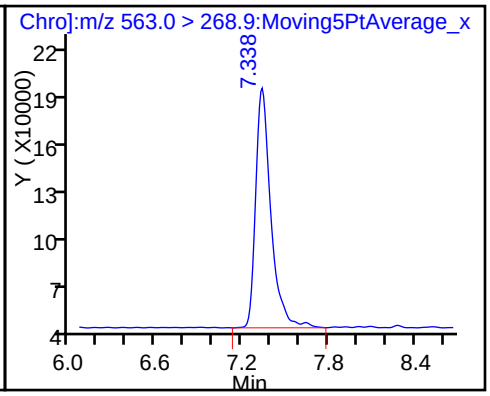
* 26 13C2 PFUnA (IS)



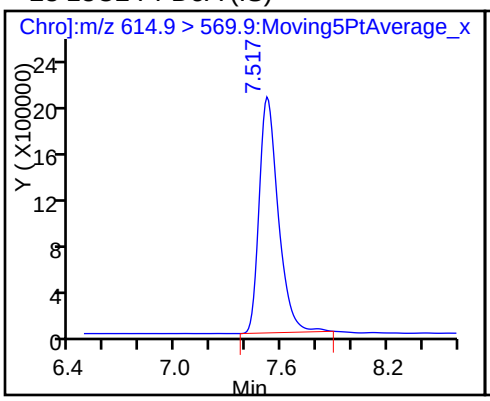
27 Perfluoroundecanoic acid



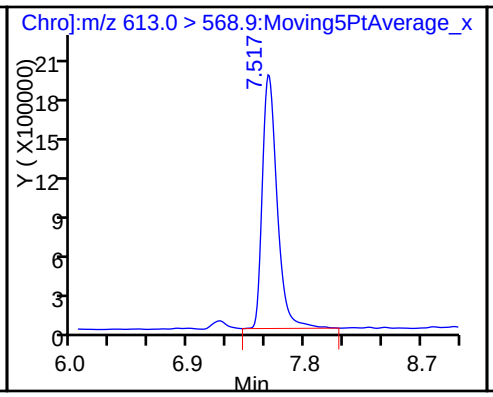
27 Perfluoroundecanoic acid



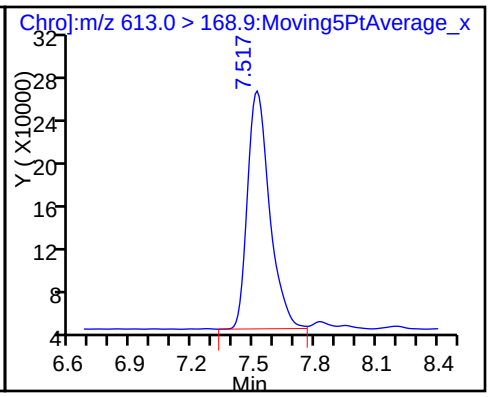
* 28 13C2 PFDoA (IS)



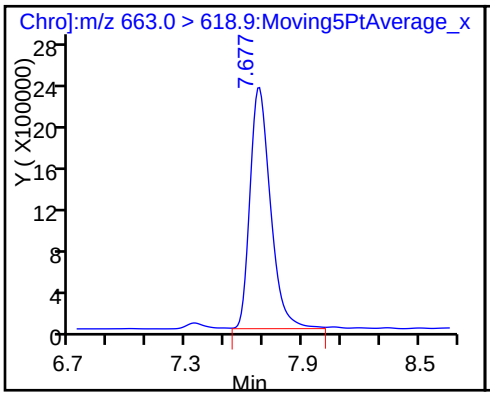
29 Perfluorododecanoic acid



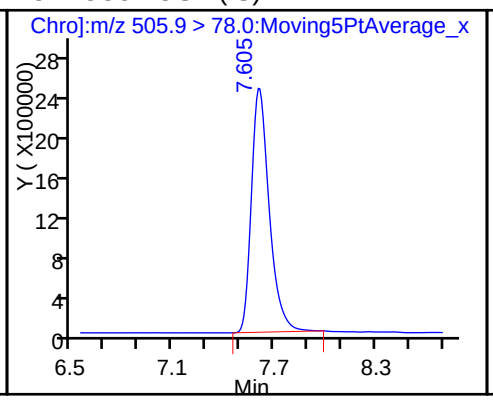
29 Perfluorododecanoic acid



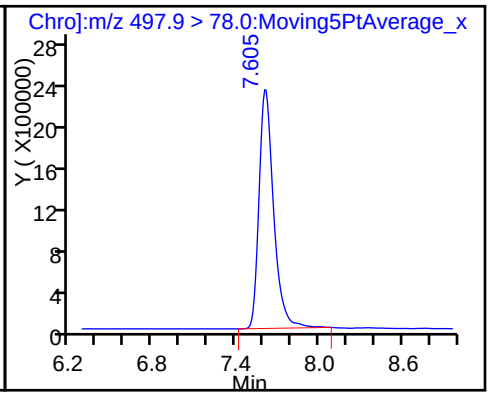
30 Perfluorotridecanoic acid



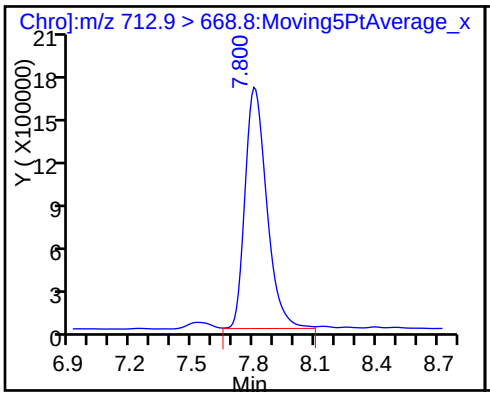
* 31 13C8 FOSA (IS)



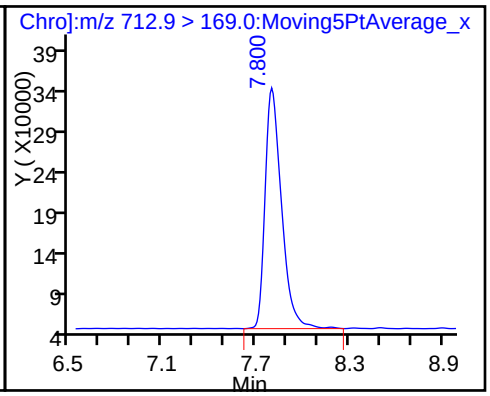
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-87416-1

SDG No.:

Client Sample ID: SB-PFC-MW4-3.0 MSD | Lab Sample ID: 280-87416-7 MSD

Matrix: Solid | Lab File ID: PC516I02069.d

Analysis Method: DV-LC-0012 | Date Collected: 08/24/2016 08:45

Extraction Method: PFC leach | Date Extracted: 08/29/2016 13:40

Sample wt/vol: 10.00(g) | Date Analyzed: 09/03/2016 00:15

Con. Extract Vol.: 20.4(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: 6.4 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 340832 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	16.17		0.87	0.15
375-85-9	Perfluoroheptanoic acid (PFHpA)	23.70		0.87	0.13
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	20.79		0.87	0.31
375-95-1	Perfluorononanoic acid (PFNA)	20.00		0.87	0.24
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20.31		0.87	0.15
335-67-1	Perfluorooctanoic acid (PFOA)	23.24		0.87	0.25

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	129		57-153
STL01054	13C8 PFOS	102		70-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02069.d
Lims ID: 280-87416-A-7-C MSD
Client ID: SB-PFC-MW4-3.0
Sample Type: MSD
Inject. Date: 03-Sep-2016 00:15:25 ALS Bottle#: 0 Worklist Smp#: 57
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-87416-A-7-C MSD, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 06-Sep-2016 08:34:27 Calib Date: 01-Sep-2016 12:33:48
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160901-50491.b\PC516I01024.d

Column 1 : Det: MS QQQ
Process Host: XAWRK035

First Level Reviewer: meyera Date: 06-Sep-2016 08:15:59

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.029	4.266	-0.237		13786346	9.80			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.030	4.266	-0.236	1.000	12448375	9.18			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.128	5.308	-0.180	0.896	11141658	9.95			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.251	5.421	-0.170	0.853	4766063	7.42			
298.9 > 98.9	5.251	5.421	-0.170	0.853	1520979		3.13(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.251	5.421	-0.170	0.853	4766063	7.42			
298.9 > 98.9	5.251	5.421	-0.170	0.853	1520979		3.13(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.885	-0.161		10064910	9.80			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.714	5.885	-0.171	0.998	8686675	9.53			
313.0 > 118.6	5.714	5.885	-0.171	0.998	253141		34.32(34.05-63.23)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.168	6.310	-0.142	1.002	5560350	9.54			R
398.9 > 98.9	6.159	6.310	-0.151	1.000	1623022		3.43(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.168	6.310	-0.142	1.002	5560350	9.54			
398.9 > 98.9	6.159	6.310	-0.151	1.000	1623022		3.43(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.159	6.311	-0.152	0.946	13522646	10.9			
363.0 > 168.9	6.150	6.311	-0.161	0.945	3540223		3.82(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.300	-0.142		1351646	9.27			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.498	6.631	-0.133	0.958	5178371	8.33			
449.0 > 98.9	6.498	6.631	-0.133	0.958	1389386		3.73(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.498	6.631	-0.133	0.958	5178371	8.33			
449.0 > 98.9	6.498	6.631	-0.133	0.958	1389386		3.73(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.631	-0.123	1.000	12572644	12.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.631	-0.123		14522084	9.80			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.632	-0.124	1.000	15462665	10.7			
413.0 > 169.0	6.508	6.632	-0.124	1.000	5080606		3.04(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.894	-0.114	1.000	3035513	9.31			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.894	-0.113		5316753	9.37			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.781	6.895	-0.114	1.000	5384821	9.32			R
498.9 > 98.9	6.781	6.895	-0.114	1.000	2071715		2.60(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.801	6.914	-0.114		12198675	9.80			
20 Perfluorononanoic acid									
463.0 > 418.9	6.801	6.914	-0.113	1.000	12076410	9.18			
463.0 > 218.9	6.801	6.914	-0.113	1.000	1919995		6.29(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.054	7.159	-0.105	1.000	10705833	9.29			
513.0 > 219.0	7.054	7.159	-0.105	1.000	923238		11.60(10.49-19.48)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.149	-0.095		11903744	9.80			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.243	7.337	-0.094	1.068	5692134	10.1			
598.9 > 99.0	7.233	7.337	-0.104	1.067	1917998		2.97(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.243	7.337	-0.094	1.068	5692134	10.1			
598.9 > 99.0	7.233	7.337	-0.104	1.067	1917998		2.97(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.262	7.357	-0.095		7085042	9.80			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.272	7.366	-0.094	1.001	9166355	9.76			R
563.0 > 268.9	7.262	7.366	-0.104	1.000	1222977		7.50(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.536	-0.086		15612708	9.80			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.451	7.536	-0.085	1.000	14373085	9.29			
613.0 > 168.9	7.451	7.536	-0.085	1.000	1772429		8.11(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.611	7.696	-0.085	1.022	17113061	8.49			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.529	7.624	-0.095		18731275	9.80			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.624	-0.094	1.000	17557019	8.89			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.743	7.819	-0.076	1.039	13596785	8.78			
712.9 > 169.0	7.743	7.819	-0.076	1.039	2136049		6.37(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Report Date: 06-Sep-2016 08:34:47 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160906-50578.b\PC516I02069.d

Injection Date: 03-Sep-2016 00:15:25 Instrument ID: LC_LCMS5

Lims ID: 280-87416-A-7-C MSD

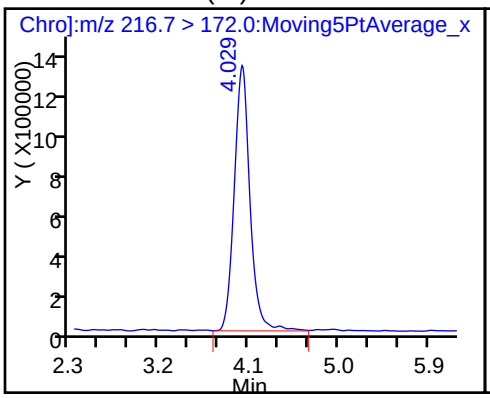
Client ID: SB-PFC-MW4-3.0

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 57

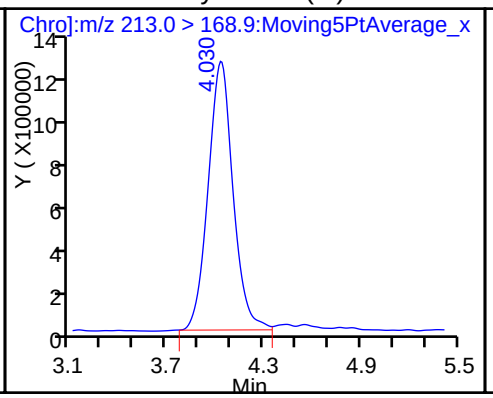
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

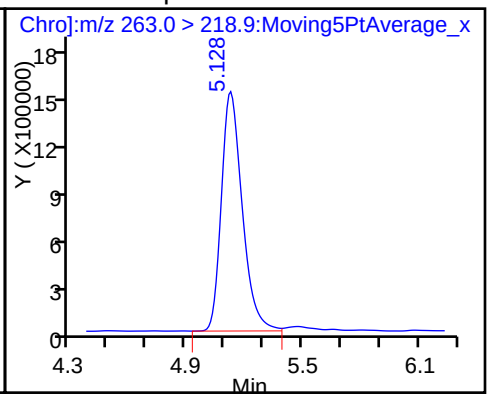
* 1 13C4 PFBA (IS)



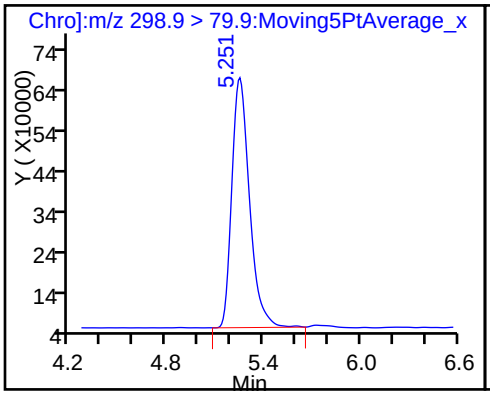
2 Perfluorobutyric acid (M)



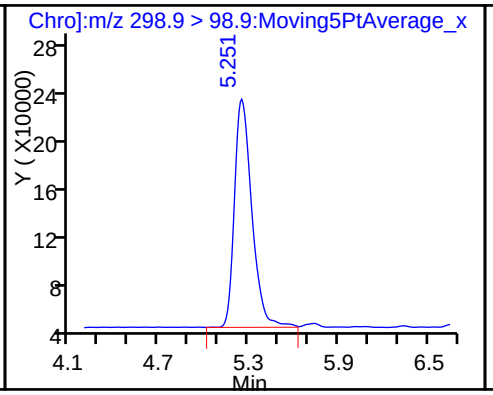
3 Perfluoropentanoic acid



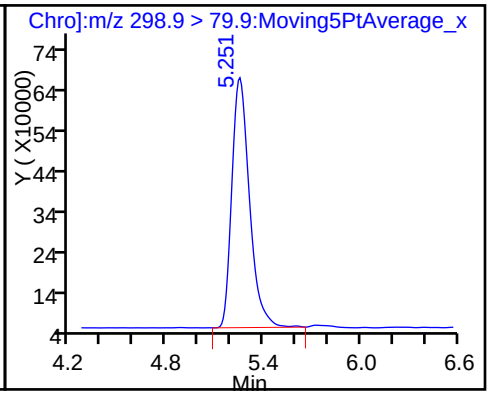
4 Perfluorobutane Sulfonate



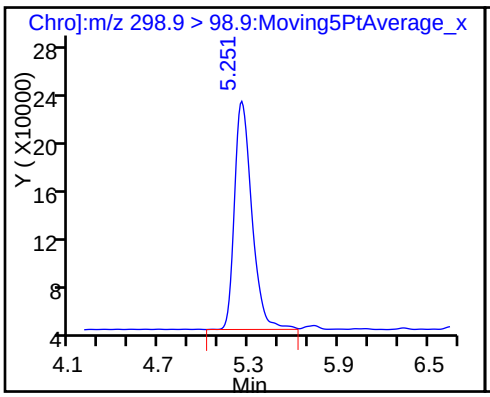
4 Perfluorobutane Sulfonate



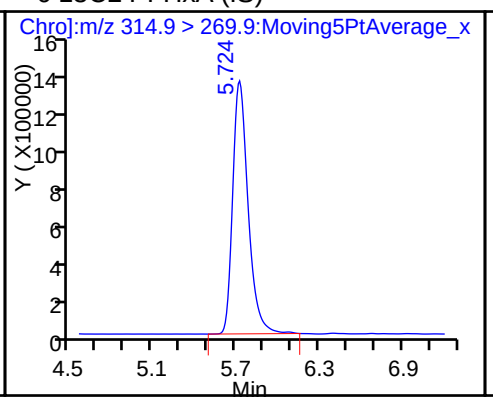
5 Perfluorobutanesulfonic acid



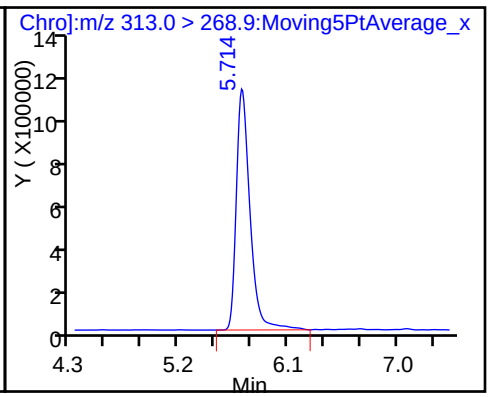
5 Perfluorobutanesulfonic acid



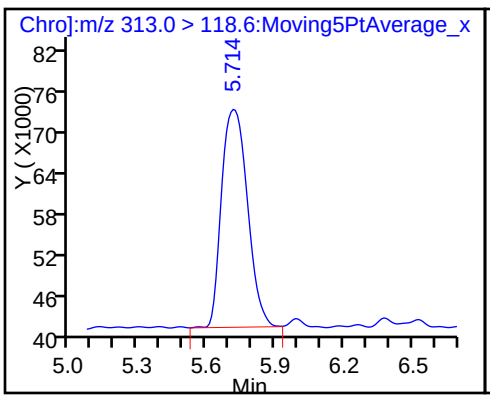
* 6 13C2 PFHxA (IS)



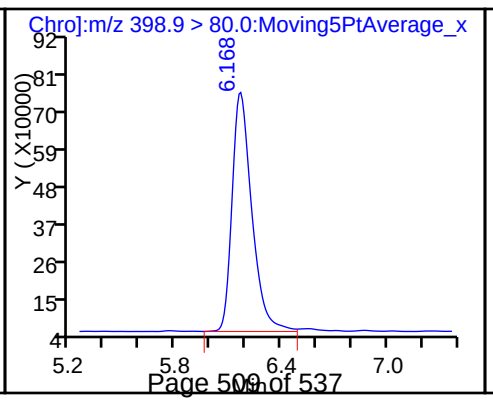
7 Perfluorohexanoic acid



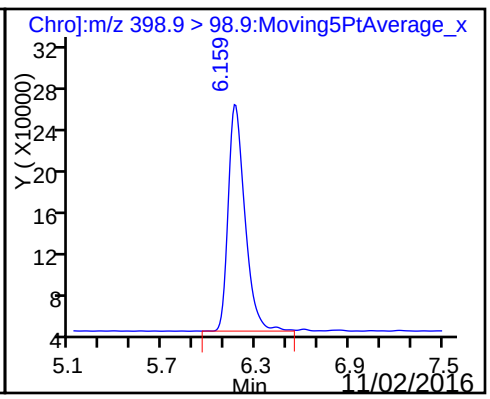
7 Perfluorohexanoic acid



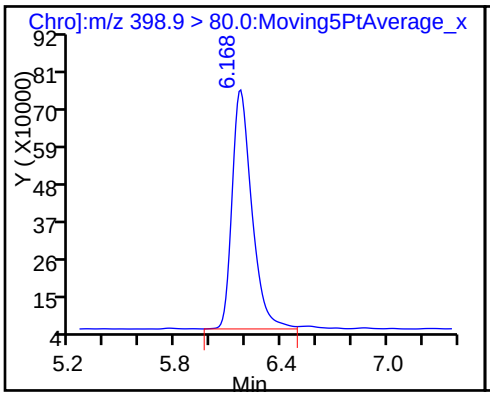
10 Perfluorohexane Sulfonate



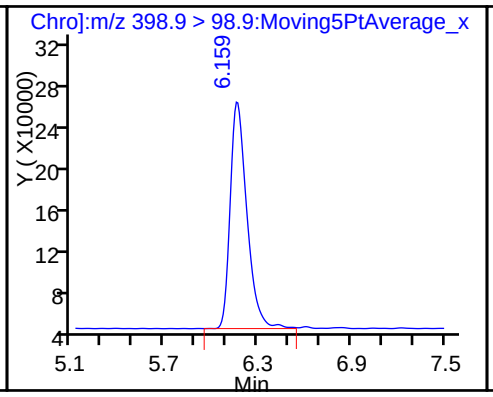
10 Perfluorohexane Sulfonate



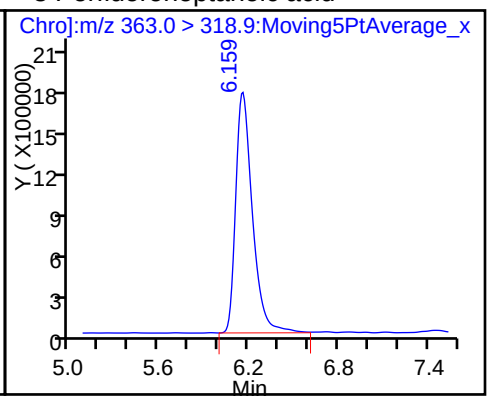
11 Perfluorohexanesulfonic acid



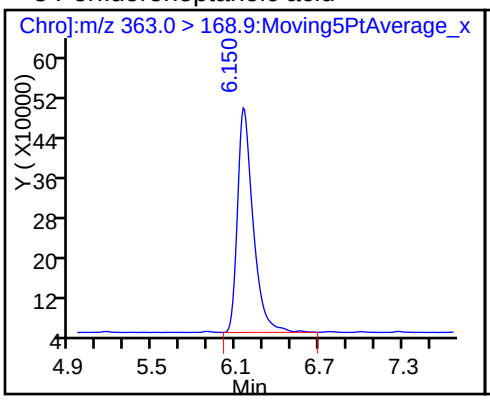
11 Perfluorohexanesulfonic acid



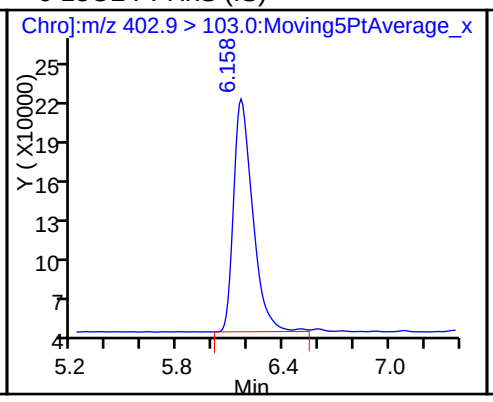
8 Perfluoroheptanoic acid



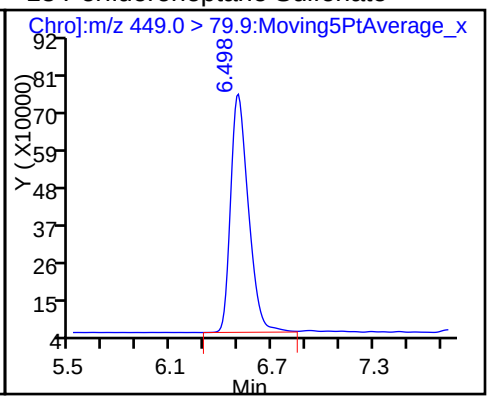
8 Perfluoroheptanoic acid



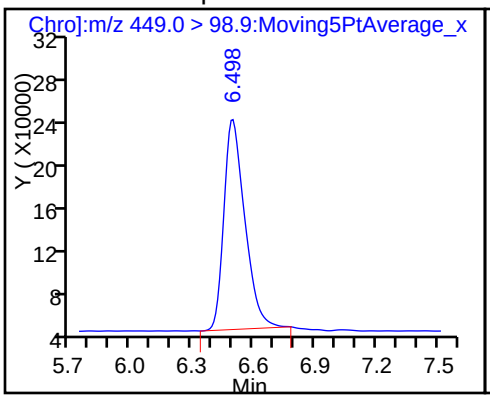
* 9 18O2 PFHxS (IS)



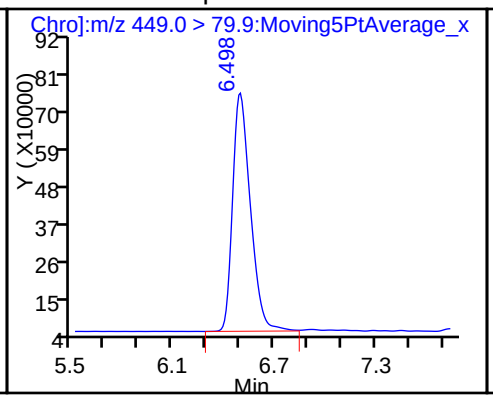
13 Perfluoroheptane Sulfonate



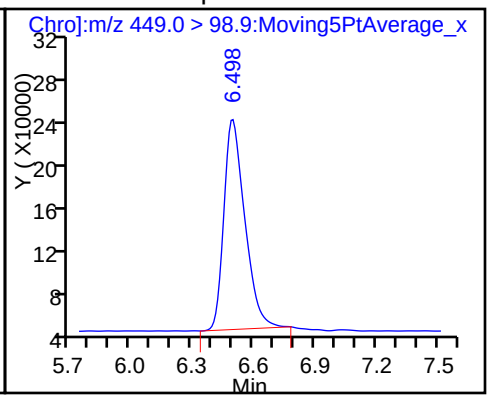
13 Perfluoroheptane Sulfonate



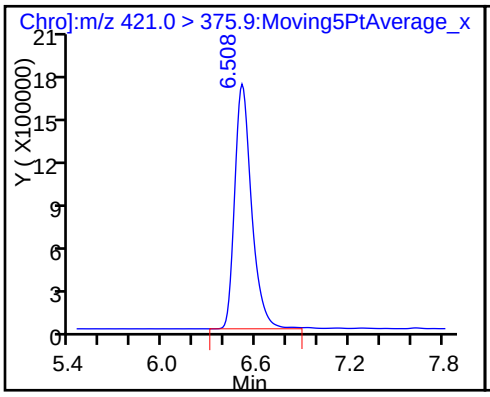
12 Perfluoroheptanesulfonic Acid



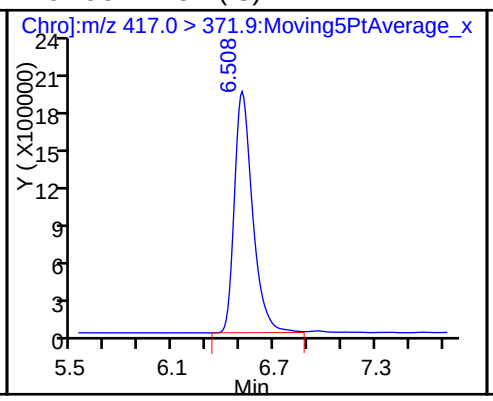
12 Perfluoroheptanesulfonic Acid



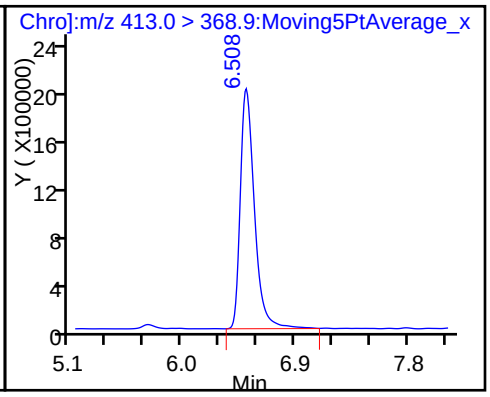
$ 14 13C8 PFOA



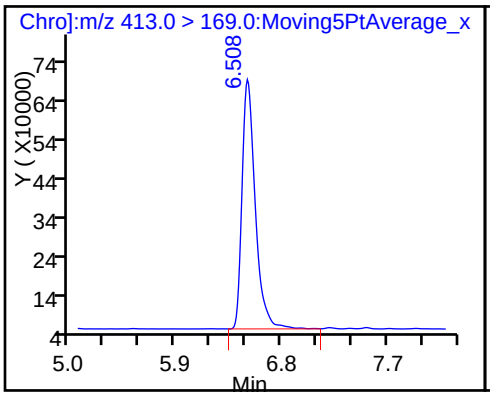
* 15 13C4 PFOA (IS)



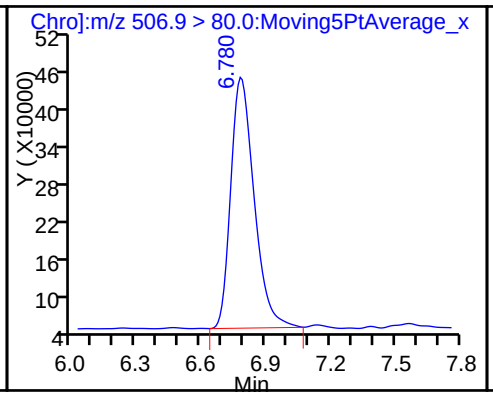
16 Perfluorooctanoic acid



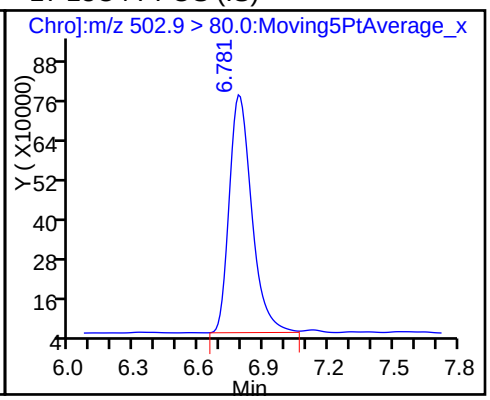
16 Perfluorooctanoic acid



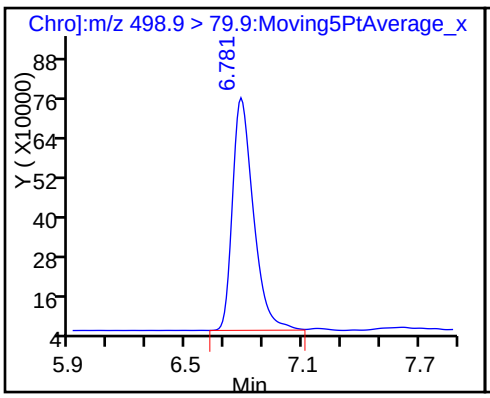
$ 18 13C8 PFOS



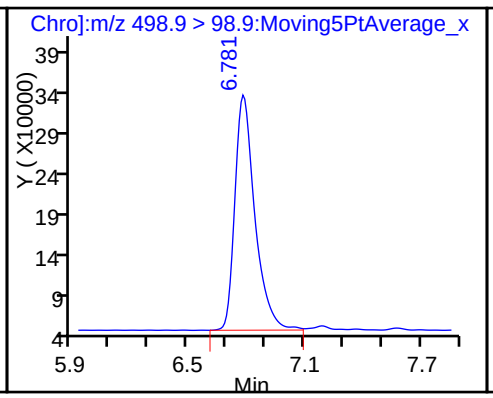
* 17 13C4 PFOS (IS)



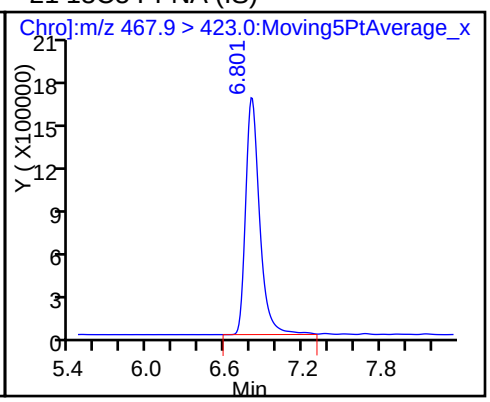
19 Perfluorooctane sulfonic acid



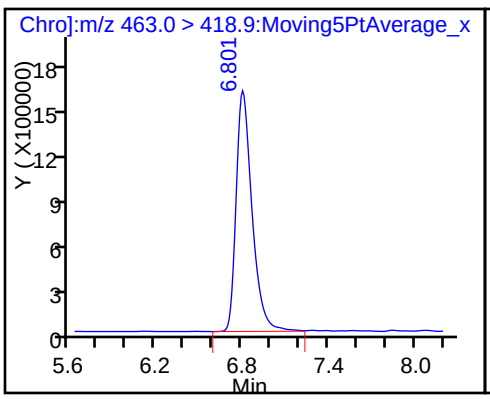
19 Perfluorooctane sulfonic acid



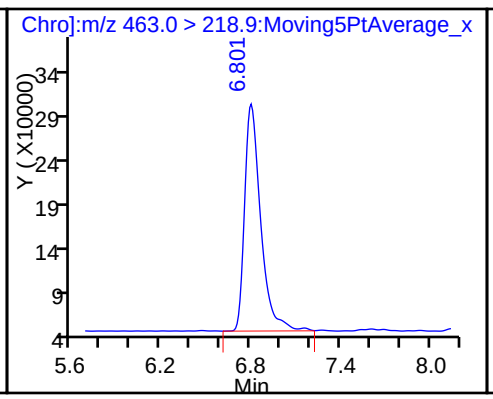
* 21 13C5 PFNA (IS)



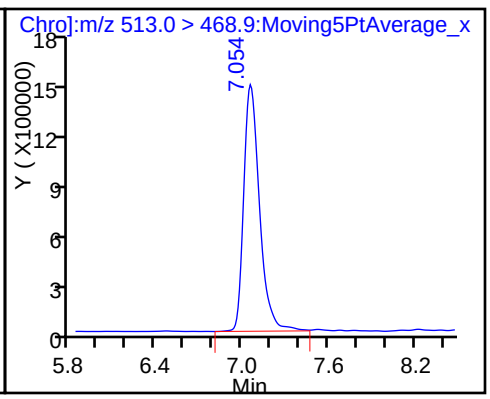
20 Perfluorononanoic acid



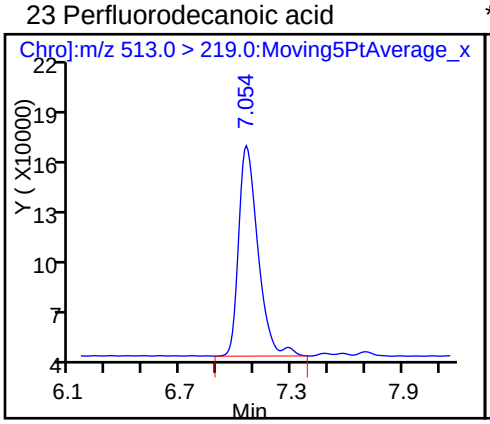
20 Perfluorononanoic acid



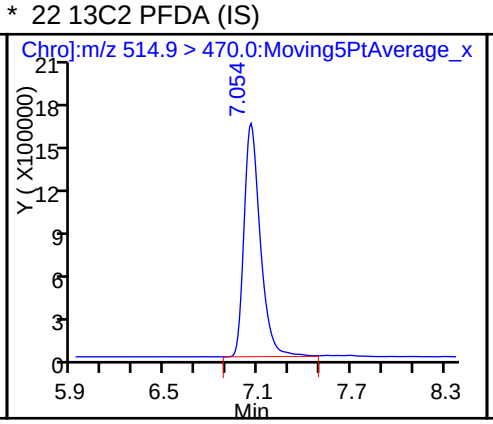
23 Perfluorodecanoic acid



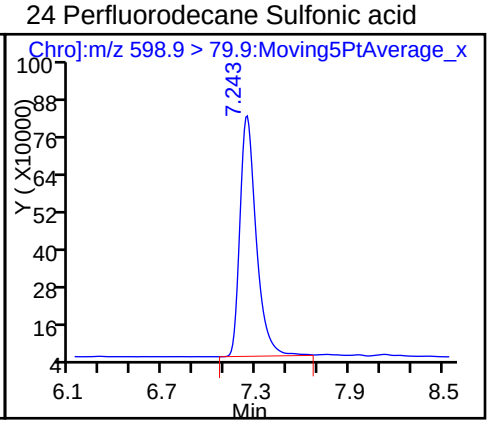
23 Perfluorodecanoic acid



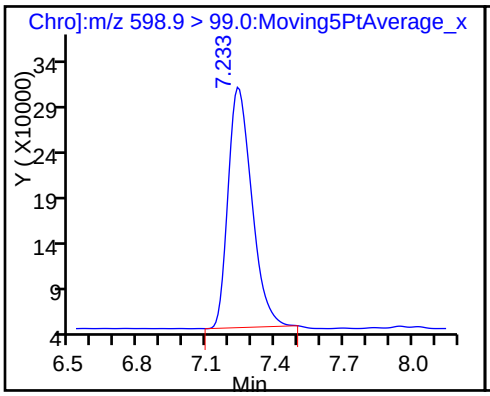
* 22 13C2 PFDA (IS)



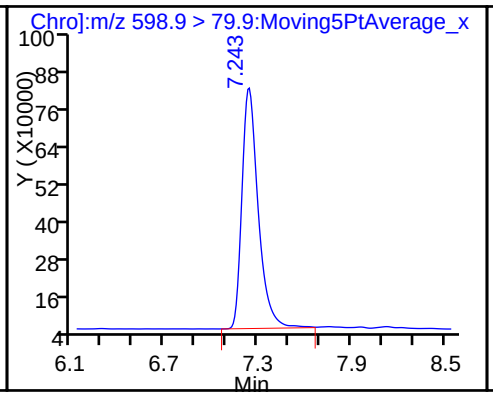
24 Perfluorodecane Sulfonic acid



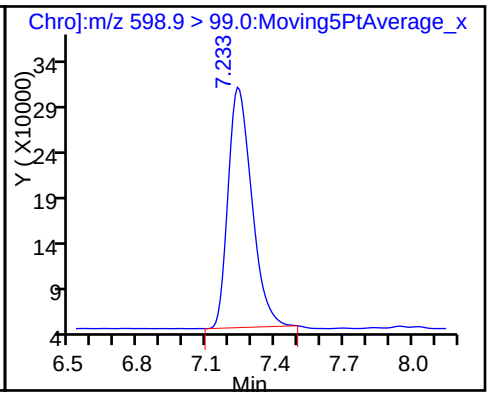
24 Perfluorodecane Sulfonic acid



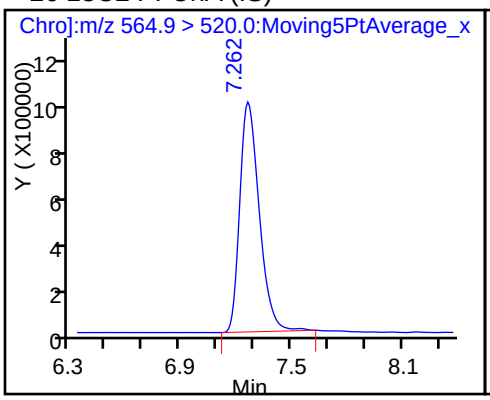
25 Perfluorodecane Sulfonate



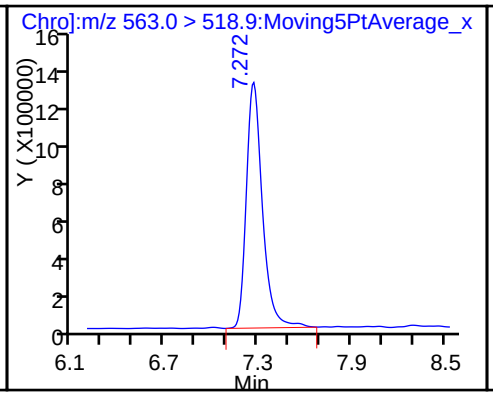
25 Perfluorodecane Sulfonate



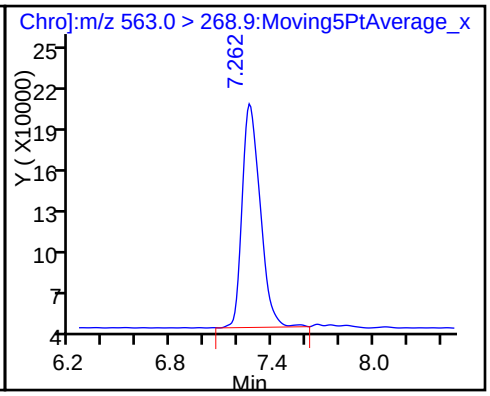
* 26 13C2 PFUnA (IS)



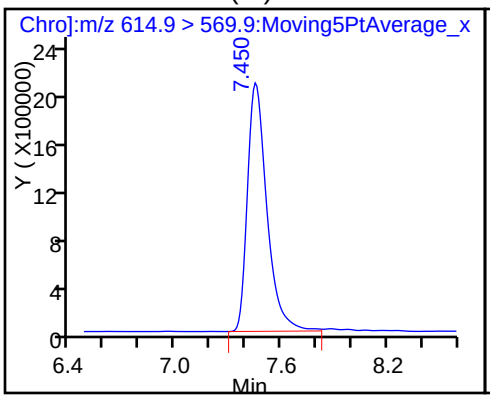
27 Perfluoroundecanoic acid



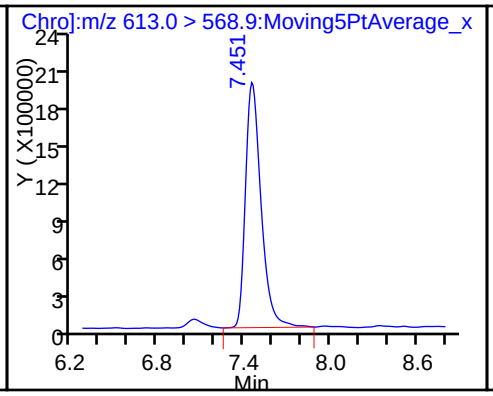
27 Perfluoroundecanoic acid



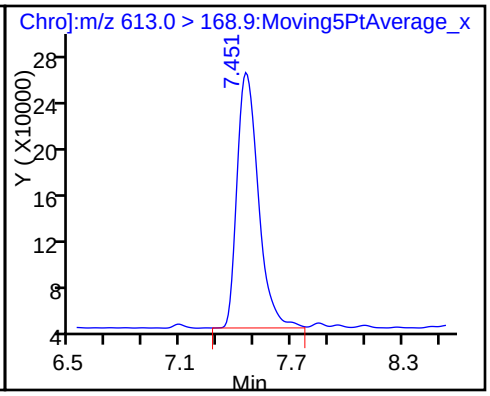
* 28 13C2 PFDoA (IS)



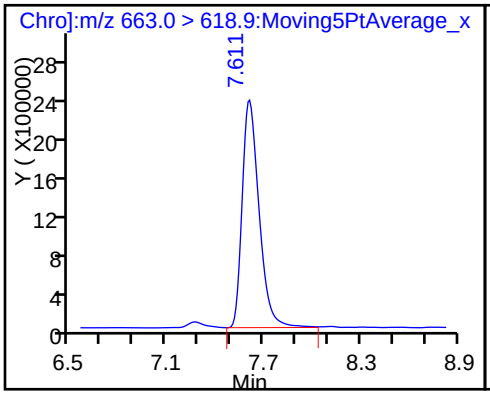
29 Perfluorododecanoic acid



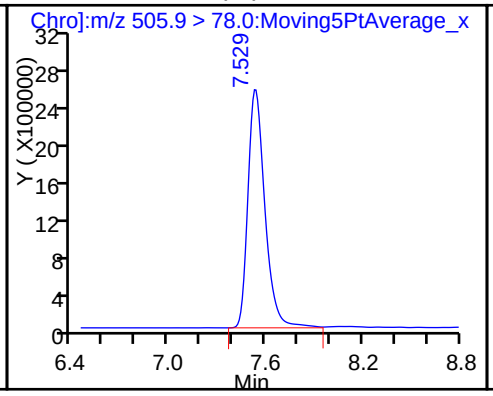
29 Perfluorododecanoic acid



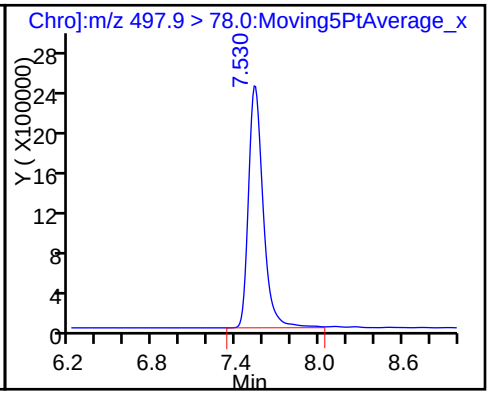
30 Perfluorotridecanoic acid



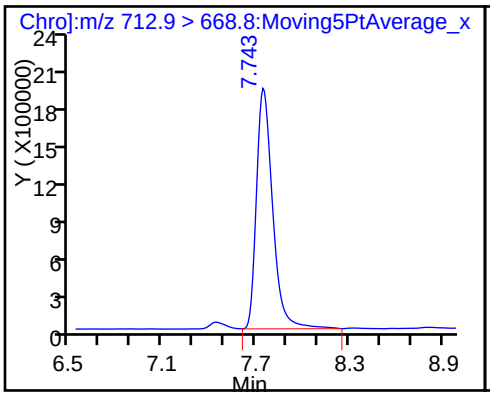
* 31 13C8 FOSA (IS)



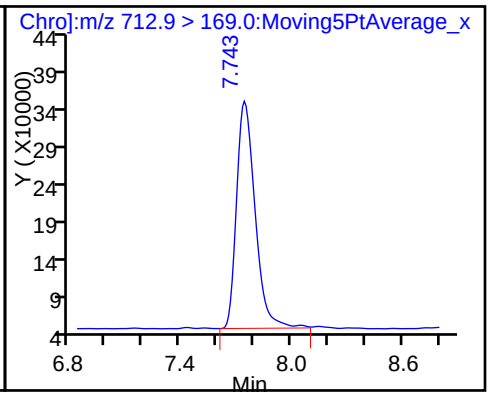
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/01/2016 10:55

Analysis Batch Number: 340408 End Date: 09/01/2016 16:52

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD0002 280-340408/3 IC		09/01/2016 10:55	1	PC516I01016.d	Gemini-NX
STD0005 280-340408/4 IC		09/01/2016 11:07	1	PC516I01017.d	Gemini-NX
STD0010 280-340408/5 IC		09/01/2016 11:19	1	PC516I01018.d	Gemini-NX
STD0020 280-340408/6 ICISAV		09/01/2016 11:32	1	PC516I01019.d	Gemini-NX
STD0050 280-340408/7 IC		09/01/2016 11:44	1	PC516I01020.d	Gemini-NX
STD0100 280-340408/8 IC		09/01/2016 11:56	1	PC516I01021.d	Gemini-NX
STD0200 280-340408/9 IC		09/01/2016 12:09	1	PC516I01022.d	Gemini-NX
STD0500 280-340408/10 IC		09/01/2016 12:21	1	PC516I01023.d	Gemini-NX
STD1250 280-340408/11 IC		09/01/2016 12:33	1	PC516I01024.d	Gemini-NX
ICB 280-340408/12		09/01/2016 12:46	1	PC516I01025.d	Gemini-NX
ICV 280-340408/13		09/01/2016 12:58	1	PC516I01026.d	Gemini-NX
DLCK 280-340408/14		09/01/2016 13:10	1	PC516I01027.d	Gemini-NX
ZZZZZ		09/01/2016 13:23	1		Gemini-NX
ZZZZZ		09/01/2016 13:35	1		Gemini-NX
ZZZZZ		09/01/2016 13:47	1		Gemini-NX
ZZZZZ		09/01/2016 14:00	1		Gemini-NX
ZZZZZ		09/01/2016 14:12	1		Gemini-NX
ZZZZZ		09/01/2016 14:24	1		Gemini-NX
ZZZZZ		09/01/2016 14:37	1		Gemini-NX
ZZZZZ		09/01/2016 14:49	1		Gemini-NX
ZZZZZ		09/01/2016 15:01	1		Gemini-NX
ZZZZZ		09/01/2016 15:13	1		Gemini-NX
CCV 280-340408/25		09/01/2016 15:26	1		Gemini-NX
ZZZZZ		09/01/2016 15:38	1		Gemini-NX
ZZZZZ		09/01/2016 15:50	1		Gemini-NX
ZZZZZ		09/01/2016 16:03	1		Gemini-NX
ZZZZZ		09/01/2016 16:15	1		Gemini-NX
ZZZZZ		09/01/2016 16:27	1		Gemini-NX
ZZZZZ		09/01/2016 16:40	1		Gemini-NX
CCV 280-340408/32		09/01/2016 16:52	1		Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/02/2016 13:09

Analysis Batch Number: 340829 End Date: 09/02/2016 16:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-340829/3		09/02/2016 13:09	1	PC516I02015.d	Gemini-NX
MB 280-340544/1-A		09/02/2016 13:22	1	PC516I02016.d	Gemini-NX
LCS 280-340544/2-A		09/02/2016 13:34	1	PC516I02017.d	Gemini-NX
LCSD 280-340544/3-A		09/02/2016 13:46	1	PC516I02018.d	Gemini-NX
ZZZZZ		09/02/2016 13:59	1		Gemini-NX
ZZZZZ		09/02/2016 14:11	1		Gemini-NX
ZZZZZ		09/02/2016 14:23	1		Gemini-NX
CCV 280-340829/10		09/02/2016 14:36	1	PC516I02022.d	Gemini-NX
ZZZZZ		09/02/2016 14:48	1		Gemini-NX
ZZZZZ		09/02/2016 15:00	1		Gemini-NX
280-87416-3		09/02/2016 15:13	1	PC516I02025.d	Gemini-NX
ZZZZZ		09/02/2016 15:25	1		Gemini-NX
ZZZZZ		09/02/2016 15:37	1		Gemini-NX
ZZZZZ		09/02/2016 15:50	1		Gemini-NX
CCV 280-340829/17		09/02/2016 16:02	1	PC516I02029.d	Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/02/2016 21:59

Analysis Batch Number: 340832 End Date: 09/03/2016 00:40

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-340832/46		09/02/2016 21:59	1	PC516I02058.d	Gemini-NX
MB 280-339949/1-A		09/02/2016 22:11	1	PC516I02059.d	Gemini-NX
LCS 280-339949/2-A		09/02/2016 22:24	1	PC516I02060.d	Gemini-NX
280-87416-1		09/02/2016 22:36	1	PC516I02061.d	Gemini-NX
280-87416-2		09/02/2016 22:48	1	PC516I02062.d	Gemini-NX
280-87416-4		09/02/2016 23:01	1	PC516I02063.d	Gemini-NX
280-87416-5		09/02/2016 23:13	1	PC516I02064.d	Gemini-NX
CCV 280-340832/53		09/02/2016 23:25	1	PC516I02065.d	Gemini-NX
280-87416-9		09/02/2016 23:38	1	PC516I02066.d	Gemini-NX
280-87416-7		09/02/2016 23:50	1	PC516I02067.d	Gemini-NX
280-87416-7 MS		09/03/2016 00:02	1	PC516I02068.d	Gemini-NX
280-87416-7 MSD		09/03/2016 00:15	1	PC516I02069.d	Gemini-NX
280-87416-6		09/03/2016 00:27	1	PC516I02070.d	Gemini-NX
CCV 280-340832/59		09/03/2016 00:40	1	PC516I02071.d	Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/07/2016 13:06

Analysis Batch Number: 341287 End Date: 09/07/2016 21:56

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD0002 280-341287/3 IC		09/07/2016 13:06	1	PC516I07006.d	Gemini-NX
STD0005 280-341287/4 IC		09/07/2016 13:18	1	PC516I07007.d	Gemini-NX
STD0010 280-341287/5 IC		09/07/2016 13:30	1	PC516I07008.d	Gemini-NX
STD0020 280-341287/6 ICISAV		09/07/2016 13:43	1	PC516I07009.d	Gemini-NX
STD0050 280-341287/7 IC		09/07/2016 13:55	1	PC516I07010.d	Gemini-NX
STD0100 280-341287/8 IC		09/07/2016 14:07	1	PC516I07011.d	Gemini-NX
STD0200 280-341287/9 IC		09/07/2016 14:20	1	PC516I07012.d	Gemini-NX
STD0500 280-341287/10 IC		09/07/2016 14:32	1	PC516I07013.d	Gemini-NX
STD1250 280-341287/11 IC		09/07/2016 14:44	1	PC516I07014.d	Gemini-NX
ICB 280-341287/12		09/07/2016 14:57	1	PC516I07015.d	Gemini-NX
ICV 280-341287/13		09/07/2016 15:09	1	PC516I07016.d	Gemini-NX
DLCK 280-341287/14		09/07/2016 15:21	1	PC516I07017.d	Gemini-NX
ZZZZZ		09/07/2016 15:34	1		Gemini-NX
ZZZZZ		09/07/2016 15:46	1		Gemini-NX
ZZZZZ		09/07/2016 15:58	1		Gemini-NX
ZZZZZ		09/07/2016 16:11	1		Gemini-NX
ZZZZZ		09/07/2016 16:23	1		Gemini-NX
ZZZZZ		09/07/2016 16:35	1		Gemini-NX
ZZZZZ		09/07/2016 16:48	1		Gemini-NX
ZZZZZ		09/07/2016 17:25	2		Gemini-NX
CCV 280-341287/23		09/07/2016 17:37	1		Gemini-NX
ZZZZZ		09/07/2016 17:49	1		Gemini-NX
ZZZZZ		09/07/2016 18:01	1		Gemini-NX
ZZZZZ		09/07/2016 18:14	1		Gemini-NX
ZZZZZ		09/07/2016 18:26	1		Gemini-NX
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ZZZZZ		09/07/2016 19:03	1		Gemini-NX
ZZZZZ		09/07/2016 19:15	1		Gemini-NX
ZZZZZ		09/07/2016 19:28	1		Gemini-NX
ZZZZZ		09/07/2016 19:40	1		Gemini-NX
CCV 280-341287/34		09/07/2016 19:52	1		Gemini-NX
ZZZZZ		09/07/2016 20:05	1		Gemini-NX
ZZZZZ		09/07/2016 20:17	1		Gemini-NX
ZZZZZ		09/07/2016 20:29	1		Gemini-NX
ZZZZZ		09/07/2016 20:42	1		Gemini-NX
ZZZZZ		09/07/2016 20:54	1		Gemini-NX
ZZZZZ		09/07/2016 21:06	1		Gemini-NX
ZZZZZ		09/07/2016 21:19	1		Gemini-NX
ZZZZZ		09/07/2016 21:31	1		Gemini-NX
ZZZZZ		09/07/2016 21:43	1		Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/07/2016 13:06

Analysis Batch Number: 341287 End Date: 09/07/2016 21:56

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-341287/44		09/07/2016 21:56	1		Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/08/2016 11:00

Analysis Batch Number: 341350 End Date: 09/08/2016 13:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-341350/3		09/08/2016 11:00	1	PC516I08006.d	Gemini-NX
MB 280-340982/1-A		09/08/2016 11:13	1	PC516I08007.d	Gemini-NX
LCS 280-340982/2-A		09/08/2016 11:25	1	PC516I08008.d	Gemini-NX
LCSD 280-340982/3-A		09/08/2016 11:37	1	PC516I08009.d	Gemini-NX
ZZZZZ		09/08/2016 11:50	1		Gemini-NX
ZZZZZ		09/08/2016 12:02	1		Gemini-NX
ZZZZZ		09/08/2016 12:14	1		Gemini-NX
ZZZZZ		09/08/2016 12:27	1		Gemini-NX
ZZZZZ		09/08/2016 12:39	1		Gemini-NX
280-87416-8		09/08/2016 12:51	1	PC516I08015.d	Gemini-NX
CCV 280-341350/13		09/08/2016 13:03	1	PC516I08016.d	Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/10/2016 01:55

Analysis Batch Number: 341622 End Date: 09/10/2016 03:45

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-341622/3		09/10/2016 01:55	1	PC516I09104.d	Gemini-NX
MB 280-341407/1-A		09/10/2016 02:07	1	PC516I09105.d	Gemini-NX
LCS 280-341407/2-A		09/10/2016 02:19	1	PC516I09106.d	Gemini-NX
LCSD 280-341407/3-A		09/10/2016 02:31	1	PC516I09107.d	Gemini-NX
ZZZZZ		09/10/2016 02:44	1		Gemini-NX
ZZZZZ		09/10/2016 02:56	1		Gemini-NX
280-87416-10		09/10/2016 03:08	1	PC516I09110.d	Gemini-NX
ZZZZZ		09/10/2016 03:21	1		Gemini-NX
ZZZZZ		09/10/2016 03:33	1		Gemini-NX
CCV 280-341622/12		09/10/2016 03:45	1	PC516I09113.d	Gemini-NX

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Batch Number: 339949 Batch Start Date: 08/29/16 13:40 Batch Analyst: Cokley, Cheyana D

Batch Method: PFC leach Batch End Date: 08/30/16 15:09

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	CalcMsg	PFC-LCS 00084	PFC_Surr&IS 00024	
MB 280-339949/1		PFC leach, DV-LC-0012		10.05 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
LCS 280-339949/2		PFC leach, DV-LC-0012		10.48 g	20.4 mL	CALC NOT SET TO RUN	0.4 mL	0.4 mL	
280-87416-A-1	SB-PFC-MW3-0.5	PFC leach, DV-LC-0012	T	10.00 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87416-A-2	SB-PFC-MW3-2.5	PFC leach, DV-LC-0012	T	10.01 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87416-A-4	SB-PFC-MW3-21.0	PFC leach, DV-LC-0012	T	10.00 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87416-A-5	SB-PFC-MW3-46.0	PFC leach, DV-LC-0012	T	10.14 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87416-A-9	SB-PFC-MW2-3.0	PFC leach, DV-LC-0012	T	10.17 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87416-A-7	SB-PFC-MW4-3.0	PFC leach, DV-LC-0012	T	10.00 g	20 mL	CALC NOT SET TO RUN		0.4 mL	
280-87416-A-7 MS	SB-PFC-MW4-3.0	PFC leach, DV-LC-0012	T	10.00 g	20.4 mL	CALC NOT SET TO RUN	0.4 mL	0.4 mL	
280-87416-A-7 MSD	SB-PFC-MW4-3.0	PFC leach, DV-LC-0012	T	10.00 g	20.4 mL	CALC NOT SET TO RUN	0.4 mL	0.4 mL	
280-87416-A-6	SB-PFC-MW4-0.5	PFC leach, DV-LC-0012	T	10.09 g	20 mL	CALC NOT SET TO RUN		0.4 mL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Batch Number: 339949 Batch Start Date: 08/29/16 13:40 Batch Analyst: Cokley, Cheyana D

Batch Method: PFC leach Batch End Date: 08/30/16 15:09

Batch Notes	
Analyst	cokleyc Pip:K Reviewer:glk
Balance ID	24750525
Batch Comment	Filtered by: cdc
HCl Concentration	2.4N
Lot # of hydrochloric acid	2.4_M_HCI_00004
HCl Pipette ID	k
MeOH Pipette #	Grad Cyl.
Methanol ID	HPLC_MeOH_00002
NaOH Concentration	0.67N
NaOH Lot #	0.67N_NaOH_00010
NaOH pipette ID	Grad. Cyl.
Nominal Amount Used	10 g
Ottawa Sand ID	156690
PVDF Filter ID	7006441
Perform Calculation (0=No, 1=Yes)	0
SOP Number	DV-OP-0019
Tumble End Time	1410
Tumble End Date	8.30.16
Tumble Start Time	1410
Tumble Start Date	8.29.16

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Batch Number: 340544 Batch Start Date: 09/01/16 19:29 Batch Analyst: Choi, Yu J

Batch Method: 3535 Batch End Date: 09/01/16 22:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00084	PFC_Surr&IS 00024
MB 280-340544/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-340544/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-340544/3		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-87416-A-3	MW-FB4	3535, DV-LC-0012	T	276.0 g	28.3 g	247.7 mL	5 mL		0.1 mL

Batch Notes	
Acid ID	2% Formic Aci_00098
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewed by: CDC
First End time	9.1.16 2157
H2O ID	HPLC_Water_00668
Pipette ID	O, SPE-1
Reagent ID	10% Ammonium Hydroxide
Reagent Lot Number	10%_NH4OH_00077
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Phenomenex Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	9.1.16 2009

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Batch Number: 340982 Batch Start Date: 09/07/16 17:42 Batch Analyst: Choi, Yu J

Batch Method: 3535 Batch End Date: 09/07/16 21:12

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00085	PFC_Surr&IS 00025
MB 280-340982/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-340982/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-340982/3		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-87416-A-8	MW-FB5	3535, DV-LC-0012	T	305.1 g	27.6 g	277.5 mL	5 mL		0.1 mL

Batch Notes	
Acid ID	2% Formic Aci_00099
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewed by:ELV
First End time	9.7.16 1941
H2O ID	HPLC_Water_00669/670/671
Pipette ID	M, SPE-1
Reagent ID	10% Ammonium Hydroxide
Reagent Lot Number	10%_NH4OH_00077
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Phenomenex Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	9.7.16 1848

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Batch Number: 341407 Batch Start Date: 09/08/16 22:13 Batch Analyst: Cokley, Cheyana D

Batch Method: 3535 Batch End Date: 09/09/16 00:23

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00085	PFC_Surr&IS 00024
MB 280-341407/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-341407/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-341407/3		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-87416-B-10	MW-FB6	3535, DV-LC-0012	T	323.4 g	27.2 g	296.2 mL	5 mL		0.1 mL

Batch Notes	
Acid ID	2% Formic Aci_00099
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewed by:n/a
First End time	9.8.16@2300
H2O ID	HPLC_Water_00671
Pipette ID	M, SPE-1
Reagent ID	10% Ammonium Hydroxide
Reagent Lot Number	10%_NH4OH_00077
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Phenomenex Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	9.8.16@2220

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-87416-1

SDG No.:

Project: Stewart International Airport (PFAS)

Client Sample ID	Lab Sample ID
SB-PFC-MW3-0.5	280-87416-1
SB-PFC-MW3-2.5	280-87416-2
SB-PFC-MW3-21.0	280-87416-4
SB-PFC-MW3-46.0	280-87416-5
SB-PFC-MW4-0.5	280-87416-6
SB-PFC-MW4-3.0	280-87416-7
SB-PFC-MW2-3.0	280-87416-9

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-87416-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: Moisture RL Date: 11/01/2009 00:00

Analyte	Wavelength/ Mass	RL (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: NOEQUIP Method: Moisture

Start Date: 08/31/2016 06:50 End Date: 08/31/2016 06:50

Lab Sample ID	D / F	Type	Time	Analytes																				
				% Sol	Moist																			
ZZZZZZ			06:50																					
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280-87416-1	1	T	06:50	X	X																			
280-87416-2	1	T	06:50	X	X																			
280-87416-4	1	T	06:50	X	X																			
280-87416-5	1	T	06:50	X	X																			
280-87416-5 DU	1	T	06:50	X	X																			

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: NOEQUIP Method: Moisture

Start Date: 08/31/2016 06:50 End Date: 08/31/2016 06:50

Lab Sample ID	D / F	Type	Time	Analytes																				
				% Sol	Moist																			
280-87416-6	1	T	06:50	X	X																			
280-87416-7	1	T	06:50	X	X																			
280-87416-9	1	T	06:50	X	X																			
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13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Instrument ID: NOEQUIP Method: Moisture

Start Date: 08/31/2016 06:50 End Date: 08/31/2016 06:50

Lab Sample ID	D / F	Type	Time	Analytes																				
				% Sol	Moist																			
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Prep Types

T = Total/NA

Gravimetric-Solids Data Review Checklist

LIMS Batch Number: 340248		Instrument ID: Bal
Analyst/1st Reviewer/Date: Kg Stull 09/02/2016	Method: Moisture	QC Type (circle): Standard LCSD DOD Q4 DoD Q5 QAPP_____ Other_____
Method (circle): 2540B 2540C 2540D 160.4 1664A 1664B 9071 D5057 D1429 D2216		
Matrix (circle): Water Solid Waste		

Review Items	Yes	No	NA	2nd rev	If No, why is data reportable?
A. Balance, Oven and DI water Checks					
Was the balance calibration verified before and after processing samples and noted in the "Balance Calibration Log" for the date(s) the samples were processed?	✓			✓	
Was the daily conductivity check of the deionized water recorded in the "Conductivity Logbook"?			✓	✓	
Temps. within the required temperature of the method: % Moisture: 100°C ± 5°C % Vol. 103°C - 105°C % Solids, TS, TSS, TVSS, VSS 103°C - 105°C TDS 180°C ± 2°C %Vol, TVSS, VSS 550°C ± 50°C Other:_____	✓			✓	
B. Method Requirements					
QC Batch contains no greater than 20 samples?	✓			✓	
If sample is visibly oily, was this noted on the benchsheet?	✓			✓	
Was final residue weight within minimum/maximum requirements?			✓	✓	
Were the initial and final drying dates and times recorded on the benchsheet/TALS and were all samples dried for at least one hour?	✓			✓	
C. Preparation/ Matrix QC					
Matrix Duplicate (RPD ± 5 %) (If > 5 %, determine corrective per SOP.) The RPD limit of 5% applies to TSS, TDS and TS, 20% RPD for all others	✓			✓	
Method blank < ½ RL or all reported samples > 10 X RL? - **(HEM, SGT HEM, and TDS the MB <RL)**			✓	✓	
LCS/LCSD run for batch and within QC limits?			✓	✓	
D. **Preparation/ Matrix QC**					
TDS/Conductivity ratio or historical data checked?			✓	✓	
For % Moisture, was the Final Dried Weight < the Initial Pan Weight or is the result greater than 100%?	✓			✓	
Were sample analyses done within holding time? **If no, create HTV NCM. NCM#**	✓			✓	
Were special client requirements met?			✓	✓	
Were data that were manually transcribed from instrument printouts into TALS verified 100% including dilution factors, significant figures and units?	✓			✓	
Do the prep and analysis dates in TALS reflect the actual dates?	✓			✓	
STD/True Value information is updated and included?	✓			✓	

Review Items	NA	Yes	No	2nd rev	If No, why is data reportable?
F. Data and TALS review					
1. Raw Data					
a. Unused data is clearly identified with reason not used		✓		✓	
b. All cross outs are initialed and dated		✓		✓	
c. Raw data includes the method, date, and analyst initials/signature		✓		✓	
2. TALS Samples Tab					
a. LIMS Sample IDs / Containers are correct		✓		✓	
b. Method and matrix are correct		✓		✓	
c. Date and time match raw data		✓		✓	
d. Dilutions are correct		✓		✓	
e. Correct suffix (DU, MS, MSD) designated (where applicable)		✓		✓	
3. TALS Worksheet Tab is complete and correct (Initial Amount, Final Amount, pH, etc.)		✓		✓	
4. TALS Reagent Tab is complete and correct and properly associated with QC samples. Confirm that reagent amounts are correct. If reagents are new verify that the correct COA has been attached to the source standard		✓		✓	
5. TALS QC Links Tab is correct		✓		✓	
6. TALS Sample Results Tab					
a. All unused data are marked Rejected or Accepted		✓		✓	
b. Set status for samples based on QC and sample results info (i.e., set to primary analysis with passing QC or reject samples without passing QC or samples that are over-range.)		✓		✓	
c. Any data that has a qualifier is commented on with appropriate action taken		✓		✓	
7. TALS Batch Information Screen documentation is complete		✓		✓	
8. Historical Data Checker: Check historical data. Print charts for outliers. Take corrective action as is appropriate		✓		✓	
9. TALS Status set to appropriate review level		✓		✓	
E. Final Report and NCMs (2nd level review only)					
1. Were all job/project requirements met?				✓	
2. Results for samples and QC correct on final report?				✓	
3. Are all necessary scanned documents in TALS?				✓	
4. NCMs reviewed for applicability, correct references to batches, grammar/typographical errors?				✓	

Comments: _____

CMK 9/2/16

2nd Reviewer CMK **Review Date:** 9/2/16

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-87416-1

SDG No.:

Batch Number: 340248 Batch Start Date: 08/31/16 06:48 Batch Analyst: Uge, Ikem E

Batch Method: Moisture Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
280-87416-A-1	SB-PFC-MW3-0.5	Moisture	T	38	1.30 g	16.27 g	15.82 g		
280-87416-A-2	SB-PFC-MW3-2.5	Moisture	T	39	1.30 g	17.18 g	15.61 g		
280-87416-A-4	SB-PFC-MW3-21.0	Moisture	T	40	1.30 g	16.64 g	14.83 g		
280-87416-A-5	SB-PFC-MW3-46.0	Moisture	T	41	1.30 g	16.75 g	14.69 g		
280-87416-A-5 DU	SB-PFC-MW3-46.0	Moisture	T	42	1.29 g	16.89 g	14.99 g		
280-87416-A-6	SB-PFC-MW4-0.5	Moisture	T	43	1.30 g	17.07 g	14.71 g		
280-87416-A-7	SB-PFC-MW4-3.0	Moisture	T	44	1.30 g	16.80 g	15.81 g		
280-87416-A-9	SB-PFC-MW2-3.0	Moisture	T	45	1.30 g	16.66 g	15.66 g		

Batch Notes	
Balance ID	H31422
Batch Comment	KMS training JP on first levelling
Date and Time Samples in Desiccator	09/01/2016 1313 KMS
Date and Time Samples out of Desiccator	09/01/2016 1424 JAP
Date samples were placed in the oven	08/31/16
Oven Temp In	103 Degrees C
Time samples were place in the oven	0956
Date samples were removed from oven	09/01/2016 KMS
Oven Temp Out	105 Degrees C
Time Samples were removed from oven	1313 KMS
Oven ID	3
Thermometer ID	227-694
Uncorrected In Temperature	103 Celsius
Uncorrected Out Temperature	105 Celsius

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Page ___ of ___

Name (for report and invoice): Melissa LaMacchia	Samplers Name (Printed): John Ifkovits / Matthew T. Kearney	Site/Project Identification: Stewart Int Airport (PFAs)
Company: HDR	P. O. #: 320008244	State (Location of site): NJ: ☐ NY: ☒ Other:
		Regulatory Program: NYSDEC DKQP: ☐
Address: 1 International Blvd 10th Floor	Analysis Turnaround Time: Standard ☒	
City: Mahwah State: NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone: 201-335-9300 Fax:		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No:

Sample Identification	Date	Time	Matrix	No. of Cont.	PFC-1014 - PFAs (UCMR4 list)	Sample Numbers
SB-PFC-MW3-0.5	Aug 19, 2016	0813	Soil	1	X	
SB-PFC-MW3-2.5	Aug 19, 2016	0830	Soil	1	X	
MW-FB4	Aug 19, 2016	0846	AQ	1	X	
SB-PFC-MW3-21.0	Aug 19, 2016	1038	Soil	1	X	
SB-PFC-MW3-46.0	Aug 19 2016	1208	Soil	1	X	
SB-PFC-MW4-0.5	8/24/16	0820	Soil	1	X	
SB-PFC-MW4-3.0	8/24/16	0845	Soil	3	X	MS/MSD also
MW-FB5	8/24/16	1440	AQ	2	X	rinsate blank
SB-PFC-MW2-3.0	8/25/16	1325	Soil	1	X	
MW-FB6	8/25/16	1705	AQ	2	X	rinsate blank

280-87416 Chain of Custody

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH Soil:
6 = Other _____, 7 = Other _____ Water:

Special Instructions: Lab Contact: Scappa NYSDEC Cat B Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) Matthew T. Kearney	HDR	8/25/16 1830	1)	TAD 8/26/16 0940
Relinquished by 2)	Company	Date / Time	Received by 2)	Company
Relinquished by 3)	Company	Date / Time	Received by 3)	Company
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132), Massachusetts (M-NJ312), North Carolina (No. 578)

TAL - 0016 (0715)

5.5 TAD IR#5 Transferred by DL 8/26/16

11/02/2016

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-87416-1

Login Number: 87416
List Number: 1
Creator: White, Denise E

List Source: TestAmerica Denver

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

ANALYTICAL REPORT

Job Number: 280-88381-1

Job Description: Stewart International Airport (PFAS)

For:
HDR Inc
1 International Blvd, 10th Floor
Mahwah, NJ 07495

Attention: Ms. Melissa LaMacchia

Approved for release.
Shalini Williams
Project Management Assistant II
9/30/2016 9:33 AM

Designee for
Sapna Nayyar, Project Manager I
777 New Durham Road, Edison, NJ, 08817
sapna.nayyar@testamericainc.com
09/30/2016

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CASE NARRATIVE

Client: HDR Inc

Project: Stewart International Airport (PFAS)

Report Number: 280-88381-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

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

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

RECEIPT

The samples were received on 09/17/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 16.6 C.

The following samples was received at the laboratory outside the required temperature criteria: PFC-MW-4 (280-88381-1), CB2K (280-88381-2), CB9A (280-88381-3), W6 (280-88381-4), ANG-CB-EB-091516 (280-88381-5), D27 (280-88381-6), D15-A (280-88381-7), ANG-MW-EB-091516 (280-88381-8), ANG-CB-FB-091516 (280-88381-9), STM-UP (280-88381-10), CB (280-88381-11), CB (280-88381-11[MS]), CB (280-88381-11[MSD]), C17 (280-88381-12), D8 (280-88381-13), CB-DUP (280-88381-14), PFC-MW-2 (280-88381-15), MW-DUP (280-88381-16), PFC-MW-3 (280-88381-17), PFC-MW-3 (280-88381-17[MS]), PFC-MW-3 (280-88381-17[MSD]), CB-FB-0914-16 (280-88381-18), CB-EB-091416 (280-88381-19), ANG-CB-EB-091616 (280-88381-20) and ANG-FB-091616 (280-88381-21). The client was contacted regarding this issue, and the laboratory was instructed to <CHOOSE_ONE> proceed with/cancel analysis.

Cooler received with not enough ice and ice melted, out of temp at 16.6°C.

The container label for the following sample(s) did not match the information listed on the Chain-of-Custody (COC): D8, SAMPLE 13 The container labels list DB-8, while the COC lists D8.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

PERFLUORINATED HYDROCARBONS (PFC)

Samples PFC-MW-4 (280-88381-1), CB2K (280-88381-2), CB9A (280-88381-3), W6 (280-88381-4), ANG-CB-EB-091516 (280-88381-5), D27 (280-88381-6), D15-A (280-88381-7), ANG-MW-EB-091516 (280-88381-8), ANG-CB-FB-091516 (280-88381-9), STM-UP (280-88381-10), CB (280-88381-11), C17 (280-88381-12), D8 (280-88381-13), CB-DUP (280-88381-14), PFC-MW-2 (280-88381-15), MW-DUP (280-88381-16), PFC-MW-3 (280-88381-17), CB-FB-0914-16 (280-88381-18), CB-EB-091416 (280-88381-19), ANG-CB-EB-091616 (280-88381-20) and ANG-FB-091616 (280-88381-21) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with DV-LC-0012. The samples were prepared on 09/27/2016 and analyzed on 09/28/2016 and 09/29/2016.

13C4 PFBA (ISTD) retention times for the following samples were outside the acceptance criteria of +/-0.5 minutes from the mid-point of the initial calibration: MW-DUP (280-88381-16), PFC-MW-3 (280-88381-17), PFC-MW-3 (280-88381-17[MS]), PFC-MW-3 (280-88381-17[MSD]), CB-FB-0914-16 (280-88381-18), CB-EB-091416 (280-88381-19), ANG-CB-EB-091616 (280-88381-20), ANG-FB-091616 (280-88381-21), (LCS 280-343904/2-A), (LCSD 280-343904/3-A) and (MB 280-343904/1-A).

This particular IS is associated with PFBA which was selected based on retention time of 13C4 PFBA. The CCV's are just in control, while the samples and batch QC are just over the limits of being 0.5minutes.

PFC preparation batch 280-343904 and analytical batch 280-344279

MW-DUP (280-88381-16), PFC-MW-3 (280-88381-17), PFC-MW-3 (280-88381-17[MS]), PFC-MW-3 (280-88381-17[MSD]), CB-FB-0914-16 (280-88381-18), CB-EB-091416 (280-88381-19), ANG-CB-EB-091616 (280-88381-20), ANG-FB-091616 (280-88381-21), (LCS 280-343904/2-A), (LCSD 280-343904/3-A) and (MB 280-343904/1-A)

Internal standard responses were outside of acceptance limits for the following samples: MW-DUP (280-88381-16), PFC-MW-3 (280-88381-17), PFC-MW-3 (280-88381-17[MS]) and PFC-MW-3 (280-88381-17[MSD]). The sample(s) shows evidence of matrix interference.

PFC preparation batch 280-343904 and analytical batch 280-344279

The samples failed for internal standards, the method blank and LCS were in control..

Internal standard responses were outside of acceptance limits for the following sample: D27 (280-88381-6). The sample(s) shows evidence of matrix interference.

PFC preparation batch 280-343884 and analytical batch 280-344348

The sample failed for % recovery for several internal standards, the method blank and LCS were in control.

The surrogate recovery for the blank associated with preparation batch 280-343884 and analytical batch 280-344280 was outside the upper control limits for 13C8 PFOS at 131% (limits 45-130). All sample surrogates were in control, therefore, the data has been reported with narrative.

Internal standard responses were outside of acceptance limits for the following samples: PFC-MW-4 (280-88381-1), CB2K (280-88381-2), CB9A (280-88381-3), W6 (280-88381-4), D27 (280-88381-6), D15-A (280-88381-7), ANG-CB-FB-091516 (280-88381-9), STM-UP (280-88381-10), CB (280-88381-11[MS]), CB (280-88381-11[MSD]), C17 (280-88381-12), D8 (280-88381-13), CB-DUP (280-88381-14) and PFC-MW-2 (280-88381-15). The samples show evidence of matrix interference. Failing internal standards are not associated with the clients requested target analytes. Report with narrative.

3C4 PFBA (ISTD) retention times for the following samples were outside the acceptance criteria of +/-0.5 minutes from the mid-point of the initial calibration: CB9A (280-88381-3), ANG-CB-FB-091516 (280-88381-9), STM-UP (280-88381-10) and (LCS 280-343884/2-A). This IS is associated with compound PFBA which is not on the client's requested target analyte list. Report with narrative.

13C8 PFOS failed the surrogate recovery criteria high for MB 280-343884/1-A. Refer to the QC report for details.

Sample D27 (280-88381-6)[4X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: The PFC LCS was not verified at time of extraction.

A deviation from the Standard Operating Procedure (SOP) occurred. The PFC LCS was not verified at time of extraction.

No other difficulties were encountered during the PFC analysis.

All other quality control parameters were within the acceptance limits.

Sample Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-88381-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-88381-1	PFC-MW-4	Water	09/15/16 12:40	09/17/16 08:45
280-88381-2	CB2K	Water	09/15/16 13:40	09/17/16 08:45
280-88381-3	CB9A	Water	09/15/16 14:05	09/17/16 08:45
280-88381-4	W6	Water	09/15/16 14:35	09/17/16 08:45
280-88381-5	ANG-CB-EB-091516	Water	09/15/16 14:45	09/17/16 08:45
280-88381-6	D27	Water	09/15/16 15:15	09/17/16 08:45
280-88381-7	D15-A	Water	09/15/16 16:00	09/17/16 08:45
280-88381-8	ANG-MW-EB-091516	Water	09/15/16 13:00	09/17/16 08:45
280-88381-9	ANG-CB-FB-091516	Water	09/15/16 16:10	09/17/16 08:45
280-88381-10	STM-UP	Water	09/15/16 13:50	09/17/16 08:45
280-88381-11	CB	Water	09/14/16 08:57	09/17/16 08:45
280-88381-12	C17	Water	09/14/16 08:30	09/17/16 08:45
280-88381-13	D8	Water	09/14/16 09:30	09/17/16 08:45
280-88381-14	CB-DUP	Water	09/14/16 10:00	09/17/16 08:45
280-88381-15	PFC-MW-2	Water	09/14/16 12:05	09/17/16 08:45
280-88381-16	MW-DUP	Water	09/14/16 12:30	09/17/16 08:45
280-88381-17	PFC-MW-3	Water	09/14/16 16:25	09/17/16 08:45
280-88381-18	CB-FB-0914-16	Water	09/14/16 16:50	09/17/16 08:45
280-88381-19	CB-EB-091416	Water	09/14/16 16:55	09/17/16 08:45
280-88381-20	ANG-CB-EB-091616	Water	09/16/16 15:40	09/17/16 08:45
280-88381-21	ANG-FB-091616	Water	09/16/16 15:50	09/17/16 08:45

Client Sample ID: PFC-MW-4 — Lab Sample ID: 280-88381-1

No Detections.

Client Sample ID: CB2K — Lab Sample ID: 280-88381-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.0091	J	0.018	0.0075	ug/L	1		DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.51		0.027	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.064		0.027	0.0063	ug/L	1		DV-LC-0012	Total/NA
Perfluorononanoic acid (PFNA)	0.052		0.036	0.016	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.071		0.027	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.52		0.018	0.0089	ug/L	1		DV-LC-0012	Total/NA

Client Sample ID: CB9A — Lab Sample ID: 280-88381-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.19		0.029	0.013	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.054		0.029	0.0068	ug/L	1		DV-LC-0012	Total/NA
Perfluorononanoic acid (PFNA)	0.031	J	0.039	0.017	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.23		0.029	0.013	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.32		0.020	0.0096	ug/L	1		DV-LC-0012	Total/NA

Client Sample ID: W6 — Lab Sample ID: 280-88381-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.014	J	0.028	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.020	J	0.028	0.0065	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.017	J	0.028	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.023		0.019	0.0091	ug/L	1		DV-LC-0012	Total/NA

Client Sample ID: ANG-CB-EB-091516 — Lab Sample ID: 280-88381-5

No Detections.

Client Sample ID: D27 — Lab Sample ID: 280-88381-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.15		0.018	0.0072	ug/L	1		DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.56		0.026	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	1.22		0.026	0.0061	ug/L	1		DV-LC-0012	Total/NA
Perfluorononanoic acid (PFNA)	0.023	J	0.035	0.015	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.28		0.018	0.0086	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	3.61	D	0.11	0.047	ug/L	4		DV-LC-0012	Total/NA

Client Sample ID: D15-A — Lab Sample ID: 280-88381-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.15		0.028	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.051		0.028	0.0064	ug/L	1		DV-LC-0012	Total/NA
Perfluorononanoic acid (PFNA)	0.016	J	0.037	0.016	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.037		0.028	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.22		0.018	0.0090	ug/L	1		DV-LC-0012	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-88381-1

Client Sample ID: ANG-MW-EB-091516 — Lab Sample ID: 280-88381-8

No Detections.

Client Sample ID: ANG-CB-FB-091516 — Lab Sample ID: 280-88381-9

No Detections.

Client Sample ID: STM-UP — Lab Sample ID: 280-88381-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.022		0.018	0.0075	ug/L	1		DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.033		0.027	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.14		0.027	0.0063	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.22		0.027	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.029		0.018	0.0089	ug/L	1		DV-LC-0012	Total/NA

Client Sample ID: CB — Lab Sample ID: 280-88381-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.0084	J	0.019	0.0077	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.029		0.028	0.0065	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.055		0.028	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.013	J	0.019	0.0091	ug/L	1		DV-LC-0012	Total/NA

Client Sample ID: C17 — Lab Sample ID: 280-88381-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.023		0.020	0.0081	ug/L	1		DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.043		0.029	0.013	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.16		0.029	0.0068	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.46		0.029	0.013	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.040		0.020	0.0096	ug/L	1		DV-LC-0012	Total/NA

Client Sample ID: D8 — Lab Sample ID: 280-88381-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.045		0.017	0.0072	ug/L	1		DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.16		0.026	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.33		0.026	0.0061	ug/L	1		DV-LC-0012	Total/NA
Perfluorononanoic acid (PFNA)	0.026	J	0.035	0.015	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.74		0.026	0.012	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.20		0.017	0.0085	ug/L	1		DV-LC-0012	Total/NA

Client Sample ID: CB-DUP — Lab Sample ID: 280-88381-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.044		0.017	0.0070	ug/L	1		DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.16		0.025	0.011	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.30		0.025	0.0059	ug/L	1		DV-LC-0012	Total/NA
Perfluorononanoic acid (PFNA)	0.031	J	0.034	0.015	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.98		0.025	0.011	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.20		0.017	0.0083	ug/L	1		DV-LC-0012	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: PFC-MW-2 — Lab Sample ID: 280-88381-15

No Detections.

Client Sample ID: MW-DUP — Lab Sample ID: 280-88381-16

No Detections.

Client Sample ID: PFC-MW-3 — Lab Sample ID: 280-88381-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.10		0.019	0.0080	ug/L	1		DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.060		0.029	0.013	ug/L	1		DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.15		0.029	0.0068	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.021	J	0.029	0.013	ug/L	1		DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.037		0.019	0.0095	ug/L	1		DV-LC-0012	Total/NA

Client Sample ID: CB-FB-0914-16 — Lab Sample ID: 280-88381-18

No Detections.

Client Sample ID: CB-EB-091416 — Lab Sample ID: 280-88381-19

No Detections.

Client Sample ID: ANG-CB-EB-091616 — Lab Sample ID: 280-88381-20

No Detections.

Client Sample ID: ANG-FB-091616 — Lab Sample ID: 280-88381-21

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-88381-1

Method	Method Description	Protocol	Laboratory
DV-LC-0012	Perfluorinated Hydrocarbons	TAL-DEN	TAL DEN

Protocol References:

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Client Sample ID: PFC-MW-4

Lab Sample ID: 280-88381-1
Date Collected: 09/15/16 12:40
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0077	U	0.019	0.0077	ug/L		09/27/16 10:45	09/29/16 00:46	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.028	0.012	ug/L		09/27/16 10:45	09/29/16 00:46	1
Perfluorohexane Sulfonate (PFHxS)	0.0065	U	0.028	0.0065	ug/L		09/27/16 10:45	09/29/16 00:46	1
Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016	ug/L		09/27/16 10:45	09/29/16 00:46	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.028	0.012	ug/L		09/27/16 10:45	09/29/16 00:46	1
Perfluorooctanoic acid (PFOA)	0.0091	U	0.019	0.0091	ug/L		09/27/16 10:45	09/29/16 00:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*109*		*60 - 155*	*09/27/16 10:45*	*09/29/16 00:46*	*1*
13C8 PFOS	*121*		*45 - 130*	*09/27/16 10:45*	*09/29/16 00:46*	*1*

Client Sample ID: CB2K

Lab Sample ID: 280-88381-2
Date Collected: 09/15/16 13:40
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	**0.0091**	**J**	0.018	0.0075	ug/L		09/27/16 10:45	09/29/16 00:58	1
Perfluoroheptanoic acid (PFHpA)	**0.51**		0.027	0.012	ug/L		09/27/16 10:45	09/29/16 00:58	1
Perfluorohexane Sulfonate (PFHxS)	**0.064**		0.027	0.0063	ug/L		09/27/16 10:45	09/29/16 00:58	1
Perfluorononanoic acid (PFNA)	**0.052**		0.036	0.016	ug/L		09/27/16 10:45	09/29/16 00:58	1
Perfluorooctanesulfonic acid (PFOS)	**0.071**		0.027	0.012	ug/L		09/27/16 10:45	09/29/16 00:58	1
Perfluorooctanoic acid (PFOA)	**0.52**		0.018	0.0089	ug/L		09/27/16 10:45	09/29/16 00:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*113*		*60 - 155*	*09/27/16 10:45*	*09/29/16 00:58*	*1*
13C8 PFOS	*124*		*45 - 130*	*09/27/16 10:45*	*09/29/16 00:58*	*1*

Client Sample ID: CB9A

Lab Sample ID: 280-88381-3
Date Collected: 09/15/16 14:05
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0081	U	0.020	0.0081	ug/L		09/27/16 10:45	09/29/16 01:10	1
Perfluoroheptanoic acid (PFHpA)	**0.19**		0.029	0.013	ug/L		09/27/16 10:45	09/29/16 01:10	1
Perfluorohexane Sulfonate (PFHxS)	**0.054**		0.029	0.0068	ug/L		09/27/16 10:45	09/29/16 01:10	1
Perfluorononanoic acid (PFNA)	**0.031**	**J**	0.039	0.017	ug/L		09/27/16 10:45	09/29/16 01:10	1
Perfluorooctanesulfonic acid (PFOS)	**0.23**		0.029	0.013	ug/L		09/27/16 10:45	09/29/16 01:10	1
Perfluorooctanoic acid (PFOA)	**0.32**		0.020	0.0096	ug/L		09/27/16 10:45	09/29/16 01:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*115*		*60 - 155*	*09/27/16 10:45*	*09/29/16 01:10*	*1*
13C8 PFOS	*113*		*45 - 130*	*09/27/16 10:45*	*09/29/16 01:10*	*1*

Client Sample ID: W6
Lab Sample ID: 280-88381-4
Date Collected: 09/15/16 14:35
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0077	U	0.019	0.0077	ug/L		09/27/16 10:45	09/29/16 01:22	1
Perfluoroheptanoic acid (PFHpA)	**0.014**	**J**	0.028	0.012	ug/L		09/27/16 10:45	09/29/16 01:22	1
Perfluorohexane Sulfonate (PFHxS)	**0.020**	**J**	0.028	0.0065	ug/L		09/27/16 10:45	09/29/16 01:22	1
Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016	ug/L		09/27/16 10:45	09/29/16 01:22	1
Perfluorooctanesulfonic acid (PFOS)	**0.017**	**J**	0.028	0.012	ug/L		09/27/16 10:45	09/29/16 01:22	1
Perfluorooctanoic acid (PFOA)	**0.023**		0.019	0.0091	ug/L		09/27/16 10:45	09/29/16 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*109*		*60 - 155*	*09/27/16 10:45*	*09/29/16 01:22*	*1*
13C8 PFOS	*109*		*45 - 130*	*09/27/16 10:45*	*09/29/16 01:22*	*1*

Client Sample ID: ANG-CB-EB-091516
Lab Sample ID: 280-88381-5
Date Collected: 09/15/16 14:45
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0070	U	0.017	0.0070	ug/L		09/27/16 10:45	09/29/16 01:35	1
Perfluoroheptanoic acid (PFHpA)	0.011	U	0.026	0.011	ug/L		09/27/16 10:45	09/29/16 01:35	1
Perfluorohexane Sulfonate (PFHxS)	0.0059	U	0.026	0.0059	ug/L		09/27/16 10:45	09/29/16 01:35	1
Perfluorononanoic acid (PFNA)	0.015	U	0.034	0.015	ug/L		09/27/16 10:45	09/29/16 01:35	1
Perfluorooctanesulfonic acid (PFOS)	0.011	U	0.026	0.011	ug/L		09/27/16 10:45	09/29/16 01:35	1
Perfluorooctanoic acid (PFOA)	0.0084	U	0.017	0.0084	ug/L		09/27/16 10:45	09/29/16 01:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*108*		*60 - 155*	*09/27/16 10:45*	*09/29/16 01:35*	*1*
13C8 PFOS	*113*		*45 - 130*	*09/27/16 10:45*	*09/29/16 01:35*	*1*

Client Sample ID: D27
Lab Sample ID: 280-88381-6
Date Collected: 09/15/16 15:15
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	**0.15**		0.018	0.0072	ug/L		09/27/16 10:45	09/29/16 01:47	1
Perfluoroheptanoic acid (PFHpA)	**0.56**		0.026	0.012	ug/L		09/27/16 10:45	09/29/16 01:47	1
Perfluorohexane Sulfonate (PFHxS)	**1.22**		0.026	0.0061	ug/L		09/27/16 10:45	09/29/16 01:47	1
Perfluorononanoic acid (PFNA)	**0.023**	**J**	0.035	0.015	ug/L		09/27/16 10:45	09/29/16 01:47	1
Perfluorooctanoic acid (PFOA)	**0.28**		0.018	0.0086	ug/L		09/27/16 10:45	09/29/16 01:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*112*		*60 - 155*	*09/27/16 10:45*	*09/29/16 01:47*	*1*
13C8 PFOS	*122*		*45 - 130*	*09/27/16 10:45*	*09/29/16 01:47*	*1*

Method: DV-LC-0012 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**3.61**	**D**	0.11	0.047	ug/L		09/27/16 10:45	09/29/16 14:05	4

Client Sample ID: D27
Date Collected: 09/15/16 15:15
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-6
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	108	D	60 - 155	09/27/16 10:45	09/29/16 14:05	4
13C8 PFOS	102	D	45 - 130	09/27/16 10:45	09/29/16 14:05	4

Client Sample ID: D15-A
Date Collected: 09/15/16 16:00
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-7
Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0076	U	0.018	0.0076	ug/L		09/27/16 10:45	09/29/16 01:59	1
Perfluoroheptanoic acid (PFHpA)	**0.15**		0.028	0.012	ug/L		09/27/16 10:45	09/29/16 01:59	1
Perfluorohexane Sulfonate (PFHxS)	**0.051**		0.028	0.0064	ug/L		09/27/16 10:45	09/29/16 01:59	1
Perfluorononanoic acid (PFNA)	**0.016**	**J**	0.037	0.016	ug/L		09/27/16 10:45	09/29/16 01:59	1
Perfluorooctanesulfonic acid (PFOS)	**0.037**		0.028	0.012	ug/L		09/27/16 10:45	09/29/16 01:59	1
Perfluorooctanoic acid (PFOA)	**0.22**		0.018	0.0090	ug/L		09/27/16 10:45	09/29/16 01:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	115		60 - 155	09/27/16 10:45	09/29/16 01:59	1
13C8 PFOS	111		45 - 130	09/27/16 10:45	09/29/16 01:59	1

Client Sample ID: ANG-MW-EB-091516
Date Collected: 09/15/16 13:00
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-8
Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078	ug/L		09/27/16 10:45	09/29/16 02:24	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.028	0.012	ug/L		09/27/16 10:45	09/29/16 02:24	1
Perfluorohexane Sulfonate (PFHxS)	0.0066	U	0.028	0.0066	ug/L		09/27/16 10:45	09/29/16 02:24	1
Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016	ug/L		09/27/16 10:45	09/29/16 02:24	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.028	0.013	ug/L		09/27/16 10:45	09/29/16 02:24	1
Perfluorooctanoic acid (PFOA)	0.0092	U	0.019	0.0092	ug/L		09/27/16 10:45	09/29/16 02:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	113		60 - 155	09/27/16 10:45	09/29/16 02:24	1
13C8 PFOS	117		45 - 130	09/27/16 10:45	09/29/16 02:24	1

Client Sample ID: ANG-CB-FB-091516
Date Collected: 09/15/16 16:10
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-9
Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0072	U	0.017	0.0072	ug/L		09/27/16 10:45	09/29/16 02:36	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.026	0.012	ug/L		09/27/16 10:45	09/29/16 02:36	1
Perfluorohexane Sulfonate (PFHxS)	0.0061	U	0.026	0.0061	ug/L		09/27/16 10:45	09/29/16 02:36	1
Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015	ug/L		09/27/16 10:45	09/29/16 02:36	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012	ug/L		09/27/16 10:45	09/29/16 02:36	1
Perfluorooctanoic acid (PFOA)	0.0086	U	0.017	0.0086	ug/L		09/27/16 10:45	09/29/16 02:36	1

Client Sample ID: ANG-CB-FB-091516

Lab Sample ID: 280-88381-9

Date Collected: 09/15/16 16:10
Matrix: Water
Date Received: 09/17/16 08:45

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*114*		*60 - 155*	*09/27/16 10:45*	*09/29/16 02:36*	*1*
13C8 PFOS	*115*		*45 - 130*	*09/27/16 10:45*	*09/29/16 02:36*	*1*

Client Sample ID: STM-UP

Lab Sample ID: 280-88381-10

Date Collected: 09/15/16 13:50
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	**0.022**		0.018	0.0075	ug/L		09/27/16 10:45	09/29/16 02:49	1
Perfluoroheptanoic acid (PFHpA)	**0.033**		0.027	0.012	ug/L		09/27/16 10:45	09/29/16 02:49	1
Perfluorohexane Sulfonate (PFHxS)	**0.14**		0.027	0.0063	ug/L		09/27/16 10:45	09/29/16 02:49	1
Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016	ug/L		09/27/16 10:45	09/29/16 02:49	1
Perfluorooctanesulfonic acid (PFOS)	**0.22**		0.027	0.012	ug/L		09/27/16 10:45	09/29/16 02:49	1
Perfluorooctanoic acid (PFOA)	**0.029**		0.018	0.0089	ug/L		09/27/16 10:45	09/29/16 02:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*116*		*60 - 155*	*09/27/16 10:45*	*09/29/16 02:49*	*1*
13C8 PFOS	*114*		*45 - 130*	*09/27/16 10:45*	*09/29/16 02:49*	*1*

Client Sample ID: CB

Lab Sample ID: 280-88381-11

Date Collected: 09/14/16 08:57
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	**0.0084**	**J**	0.019	0.0077	ug/L		09/27/16 10:45	09/29/16 03:01	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.028	0.012	ug/L		09/27/16 10:45	09/29/16 03:01	1
Perfluorohexane Sulfonate (PFHxS)	**0.029**		0.028	0.0065	ug/L		09/27/16 10:45	09/29/16 03:01	1
Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016	ug/L		09/27/16 10:45	09/29/16 03:01	1
Perfluorooctanesulfonic acid (PFOS)	**0.055**		0.028	0.012	ug/L		09/27/16 10:45	09/29/16 03:01	1
Perfluorooctanoic acid (PFOA)	**0.013**	**J**	0.019	0.0091	ug/L		09/27/16 10:45	09/29/16 03:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*114*		*60 - 155*	*09/27/16 10:45*	*09/29/16 03:01*	*1*
13C8 PFOS	*117*		*45 - 130*	*09/27/16 10:45*	*09/29/16 03:01*	*1*

Client Sample ID: C17

Lab Sample ID: 280-88381-12

Date Collected: 09/14/16 08:30
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	**0.023**		0.020	0.0081	ug/L		09/27/16 10:45	09/29/16 03:38	1
Perfluoroheptanoic acid (PFHpA)	**0.043**		0.029	0.013	ug/L		09/27/16 10:45	09/29/16 03:38	1
Perfluorohexane Sulfonate (PFHxS)	**0.16**		0.029	0.0068	ug/L		09/27/16 10:45	09/29/16 03:38	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L		09/27/16 10:45	09/29/16 03:38	1

Client Sample ID: C17

Lab Sample ID: 280-88381-12

Date Collected: 09/14/16 08:30

Matrix: Water

Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.46		0.029	0.013	ug/L		09/27/16 10:45	09/29/16 03:38	1
Perfluorooctanoic acid (PFOA)	0.040		0.020	0.0096	ug/L		09/27/16 10:45	09/29/16 03:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*113*		*60 - 155*	*09/27/16 10:45*	*09/29/16 03:38*	*1*
13C8 PFOS	*126*		*45 - 130*	*09/27/16 10:45*	*09/29/16 03:38*	*1*

Client Sample ID: D8

Lab Sample ID: 280-88381-13

Date Collected: 09/14/16 09:30

Matrix: Water

Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.045		0.017	0.0072	ug/L		09/27/16 10:45	09/29/16 03:50	1
Perfluoroheptanoic acid (PFHpA)	0.16		0.026	0.012	ug/L		09/27/16 10:45	09/29/16 03:50	1
Perfluorohexane Sulfonate (PFHxS)	0.33		0.026	0.0061	ug/L		09/27/16 10:45	09/29/16 03:50	1
Perfluorononanoic acid (PFNA)	0.026	J	0.035	0.015	ug/L		09/27/16 10:45	09/29/16 03:50	1
Perfluorooctanesulfonic acid (PFOS)	0.74		0.026	0.012	ug/L		09/27/16 10:45	09/29/16 03:50	1
Perfluorooctanoic acid (PFOA)	0.20		0.017	0.0085	ug/L		09/27/16 10:45	09/29/16 03:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*115*		*60 - 155*	*09/27/16 10:45*	*09/29/16 03:50*	*1*
13C8 PFOS	*120*		*45 - 130*	*09/27/16 10:45*	*09/29/16 03:50*	*1*

Client Sample ID: CB-DUP

Lab Sample ID: 280-88381-14

Date Collected: 09/14/16 10:00

Matrix: Water

Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.044		0.017	0.0070	ug/L		09/27/16 10:45	09/29/16 04:03	1
Perfluoroheptanoic acid (PFHpA)	0.16		0.025	0.011	ug/L		09/27/16 10:45	09/29/16 04:03	1
Perfluorohexane Sulfonate (PFHxS)	0.30		0.025	0.0059	ug/L		09/27/16 10:45	09/29/16 04:03	1
Perfluorononanoic acid (PFNA)	0.031	J	0.034	0.015	ug/L		09/27/16 10:45	09/29/16 04:03	1
Perfluorooctanesulfonic acid (PFOS)	0.98		0.025	0.011	ug/L		09/27/16 10:45	09/29/16 04:03	1
Perfluorooctanoic acid (PFOA)	0.20		0.017	0.0083	ug/L		09/27/16 10:45	09/29/16 04:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*115*		*60 - 155*	*09/27/16 10:45*	*09/29/16 04:03*	*1*
13C8 PFOS	*123*		*45 - 130*	*09/27/16 10:45*	*09/29/16 04:03*	*1*

Client Sample ID: PFC-MW-2

Lab Sample ID: 280-88381-15

Date Collected: 09/14/16 12:05

Matrix: Water

Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0070	U	0.017	0.0070	ug/L		09/27/16 10:45	09/29/16 04:15	1
Perfluoroheptanoic acid (PFHpA)	0.011	U	0.026	0.011	ug/L		09/27/16 10:45	09/29/16 04:15	1
Perfluorohexane Sulfonate (PFHxS)	0.0059	U	0.026	0.0059	ug/L		09/27/16 10:45	09/29/16 04:15	1
Perfluorononanoic acid (PFNA)	0.015	U	0.034	0.015	ug/L		09/27/16 10:45	09/29/16 04:15	1
Perfluorooctanesulfonic acid (PFOS)	0.011	U	0.026	0.011	ug/L		09/27/16 10:45	09/29/16 04:15	1
Perfluorooctanoic acid (PFOA)	0.0083	U	0.017	0.0083	ug/L		09/27/16 10:45	09/29/16 04:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*111*		*60 - 155*	*09/27/16 10:45*	*09/29/16 04:15*	*1*
13C8 PFOS	*123*		*45 - 130*	*09/27/16 10:45*	*09/29/16 04:15*	*1*

Client Sample ID: MW-DUP

Lab Sample ID: 280-88381-16

Date Collected: 09/14/16 12:30

Matrix: Water

Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0071	U	0.017	0.0071	ug/L		09/27/16 10:55	09/28/16 20:39	1
Perfluoroheptanoic acid (PFHpA)	0.011	U	0.026	0.011	ug/L		09/27/16 10:55	09/28/16 20:39	1
Perfluorohexane Sulfonate (PFHxS)	0.0060	U	0.026	0.0060	ug/L		09/27/16 10:55	09/28/16 20:39	1
Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015	ug/L		09/27/16 10:55	09/28/16 20:39	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012	ug/L		09/27/16 10:55	09/28/16 20:39	1
Perfluorooctanoic acid (PFOA)	0.0085	U	0.017	0.0085	ug/L		09/27/16 10:55	09/28/16 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*104*		*60 - 155*	*09/27/16 10:55*	*09/28/16 20:39*	*1*
13C8 PFOS	*120*		*45 - 130*	*09/27/16 10:55*	*09/28/16 20:39*	*1*

Client Sample ID: PFC-MW-3

Lab Sample ID: 280-88381-17

Date Collected: 09/14/16 16:25

Matrix: Water

Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	**0.10**		0.019	0.0080	ug/L		09/27/16 10:55	09/28/16 20:51	1
Perfluoroheptanoic acid (PFHpA)	**0.060**		0.029	0.013	ug/L		09/27/16 10:55	09/28/16 20:51	1
Perfluorohexane Sulfonate (PFHxS)	**0.15**		0.029	0.0068	ug/L		09/27/16 10:55	09/28/16 20:51	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L		09/27/16 10:55	09/28/16 20:51	1
Perfluorooctanesulfonic acid (PFOS)	**0.021**	**J**	0.029	0.013	ug/L		09/27/16 10:55	09/28/16 20:51	1
Perfluorooctanoic acid (PFOA)	**0.037**		0.019	0.0095	ug/L		09/27/16 10:55	09/28/16 20:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*112*		*60 - 155*	*09/27/16 10:55*	*09/28/16 20:51*	*1*
13C8 PFOS	*118*		*45 - 130*	*09/27/16 10:55*	*09/28/16 20:51*	*1*

Client Sample ID: CB-FB-0914-16

Lab Sample ID: 280-88381-18

Date Collected: 09/14/16 16:50
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0073	U	0.018	0.0073	ug/L		09/27/16 10:55	09/28/16 21:28	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.026	0.012	ug/L		09/27/16 10:55	09/28/16 21:28	1
Perfluorohexane Sulfonate (PFHxS)	0.0061	U	0.026	0.0061	ug/L		09/27/16 10:55	09/28/16 21:28	1
Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015	ug/L		09/27/16 10:55	09/28/16 21:28	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012	ug/L		09/27/16 10:55	09/28/16 21:28	1
Perfluorooctanoic acid (PFOA)	0.0086	U	0.018	0.0086	ug/L		09/27/16 10:55	09/28/16 21:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*111*		*60 - 155*	*09/27/16 10:55*	*09/28/16 21:28*	*1*
13C8 PFOS	*114*		*45 - 130*	*09/27/16 10:55*	*09/28/16 21:28*	*1*

Client Sample ID: CB-EB-091416

Lab Sample ID: 280-88381-19

Date Collected: 09/14/16 16:55
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0072	U	0.018	0.0072	ug/L		09/27/16 10:55	09/28/16 21:41	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.026	0.012	ug/L		09/27/16 10:55	09/28/16 21:41	1
Perfluorohexane Sulfonate (PFHxS)	0.0061	U	0.026	0.0061	ug/L		09/27/16 10:55	09/28/16 21:41	1
Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015	ug/L		09/27/16 10:55	09/28/16 21:41	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012	ug/L		09/27/16 10:55	09/28/16 21:41	1
Perfluorooctanoic acid (PFOA)	0.0086	U	0.018	0.0086	ug/L		09/27/16 10:55	09/28/16 21:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*110*		*60 - 155*	*09/27/16 10:55*	*09/28/16 21:41*	*1*
13C8 PFOS	*113*		*45 - 130*	*09/27/16 10:55*	*09/28/16 21:41*	*1*

Client Sample ID: ANG-CB-EB-091616

Lab Sample ID: 280-88381-20

Date Collected: 09/16/16 15:40
Matrix: Water
Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0072	U	0.017	0.0072	ug/L		09/27/16 10:55	09/28/16 22:05	1
Perfluoroheptanoic acid (PFHpA)	0.011	U	0.026	0.011	ug/L		09/27/16 10:55	09/28/16 22:05	1
Perfluorohexane Sulfonate (PFHxS)	0.0061	U	0.026	0.0061	ug/L		09/27/16 10:55	09/28/16 22:05	1
Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015	ug/L		09/27/16 10:55	09/28/16 22:05	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012	ug/L		09/27/16 10:55	09/28/16 22:05	1
Perfluorooctanoic acid (PFOA)	0.0085	U	0.017	0.0085	ug/L		09/27/16 10:55	09/28/16 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*112*		*60 - 155*	*09/27/16 10:55*	*09/28/16 22:05*	*1*
13C8 PFOS	*118*		*45 - 130*	*09/27/16 10:55*	*09/28/16 22:05*	*1*

Client Sample ID: ANG-FB-091616
Lab Sample ID: 280-88381-21

Date Collected: 09/16/16 15:50
Matrix: Water

Date Received: 09/17/16 08:45

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0073	U	0.018	0.0073	ug/L		09/27/16 10:55	09/28/16 22:18	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.027	0.012	ug/L		09/27/16 10:55	09/28/16 22:18	1
Perfluorohexane Sulfonate (PFHxS)	0.0062	U	0.027	0.0062	ug/L		09/27/16 10:55	09/28/16 22:18	1
Perfluorononanoic acid (PFNA)	0.015	U	0.036	0.015	ug/L		09/27/16 10:55	09/28/16 22:18	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.027	0.012	ug/L		09/27/16 10:55	09/28/16 22:18	1
Perfluorooctanoic acid (PFOA)	0.0087	U	0.018	0.0087	ug/L		09/27/16 10:55	09/28/16 22:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*115*		*60 - 155*	*09/27/16 10:55*	*09/28/16 22:18*	*1*
13C8 PFOS	*117*		*45 - 130*	*09/27/16 10:55*	*09/28/16 22:18*	*1*

Surrogate Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-88381-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

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

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	3C8 PFO/ (60-155)	3C8 PFOS (45-130)
280-88381-1	PFC-MW-4	109	121
280-88381-2	CB2K	113	124
280-88381-3	CB9A	115	113
280-88381-4	W6	109	109
280-88381-5	ANG-CB-EB-091516	108	113
280-88381-6	D27	112	122
280-88381-6 - DL	D27	108 D	102 D
280-88381-7	D15-A	115	111
280-88381-8	ANG-MW-EB-091516	113	117
280-88381-9	ANG-CB-FB-091516	114	115
280-88381-10	STM-UP	116	114
280-88381-11	CB	114	117
280-88381-11 MS	CB	113	115
280-88381-11 MSD	CB	113	128
280-88381-12	C17	113	126
280-88381-13	D8	115	120
280-88381-14	CB-DUP	115	123
280-88381-15	PFC-MW-2	111	123
280-88381-16	MW-DUP	104	120
280-88381-17	PFC-MW-3	112	118
280-88381-17 MS	PFC-MW-3	113	122
280-88381-17 MSD	PFC-MW-3	113	122
280-88381-18	CB-FB-0914-16	111	114
280-88381-19	CB-EB-091416	110	113
280-88381-20	ANG-CB-EB-091616	112	118
280-88381-21	ANG-FB-091616	115	117
DLCK 280-343000/14	Lab Control Sample	107	105
LCS 280-343884/2-A	Lab Control Sample	114	118
LCS 280-343904/2-A	Lab Control Sample	111	128
LCSD 280-343884/3-A	Lab Control Sample Dup	109	124
LCSD 280-343904/3-A	Lab Control Sample Dup	110	120
MB 280-343884/1-A	Method Blank	112	131 X
MB 280-343904/1-A	Method Blank	113	118

Surrogate Legend

13C8 PFOA = 13C8 PFOA
13C8 PFOS = 13C8 PFOS

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Lab Sample ID: DLCK 280-343000/14
Matrix: Water
Analysis Batch: 343000

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

Analyte	Spike Added	DLCK Result	DLCK Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.443	0.398		ug/L		90	70 - 130
Perfluoroheptanoic acid (PFHpA)	0.500	0.490		ug/L		98	70 - 130
Perfluorohexane Sulfonate (PFHxS)	0.473	0.502		ug/L		106	70 - 130
Perfluorononanoic acid (PFNA)	0.500	0.513		ug/L		103	70 - 130
Perfluorooctanesulfonic acid (PFOS)	0.478	0.539		ug/L		113	70 - 130
Perfluorooctanoic acid (PFOA)	0.500	0.465		ug/L		93	70 - 130

Surrogate	*DLCK %Recovery*	*DLCK Qualifier*	*Limits*
13C8 PFOA	*107*		*60 - 155*
13C8 PFOS	*105*		*45 - 130*

Lab Sample ID: MB 280-343884/1-A
Matrix: Water
Analysis Batch: 344280

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 343884

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		09/27/16 10:45	09/29/16 00:08	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		09/27/16 10:45	09/29/16 00:08	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		09/27/16 10:45	09/29/16 00:08	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		09/27/16 10:45	09/29/16 00:08	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		09/27/16 10:45	09/29/16 00:08	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		09/27/16 10:45	09/29/16 00:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*112*		*60 - 155*	*09/27/16 10:45*	*09/29/16 00:08*	*1*
13C8 PFOS	*131*	*X*	*45 - 130*	*09/27/16 10:45*	*09/29/16 00:08*	*1*

Lab Sample ID: LCS 280-343884/2-A
Matrix: Water
Analysis Batch: 344280

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 343884

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.138		ug/L		78	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.172		ug/L		86	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.169		ug/L		89	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.168		ug/L		84	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.167		ug/L		87	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.192		ug/L		96	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 PFOA	*114*		*60 - 155*
13C8 PFOS	*118*		*45 - 130*

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 280-343884/3-A
Matrix: Water
Analysis Batch: 344280

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 343884

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)			0.177	0.153		ug/L		86	70 - 134	10	30
Perfluoroheptanoic acid (PFHpA)			0.200	0.169		ug/L		84	70 - 135	2	30
Perfluorohexane Sulfonate (PFHxS)			0.189	0.176		ug/L		93	70 - 132	4	30
Perfluorononanoic acid (PFNA)			0.200	0.171		ug/L		85	69 - 143	2	30
Perfluorooctanesulfonic acid (PFOS)			0.191	0.167		ug/L		87	70 - 130	0	20
Perfluorooctanoic acid (PFOA)			0.200	0.189		ug/L		94	70 - 130	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C8 PFOA	*109*		*60 - 155*
13C8 PFOS	*124*		*45 - 130*

Lab Sample ID: 280-88381-11 MS
Matrix: Water
Analysis Batch: 344280

Client Sample ID: CB
Prep Type: Total/NA
Prep Batch: 343884

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.0084	J	0.153	0.142		ug/L		87	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.173	0.166		ug/L		96	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.029		0.164	0.187		ug/L		97	70 - 132
Perfluorononanoic acid (PFNA)	0.016	U	0.173	0.159		ug/L		92	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.055		0.166	0.189		ug/L		81	70 - 130
Perfluorooctanoic acid (PFOA)	0.013	J	0.173	0.182		ug/L		98	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
13C8 PFOA	*113*		*60 - 155*
13C8 PFOS	*115*		*45 - 130*

Lab Sample ID: 280-88381-11 MSD
Matrix: Water
Analysis Batch: 344280

Client Sample ID: CB
Prep Type: Total/NA
Prep Batch: 343884

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.0084	J	0.144	0.129		ug/L		84	70 - 134	10	30
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.162	0.156		ug/L		96	70 - 135	7	30
Perfluorohexane Sulfonate (PFHxS)	0.029		0.154	0.175		ug/L		95	70 - 132	7	30
Perfluorononanoic acid (PFNA)	0.016	U	0.162	0.149		ug/L		92	69 - 143	7	30
Perfluorooctanesulfonic acid (PFOS)	0.055		0.155	0.191		ug/L		87	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	0.013	J	0.162	0.176		ug/L		100	70 - 130	3	30

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: 280-88381-11 MSD
Matrix: Water
Analysis Batch: 344280

Client Sample ID: CB
Prep Type: Total/NA
Prep Batch: 343884

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C8 PFOA	*113*		*60 - 155*
13C8 PFOS	*128*		*45 - 130*

Lab Sample ID: MB 280-343904/1-A
Matrix: Water
Analysis Batch: 344279

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 343904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		09/27/16 10:55	09/28/16 20:02	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		09/27/16 10:55	09/28/16 20:02	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		09/27/16 10:55	09/28/16 20:02	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		09/27/16 10:55	09/28/16 20:02	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		09/27/16 10:55	09/28/16 20:02	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		09/27/16 10:55	09/28/16 20:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*113*		*60 - 155*	*09/27/16 10:55*	*09/28/16 20:02*	*1*
13C8 PFOS	*118*		*45 - 130*	*09/27/16 10:55*	*09/28/16 20:02*	*1*

Lab Sample ID: LCS 280-343904/2-A
Matrix: Water
Analysis Batch: 344279

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 343904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.160		ug/L		90	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.175		ug/L		88	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.180		ug/L		95	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.183		ug/L		92	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.178		ug/L		93	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.196		ug/L		98	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 PFOA	*111*		*60 - 155*
13C8 PFOS	*128*		*45 - 130*

Lab Sample ID: LCSD 280-343904/3-A
Matrix: Water
Analysis Batch: 344279

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 343904

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.177	0.166		ug/L		94	70 - 134	4	30
Perfluoroheptanoic acid (PFHpA)	0.200	0.179		ug/L		89	70 - 135	2	30
Perfluorohexane Sulfonate (PFHxS)	0.189	0.191		ug/L		101	70 - 132	6	30
Perfluorononanoic acid (PFNA)	0.200	0.181		ug/L		91	69 - 143	1	30

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 280-343904/3-A
Matrix: Water
Analysis Batch: 344279

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 343904

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)			0.191	0.170		ug/L		89	70 - 130	4	20
Perfluorooctanoic acid (PFOA)			0.200	0.199		ug/L		99	70 - 130	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C8 PFOA	*110*		*60 - 155*
13C8 PFOS	*120*		*45 - 130*

Lab Sample ID: 280-88381-17 MS
Matrix: Water
Analysis Batch: 344279

Client Sample ID: PFC-MW-3
Prep Type: Total/NA
Prep Batch: 343904

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.10		0.170	0.279		ug/L		102	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.060		0.192	0.219		ug/L		83	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.15		0.181	0.331		ug/L		101	70 - 132
Perfluorononanoic acid (PFNA)	0.017	U	0.192	0.177		ug/L		92	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.021	J	0.183	0.200		ug/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	0.037		0.192	0.225		ug/L		98	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
13C8 PFOA	*113*		*60 - 155*
13C8 PFOS	*122*		*45 - 130*

Lab Sample ID: 280-88381-17 MSD
Matrix: Water
Analysis Batch: 344279

Client Sample ID: PFC-MW-3
Prep Type: Total/NA
Prep Batch: 343904

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.10		0.166	0.276		ug/L		103	70 - 134	1	30
Perfluoroheptanoic acid (PFHpA)	0.060		0.188	0.234		ug/L		93	70 - 135	7	30
Perfluorohexane Sulfonate (PFHxS)	0.15		0.178	0.330		ug/L		102	70 - 132	0	30
Perfluorononanoic acid (PFNA)	0.017	U	0.188	0.169		ug/L		90	69 - 143	4	30
Perfluorooctanesulfonic acid (PFOS)	0.021	J	0.180	0.181		ug/L		89	70 - 130	10	30
Perfluorooctanoic acid (PFOA)	0.037		0.188	0.231		ug/L		103	70 - 130	3	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C8 PFOA	*113*		*60 - 155*
13C8 PFOS	*122*		*45 - 130*

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
X	Surrogate is outside control limits

Glossary

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

LCMS

Analysis Batch: 343000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-343000/14	Lab Control Sample	Total/NA	Water	DV-LC-0012	

Prep Batch: 343884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88381-1	PFC-MW-4	Total/NA	Water	3535	
280-88381-2	CB2K	Total/NA	Water	3535	
280-88381-3	CB9A	Total/NA	Water	3535	
280-88381-4	W6	Total/NA	Water	3535	
280-88381-5	ANG-CB-EB-091516	Total/NA	Water	3535	
280-88381-6	D27	Total/NA	Water	3535	
280-88381-6 - DL	D27	Total/NA	Water	3535	
280-88381-7	D15-A	Total/NA	Water	3535	
280-88381-8	ANG-MW-EB-091516	Total/NA	Water	3535	
280-88381-9	ANG-CB-FB-091516	Total/NA	Water	3535	
280-88381-10	STM-UP	Total/NA	Water	3535	
280-88381-11	CB	Total/NA	Water	3535	
280-88381-12	C17	Total/NA	Water	3535	
280-88381-13	D8	Total/NA	Water	3535	
280-88381-14	CB-DUP	Total/NA	Water	3535	
280-88381-15	PFC-MW-2	Total/NA	Water	3535	
MB 280-343884/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-343884/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-343884/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
280-88381-11 MS	CB	Total/NA	Water	3535	
280-88381-11 MSD	CB	Total/NA	Water	3535	

Prep Batch: 343904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88381-16	MW-DUP	Total/NA	Water	3535	
280-88381-17	PFC-MW-3	Total/NA	Water	3535	
280-88381-18	CB-FB-0914-16	Total/NA	Water	3535	
280-88381-19	CB-EB-091416	Total/NA	Water	3535	
280-88381-20	ANG-CB-EB-091616	Total/NA	Water	3535	
280-88381-21	ANG-FB-091616	Total/NA	Water	3535	
MB 280-343904/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-343904/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-343904/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
280-88381-17 MS	PFC-MW-3	Total/NA	Water	3535	
280-88381-17 MSD	PFC-MW-3	Total/NA	Water	3535	

Analysis Batch: 344279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88381-16	MW-DUP	Total/NA	Water	DV-LC-0012	343904
280-88381-17	PFC-MW-3	Total/NA	Water	DV-LC-0012	343904
280-88381-18	CB-FB-0914-16	Total/NA	Water	DV-LC-0012	343904
280-88381-19	CB-EB-091416	Total/NA	Water	DV-LC-0012	343904
280-88381-20	ANG-CB-EB-091616	Total/NA	Water	DV-LC-0012	343904
280-88381-21	ANG-FB-091616	Total/NA	Water	DV-LC-0012	343904
MB 280-343904/1-A	Method Blank	Total/NA	Water	DV-LC-0012	343904
LCS 280-343904/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	343904
LCSD 280-343904/3-A	Lab Control Sample Dup	Total/NA	Water	DV-LC-0012	343904

LCMS (Continued)

Analysis Batch: 344279 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88381-17 MS	PFC-MW-3	Total/NA	Water	DV-LC-0012	343904
280-88381-17 MSD	PFC-MW-3	Total/NA	Water	DV-LC-0012	343904

Analysis Batch: 344280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88381-1	PFC-MW-4	Total/NA	Water	DV-LC-0012	343884
280-88381-2	CB2K	Total/NA	Water	DV-LC-0012	343884
280-88381-3	CB9A	Total/NA	Water	DV-LC-0012	343884
280-88381-4	W6	Total/NA	Water	DV-LC-0012	343884
280-88381-5	ANG-CB-EB-091516	Total/NA	Water	DV-LC-0012	343884
280-88381-6	D27	Total/NA	Water	DV-LC-0012	343884
280-88381-7	D15-A	Total/NA	Water	DV-LC-0012	343884
280-88381-8	ANG-MW-EB-091516	Total/NA	Water	DV-LC-0012	343884
280-88381-9	ANG-CB-FB-091516	Total/NA	Water	DV-LC-0012	343884
280-88381-10	STM-UP	Total/NA	Water	DV-LC-0012	343884
280-88381-11	CB	Total/NA	Water	DV-LC-0012	343884
280-88381-12	C17	Total/NA	Water	DV-LC-0012	343884
280-88381-13	D8	Total/NA	Water	DV-LC-0012	343884
280-88381-14	CB-DUP	Total/NA	Water	DV-LC-0012	343884
280-88381-15	PFC-MW-2	Total/NA	Water	DV-LC-0012	343884
MB 280-343884/1-A	Method Blank	Total/NA	Water	DV-LC-0012	343884
LCS 280-343884/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	343884
LCSD 280-343884/3-A	Lab Control Sample Dup	Total/NA	Water	DV-LC-0012	343884
280-88381-11 MS	CB	Total/NA	Water	DV-LC-0012	343884
280-88381-11 MSD	CB	Total/NA	Water	DV-LC-0012	343884

Analysis Batch: 344348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88381-6 - DL	D27	Total/NA	Water	DV-LC-0012	343884

Client Sample ID: PFC-MW-4
Lab Sample ID: 280-88381-1
Date Collected: 09/15/16 12:40
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.8 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 00:46	HKF	TAL DEN

Client Sample ID: CB2K
Lab Sample ID: 280-88381-2
Date Collected: 09/15/16 13:40
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.4 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 00:58	HKF	TAL DEN

Client Sample ID: CB9A
Lab Sample ID: 280-88381-3
Date Collected: 09/15/16 14:05
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.9 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 01:10	HKF	TAL DEN

Client Sample ID: W6
Lab Sample ID: 280-88381-4
Date Collected: 09/15/16 14:35
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.7 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 01:22	HKF	TAL DEN

Client Sample ID: ANG-CB-EB-091516
Lab Sample ID: 280-88381-5
Date Collected: 09/15/16 14:45
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 01:35	HKF	TAL DEN

Client Sample ID: D27
Lab Sample ID: 280-88381-6
Date Collected: 09/15/16 15:15
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.2 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 01:47	HKF	TAL DEN

Client Sample ID: D27
Date Collected: 09/15/16 15:15
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		284.2 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012	DL	4			344348	09/29/16 14:05	HKF	TAL DEN

Client Sample ID: D15-A
Date Collected: 09/15/16 16:00
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.5 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 01:59	HKF	TAL DEN

Client Sample ID: ANG-MW-EB-091516
Date Collected: 09/15/16 13:00
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.8 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 02:24	HKF	TAL DEN

Client Sample ID: ANG-CB-FB-091516
Date Collected: 09/15/16 16:10
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			285.9 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 02:36	HKF	TAL DEN

Client Sample ID: STM-UP
Date Collected: 09/15/16 13:50
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 02:49	HKF	TAL DEN

Client Sample ID: CB
Date Collected: 09/14/16 08:57
Date Received: 09/17/16 08:45

Lab Sample ID: 280-88381-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 03:01	HKF	TAL DEN

Client Sample ID: C17
Lab Sample ID: 280-88381-12
Date Collected: 09/14/16 08:30
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.2 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 03:38	HKF	TAL DEN

Client Sample ID: D8
Lab Sample ID: 280-88381-13
Date Collected: 09/14/16 09:30
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			286.8 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 03:50	HKF	TAL DEN

Client Sample ID: CB-DUP
Lab Sample ID: 280-88381-14
Date Collected: 09/14/16 10:00
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			296.4 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 04:03	HKF	TAL DEN

Client Sample ID: PFC-MW-2
Lab Sample ID: 280-88381-15
Date Collected: 09/14/16 12:05
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293.4 mL	5 mL	343884	09/27/16 10:45	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344280	09/29/16 04:15	HKF	TAL DEN

Client Sample ID: MW-DUP
Lab Sample ID: 280-88381-16
Date Collected: 09/14/16 12:30
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			288.2 mL	5 mL	343904	09/27/16 10:55	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344279	09/28/16 20:39	HKF	TAL DEN

Client Sample ID: PFC-MW-3
Lab Sample ID: 280-88381-17
Date Collected: 09/14/16 16:25
Matrix: Water
Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.8 mL	5 mL	343904	09/27/16 10:55	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344279	09/28/16 20:51	HKF	TAL DEN

Client Sample ID: CB-FB-0914-16

Lab Sample ID: 280-88381-18

Date Collected: 09/14/16 16:50

Matrix: Water

Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.1 mL	5 mL	343904	09/27/16 10:55	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344279	09/28/16 21:28	HKF	TAL DEN

Client Sample ID: CB-EB-091416

Lab Sample ID: 280-88381-19

Date Collected: 09/14/16 16:55

Matrix: Water

Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			284.3 mL	5 mL	343904	09/27/16 10:55	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344279	09/28/16 21:41	HKF	TAL DEN

Client Sample ID: ANG-CB-EB-091616

Lab Sample ID: 280-88381-20

Date Collected: 09/16/16 15:40

Matrix: Water

Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.6 mL	5 mL	343904	09/27/16 10:55	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344279	09/28/16 22:05	HKF	TAL DEN

Client Sample ID: ANG-FB-091616

Lab Sample ID: 280-88381-21

Date Collected: 09/16/16 15:50

Matrix: Water

Date Received: 09/17/16 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.6 mL	5 mL	343904	09/27/16 10:55	ACF	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			344279	09/28/16 22:18	HKF	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Certification Summary

Client: HDR Inc
TestAmerica Job ID: 280-88381-1
Project/Site: Stewart International Airport (PFAS)

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	11964	04-01-17

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

Analysis Method	Prep Method	Matrix	Analyte
DV-LC-0012	3535	Water	Perfluorobutane Sulfonate (PFBS)
DV-LC-0012	3535	Water	Perfluoroheptanoic acid (PFHpA)
DV-LC-0012	3535	Water	Perfluorohexane Sulfonate (PFHxS)
DV-LC-0012	3535	Water	Perfluorononanoic acid (PFNA)
DV-LC-0012	3535	Water	Perfluorooctanesulfonic acid (PFOS)
DV-LC-0012	3535	Water	Perfluorooctanoic acid (PFOA)

Oregon	NELAP	10	4025	01-09-17

Analysis Method	Prep Method	Matrix	Analyte

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	4040	01-29-17

Method PFC

Perfluronated Hydrocarbons (LC/MS) by Method PFC

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini-NX ID:

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
PFC-MW-4	280-88381-1	109	121
CB2K	280-88381-2	113	124
CB9A	280-88381-3	115	113
W6	280-88381-4	109	109
ANG-CB-EB-091516	280-88381-5	108	113
D27	280-88381-6	112	122
D27 DL	280-88381-6 DL	108 D	102 D
D15-A	280-88381-7	115	111
ANG-MW-EB-091516	280-88381-8	113	117
ANG-CB-FB-091516	280-88381-9	114	115
STM-UP	280-88381-10	116	114
CB	280-88381-11	114	117
C17	280-88381-12	113	126
D8	280-88381-13	115	120
CB-DUP	280-88381-14	115	123
PFC-MW-2	280-88381-15	111	123
MW-DUP	280-88381-16	104	120
PFC-MW-3	280-88381-17	112	118
CB-FB-0914-16	280-88381-18	111	114
CB-EB-091416	280-88381-19	110	113
ANG-CB-EB-091616	280-88381-20	112	118
ANG-FB-091616	280-88381-21	115	117
	MB 280-343884/1-A	112	131 X
	MB 280-343904/1-A	113	118
	LCS 280-343884/2-A	114	118
	LCS 280-343904/2-A	111	128
	LCSD 280-343884/3-A	109	124
	LCSD 280-343904/3-A	110	120
CB MS	280-88381-11 MS	113	115
PFC-MW-3 MS	280-88381-17 MS	113	122
CB MSD	280-88381-11 MSD	113	128
PFC-MW-3 MSD	280-88381-17 MSD	113	122

	QC LIMITS
PFOA = 13C8 PFOA	60-155
PFOS = 13C8 PFOS	45-130

Column to be used to flag recovery values

FORM II DV-LC-0012

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini-NX ID:

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
	DLCK 280-343000/14	107	105

	QC LIMITS
PFOA = 13C8 PFOA	60-155
PFOS = 13C8 PFOS	45-130

Column to be used to flag recovery values

FORM II DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I028102.d

Lab ID: LCS 280-343884/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.138	78	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.172	86	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.169	89	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.168	84	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.167	87	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.192	96	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I028082.d

Lab ID: LCS 280-343904/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.160	90	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.175	88	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.180	95	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.183	92	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.178	93	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.196	98	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I028103.d

Lab ID: LCSD 280-343884/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.153	86	10	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.169	84	2	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.176	93	4	30	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.171	85	2	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.167	87	0	20	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.189	94	2	20	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I028083.d

Lab ID: LCSD 280-343904/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutane Sulfonate (PFBS)	0.177	0.166	94	4	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.179	89	2	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.191	101	6	30	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.181	91	1	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.170	89	4	20	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.199	99	2	20	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I028116.d

Lab ID: 280-88381-11 MS Client ID: CB MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.153	0.0084 J	0.142	87	70-134	
Perfluoroheptanoic acid (PFHpA)	0.173	0.012 U	0.166	96	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.164	0.029	0.187	97	70-132	
Perfluorononanoic acid (PFNA)	0.173	0.016 U	0.159	92	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.166	0.055	0.189	81	70-130	
Perfluorooctanoic acid (PFOA)	0.173	0.013 J	0.182	98	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I028086.d

Lab ID: 280-88381-17 MS Client ID: PFC-MW-3 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.170	0.10	0.279	102	70-134	
Perfluoroheptanoic acid (PFHpA)	0.192	0.060	0.219	83	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.181	0.15	0.331	101	70-132	
Perfluorononanoic acid (PFNA)	0.192	0.017 U	0.177	92	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.183	0.021 J	0.200	98	70-130	
Perfluorooctanoic acid (PFOA)	0.192	0.037	0.225	98	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I028117.d

Lab ID: 280-88381-11 MSD Client ID: CB MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.144	0.129	84	10	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.162	0.156	96	7	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.154	0.175	95	7	30	70-132	
Perfluorononanoic acid (PFNA)	0.162	0.149	92	7	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.155	0.191	87	1	30	70-130	
Perfluorooctanoic acid (PFOA)	0.162	0.176	100	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I028087.d

Lab ID: 280-88381-17 MSD Client ID: PFC-MW-3 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.166	0.276	103	1	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.188	0.234	93	7	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.178	0.330	102	0	30	70-132	
Perfluorononanoic acid (PFNA)	0.188	0.169	90	4	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.180	0.181	89	10	30	70-130	
Perfluorooctanoic acid (PFOA)	0.188	0.231	103	3	30	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM III
LCMS DETECTION LIMIT CHECK STANDARD RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC516I020017.d

Lab ID: DLCK 280-343000/14 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	DLCK CONCENTRATION (ug/L)	DLCK % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.443	0.398	90	70-130	
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	98	70-130	
Perfluorohexane Sulfonate (PFHxS)	0.473	0.502	106	70-130	
Perfluorononanoic acid (PFNA)	0.500	0.513	103	70-130	
Perfluorooctanesulfonic acid (PFOS)	0.478	0.539	113	70-130	
Perfluorooctanoic acid (PFOA)	0.500	0.465	93	70-130	

Column to be used to flag recovery and RPD values

FORM III DV-LC-0012

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab File ID: PC516I028101.d Lab Sample ID: MB 280-343884/1-A

Matrix: Water Date Extracted: 09/27/2016 10:45

Instrument ID: LC_LCMS5 Date Analyzed: 09/29/2016 00:08

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-343884/2-A	PC516I028102.d	09/29/2016 00:21
	LCSD 280-343884/3-A	PC516I028103.d	09/29/2016 00:33
PFC-MW-4	280-88381-1	PC516I028104.d	09/29/2016 00:46
CB2K	280-88381-2	PC516I028105.d	09/29/2016 00:58
CB9A	280-88381-3	PC516I028106.d	09/29/2016 01:10
W6	280-88381-4	PC516I028107.d	09/29/2016 01:22
ANG-CB-EB-091516	280-88381-5	PC516I028108.d	09/29/2016 01:35
D27	280-88381-6	PC516I028109.d	09/29/2016 01:47
D15-A	280-88381-7	PC516I028110.d	09/29/2016 01:59
ANG-MW-EB-091516	280-88381-8	PC516I028112.d	09/29/2016 02:24
ANG-CB-FB-091516	280-88381-9	PC516I028113.d	09/29/2016 02:36
STM-UP	280-88381-10	PC516I028114.d	09/29/2016 02:49
CB	280-88381-11	PC516I028115.d	09/29/2016 03:01
CB MS	280-88381-11 MS	PC516I028116.d	09/29/2016 03:13
CB MSD	280-88381-11 MSD	PC516I028117.d	09/29/2016 03:26
C17	280-88381-12	PC516I028118.d	09/29/2016 03:38
D8	280-88381-13	PC516I028119.d	09/29/2016 03:50
CB-DUP	280-88381-14	PC516I028120.d	09/29/2016 04:03
PFC-MW-2	280-88381-15	PC516I028121.d	09/29/2016 04:15
D27 DL	280-88381-6 DL	PC516I029040.d	09/29/2016 14:05

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab File ID: PC516I028081.d Lab Sample ID: MB 280-343904/1-A

Matrix: Water Date Extracted: 09/27/2016 10:55

Instrument ID: LC_LCMS5 Date Analyzed: 09/28/2016 20:02

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-343904/2-A	PC516I028082.d	09/28/2016 20:14
	LCSD 280-343904/3-A	PC516I028083.d	09/28/2016 20:27
MW-DUP	280-88381-16	PC516I028084.d	09/28/2016 20:39
PFC-MW-3	280-88381-17	PC516I028085.d	09/28/2016 20:51
PFC-MW-3 MS	280-88381-17 MS	PC516I028086.d	09/28/2016 21:04
PFC-MW-3 MSD	280-88381-17 MSD	PC516I028087.d	09/28/2016 21:16
CB-FB-0914-16	280-88381-18	PC516I028088.d	09/28/2016 21:28
CB-EB-091416	280-88381-19	PC516I028089.d	09/28/2016 21:41
ANG-CB-EB-091616	280-88381-20	PC516I028091.d	09/28/2016 22:05
ANG-FB-091616	280-88381-21	PC516I028092.d	09/28/2016 22:18

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calibration End Date: 09/20/2016 17:57

Calibration ID: 27083

		BA		HXA		HXS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		35147900	4.32	25529739	5.91	3055656	6.33
UPPER LIMIT		52721850	4.82	38294609	6.41	4583484	6.83
LOWER LIMIT		17573950	3.82	12764870	5.41	1527828	5.83
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-343000/12		35308579	4.35	24692515	5.89	2980178	6.31
ICV 280-343000/13		34616662	4.31	24836692	5.89	2962815	6.29
DLCK 280-343000/14		35458721	4.36	25385297	5.89	2992412	6.29
CCV 280-344279/3		25947978	3.96	19717851	5.64	2186371	6.07
MB 280-343904/1-A		28192593	3.76*	20313313	5.59	2085082	6.04
LCS 280-343904/2-A		26600703	3.70*	20611473	5.52	2201122	5.97
LCSD 280-343904/3-A		25586328	3.79*	19202910	5.62	1987481	6.05
280-88381-16	MW-DUP	24995276	3.73*	19859895	5.53	1998645	5.97
280-88381-17	PFC-MW-3	26530929	3.80*	18413495	5.61	2248898	6.05
280-88381-17 MS	PFC-MW-3 MS	24661247	3.81*	16957738	5.59	1975225	6.03
280-88381-17 MSD	PFC-MW-3 MSD	24796660	3.75*	18061180	5.54	1991401	6.00
280-88381-18	CB-FB-0914-16	27066288	3.82*	20322269	5.59	2141949	6.04
280-88381-19	CB-EB-091416	26564886	3.81*	20173397	5.59	2177119	6.05
CCV 280-344279/14		28937086	3.91	21531945	5.60	2375065	6.04
280-88381-20	ANG-CB-EB-091616	25575149	3.76*	18873842	5.57	2070846	6.02
280-88381-21	ANG-FB-091616	24547914	3.81*	18258164	5.62	1964923	6.07
CCV 280-344279/24		26148562	3.96	18781141	5.65	1988593	6.07
CCV 280-344280/24		26148562	3.96	18781141	5.65	1988593	6.07
MB 280-343884/1-A		26649207	3.81	19391430	5.60	2096318	6.05
LCS 280-343884/2-A		26811556	3.79*	19272705	5.59	2246548	6.04
LCSD 280-343884/3-A		27963409	3.83	20443056	5.61	2222444	6.05
280-88381-1	PFC-MW-4	23049732	3.88	19272944	5.62	2172983	6.05
280-88381-2	CB2K	22422216	3.97	19281692	5.70	2092656	6.11
280-88381-3	CB9A	12676479*	3.80*	19139137	5.58	2137912	6.02
280-88381-4	W6	22856379	3.91	20468396	5.65	2110939	6.07
280-88381-5	ANG-CB-EB-091516	28043475	3.88	21303217	5.64	2180001	6.07
280-88381-6	D27	23392930	3.94	18115967	5.67	1894416	6.10
280-88381-7	D15-A	12071744*	3.97	19911139	5.71	2086644	6.13
CCV 280-344280/35		28643288	4.03	20577205	5.69	2369124	6.11
280-88381-8	ANG-MW-EB-091516	26273475	3.91	19461735	5.68	1747102	6.10

BA = 13C4 PFBA (IS)
HXA = 13C2 PFHxA (IS)
HXS = 18O2 PFHxS (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calibration End Date: 09/20/2016 17:57

Calibration ID: 27083

		BA		HXA		HXS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		35147900	4.32	25529739	5.91	3055656	6.33
UPPER LIMIT		52721850	4.82	38294609	6.41	4583484	6.83
LOWER LIMIT		17573950	3.82	12764870	5.41	1527828	5.83
LAB SAMPLE ID	CLIENT SAMPLE ID						
280-88381-9	ANG-CB-FB-091516	25757166	3.78*	18919623	5.55	1965558	5.99
280-88381-10	STM-UP	12123301*	3.77*	20713687	5.59	2266627	6.04
280-88381-11	CB	29148341	3.94	19161078	5.66	1996673	6.10
280-88381-11 MS	CB MS	26225530	3.92	17495263	5.65	1915454	6.08
280-88381-11 MSD	CB MSD	25502335	3.86	16750541	5.60	1866364	6.04
280-88381-12	C17	21072633	3.86	17358545	5.63	1898442	6.06
280-88381-13	D8	23241998	3.84	16889786	5.63	1844758	6.08
280-88381-14	CB-DUP	27010839	3.94	19219168	5.66	2290297	6.08
280-88381-15	PFC-MW-2	27408987	3.89	19470908	5.61	2211934	6.05
CCV 280-344280/46		26944642	3.86	20817529	5.55	2258904	6.00
CCV 280-344348/3		28413751	4.12	20365516	5.76	2280516	6.20
280-88381-6 DL	D27 DL	5818020*	4.08	4467043*	5.75	409548*	6.19
CCV 280-344348/5		28149808	4.12	20106378	5.77	2156121	6.20

BA = 13C4 PFBA (IS)
HXA = 13C2 PFHxA (IS)
HXS = 18O2 PFHxS (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calibration End Date: 09/20/2016 17:57

Calibration ID: 27083

		OA		PFOS		NA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		38685089	6.66	10134302	6.94	26341857	6.96
UPPER LIMIT		58027634	7.16	15201453	7.44	39512786	7.46
LOWER LIMIT		19342545	6.16	5067151	6.44	13170929	6.46
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-343000/12		40636580	6.64	9949181	6.91	28673486	6.93
ICV 280-343000/13		40081246	6.62	9974383	6.88	26739184	6.91
DLCK 280-343000/14		39615826	6.63	9802299	6.90	29283498	6.92
CCV 280-344279/3		29501949	6.40	7606890	6.68	23045346	6.70
MB 280-343904/1-A		30757039	6.37	7929360	6.65	26158688	6.66
LCS 280-343904/2-A		31400099	6.31	7633397	6.59	24393891	6.60
LCSD 280-343904/3-A		28604881	6.40	7331743	6.67	22578775	6.69
280-88381-16	MW-DUP	30843625	6.31	6963822	6.58	22970074	6.60
280-88381-17	PFC-MW-3	29204095	6.39	6941610	6.67	23816805	6.68
280-88381-17 MS	PFC-MW-3 MS	27421517	6.37	6381064	6.64	21658956	6.66
280-88381-17 MSD	PFC-MW-3 MSD	27210447	6.34	6589929	6.61	21477847	6.63
280-88381-18	CB-FB-0914-16	30550929	6.37	7730328	6.65	23863181	6.66
280-88381-19	CB-EB-091416	31038643	6.39	7782186	6.65	24152666	6.67
CCV 280-344279/14		31053180	6.38	8412608	6.65	24958077	6.67
280-88381-20	ANG-CB-EB-091616	30088069	6.36	7378607	6.64	24072787	6.65
280-88381-21	ANG-FB-091616	27894007	6.40	6967640	6.68	22583957	6.69
CCV 280-344279/24		27747009	6.41	7546561	6.68	22531765	6.70
CCV 280-344280/24		27747009	6.41	7546561	6.68	22531765	6.70
MB 280-343884/1-A		29022818	6.39	6873940	6.67	24528765	6.68
LCS 280-343884/2-A		28312065	6.37	7447729	6.65	23381679	6.66
LCSD 280-343884/3-A		30481528	6.40	7823755	6.67	23890014	6.69
280-88381-1	PFC-MW-4	29850545	6.40	6384763	6.67	22509303	6.69
280-88381-2	CB2K	29340979	6.42	7342993	6.70	24666725	6.71
280-88381-3	CB9A	28793665	6.35	7329976	6.63	23666471	6.64
280-88381-4	W6	30946193	6.40	7300123	6.67	24184268	6.69
280-88381-5	ANG-CB-EB-091516	32502560	6.40	8147507	6.68	25538461	6.70
280-88381-6	D27	22145761	6.44	6653055	6.71	18343857	6.73
280-88381-7	D15-A	30320675	6.46	7625108	6.72	23084672	6.74
CCV 280-344280/35		30027673	6.44	8362115	6.71	24487380	6.73
280-88381-8	ANG-MW-EB-091516	30450228	6.41	7395735	6.69	24248869	6.71

OA = 13C4 PFOA (IS)
PFOS = 13C4 PFOS (IS)
NA = 13C5 PFNA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calibration End Date: 09/20/2016 17:57

Calibration ID: 27083

		OA		PFOS		NA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		38685089	6.66	10134302	6.94	26341857	6.96
UPPER LIMIT		58027634	7.16	15201453	7.44	39512786	7.46
LOWER LIMIT		19342545	6.16	5067151	6.44	13170929	6.46
LAB SAMPLE ID	CLIENT SAMPLE ID						
280-88381-9	ANG-CB-FB-091516	28783431	6.33	7433694	6.61	23566306	6.62
280-88381-10	STM-UP	31853078	6.38	8280589	6.66	26362232	6.68
280-88381-11	CB	30241473	6.43	7531636	6.70	25138179	6.72
280-88381-11 MS	CB MS	27620458	6.42	6965757	6.69	21380099	6.71
280-88381-11 MSD	CB MSD	25578159	6.38	6240008	6.65	21183665	6.66
280-88381-12	C17	27141098	6.40	5873277	6.67	21476888	6.69
280-88381-13	D8	25286648	6.42	6150199	6.71	20594696	6.72
280-88381-14	CB-DUP	28918298	6.41	7190543	6.68	22371501	6.70
280-88381-15	PFC-MW-2	30292003	6.38	7542502	6.65	24385679	6.67
CCV 280-344280/46		30641318	6.33	7870118	6.61	24423378	6.63
CCV 280-344348/3		28879996	6.54	7481792	6.81	21424398	6.83
280-88381-6 DL	D27 DL	6231540*	6.53	1648983*	6.79	5354547*	6.81
CCV 280-344348/5		29600755	6.54	7927196	6.80	23220502	6.82

OA = 13C4 PFOA (IS)
PFOS = 13C4 PFOS (IS)
NA = 13C5 PFNA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calibration End Date: 09/20/2016 17:57

Calibration ID: 27083

		DA		UNA		DOA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		31036778	7.20	21312407	7.41	44244234	7.59
UPPER LIMIT		46555167	7.70	31968611	7.91	66366351	8.09
LOWER LIMIT		15518389	6.70	10656204	6.91	22122117	7.09
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-343000/12		31292495	7.17	22936160	7.38	45231070	7.56
ICV 280-343000/13		30249311	7.14	21690948	7.35	43469080	7.54
DLCK 280-343000/14		31304092	7.17	23736552	7.39	46479115	7.56
CCV 280-344279/3		23959611	6.94	15904017	7.15	31787719	7.33
MB 280-343904/1-A		26142753	6.91	17776814	7.13	32044148	7.31
LCS 280-343904/2-A		26732202	6.86	16865066	7.07	30606646	7.25
LCSD 280-343904/3-A		24418048	6.92	15609490	7.14	26982005	7.31
280-88381-16	MW-DUP	22661746	6.86	12130340	7.06	19107409*	7.25
280-88381-17	PFC-MW-3	21927320	6.92	11325532	7.14	14125879*	7.32
280-88381-17 MS	PFC-MW-3 MS	20229735	6.90	9836950*	7.11	13286737*	7.30
280-88381-17 MSD	PFC-MW-3 MSD	19806042	6.88	10554744*	7.08	12888801*	7.27
280-88381-18	CB-FB-0914-16	24418472	6.90	16804666	7.11	28205708	7.29
280-88381-19	CB-EB-091416	25544892	6.91	16034481	7.13	29516746	7.30
CCV 280-344279/14		27024572	6.91	17656739	7.12	34936138	7.30
280-88381-20	ANG-CB-EB-091616	24190735	6.90	16164561	7.11	31708910	7.29
280-88381-21	ANG-FB-091616	23162370	6.94	14612887	7.15	25575982	7.34
CCV 280-344279/24		23829053	6.94	15574352	7.15	32178529	7.33
CCV 280-344280/24		23829053	6.94	15574352	7.15	32178529	7.33
MB 280-343884/1-A		24447065	6.91	15390491	7.12	25301770	7.30
LCS 280-343884/2-A		24343768	6.90	16050393	7.11	27014205	7.30
LCSD 280-343884/3-A		26052799	6.93	16072951	7.14	29640632	7.33
280-88381-1	PFC-MW-4	19666092	6.93	9582480*	7.15	15925692*	7.33
280-88381-2	CB2K	23417037	6.96	13253643	7.17	21247358*	7.35
280-88381-3	CB9A	21827887	6.89	11290757	7.11	18148854*	7.29
280-88381-4	W6	22489577	6.93	11786192	7.13	18698337*	7.31
280-88381-5	ANG-CB-EB-091516	27224740	6.94	17921477	7.15	38640256	7.34
280-88381-6	D27	21455836	6.97	11974708	7.19	20896250*	7.37
280-88381-7	D15-A	21729949	6.98	12216993	7.19	20366483*	7.38
CCV 280-344280/35		26906658	6.96	16926053	7.17	35183810	7.35
280-88381-8	ANG-MW-EB-091516	25188177	6.94	17165325	7.15	29209679	7.34

DA = 13C2 PFDA (IS)
UNA = 13C2 PFUnA (IS)
DOA = 13C2 PFDoA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calibration End Date: 09/20/2016 17:57

Calibration ID: 27083

		DA		UNA		DOA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		31036778	7.20	21312407	7.41	44244234	7.59
UPPER LIMIT		46555167	7.70	31968611	7.91	66366351	8.09
LOWER LIMIT		15518389	6.70	10656204	6.91	22122117	7.09
LAB SAMPLE ID	CLIENT SAMPLE ID						
280-88381-9	ANG-CB-FB-091516	22949628	6.87	12695989	7.09	18392024*	7.27
280-88381-10	STM-UP	26349840	6.92	16011790	7.14	24445342	7.32
280-88381-11	CB	23774132	6.96	13407176	7.17	22860961	7.35
280-88381-11 MS	CB MS	21432965	6.95	11383065	7.16	19499608*	7.35
280-88381-11 MSD	CB MSD	20066097	6.91	11493235	7.12	17964136*	7.29
280-88381-12	C17	20537638	6.93	10745148	7.14	16528537*	7.32
280-88381-13	D8	19241854	6.97	10452332*	7.17	16943602*	7.36
280-88381-14	CB-DUP	23489280	6.94	14588575	7.14	20806190*	7.33
280-88381-15	PFC-MW-2	24621400	6.91	12857771	7.12	21257545*	7.31
CCV 280-344280/46		26401780	6.88	16918608	7.09	34680593	7.28
CCV 280-344348/3		23573713	7.07	15599201	7.28	31843783	7.46
280-88381-6 DL	D27 DL	4909886*	7.05	2798257*	7.27	4544436*	7.44
CCV 280-344348/5		24011943	7.06	15502226	7.28	32026206	7.45

DA = 13C2 PFDA (IS)
UNA = 13C2 PFUnA (IS)
DOA = 13C2 PFDoA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calibration End Date: 09/20/2016 17:57

Calibration ID: 27083

		FOSA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		32160683	7.68				
UPPER LIMIT		48241025	8.18				
LOWER LIMIT		16080342	7.18				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-343000/12		33489915	7.65				
ICV 280-343000/13		31659480	7.63				
DLCK 280-343000/14		32878243	7.65				
CCV 280-344279/3		24160540	7.54				
MB 280-343904/1-A		852919*	7.53				
LCS 280-343904/2-A		990534*	7.45				
LCSD 280-343904/3-A		639853*	7.53				
280-88381-16	MW-DUP	1054459*	7.45				
280-88381-17	PFC-MW-3	470183*	7.53				
280-88381-17 MS	PFC-MW-3 MS	575937*	7.51				
280-88381-17 MSD	PFC-MW-3 MSD	695338*	7.46				
280-88381-18	CB-FB-0914-16	1037673*	7.50				
280-88381-19	CB-EB-091416	1129037*	7.51				
CCV 280-344279/14		25311905	7.51				
280-88381-20	ANG-CB-EB-091616	1063671*	7.49				
280-88381-21	ANG-FB-091616	865608*	7.56				
CCV 280-344279/24		23739631	7.55				
CCV 280-344280/24		23739631	7.55				
MB 280-343884/1-A		711701	7.51				
LCS 280-343884/2-A		647977*	7.50				
LCSD 280-343884/3-A		982588*	7.53				
280-88381-1	PFC-MW-4	437992*	7.54				
280-88381-2	CB2K	2655011*	7.55				
280-88381-3	CB9A	1765922*	7.49				
280-88381-4	W6	1689738*	7.52				
280-88381-5	ANG-CB-EB-091516	1667686*	7.55				
280-88381-6	D27	2233303*	7.58				
280-88381-7	D15-A	1939182*	7.59				
CCV 280-344280/35		24960653	7.57				
280-88381-8	ANG-MW-EB-091516	1194747*	7.55				

FOSA = 13C8 FOSA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calibration End Date: 09/20/2016 17:57

Calibration ID: 27083

		FOSA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		32160683	7.68				
UPPER LIMIT		48241025	8.18				
LOWER LIMIT		16080342	7.18				
LAB SAMPLE ID	CLIENT SAMPLE ID						
280-88381-9	ANG-CB-FB-091516	533252*	7.46				
280-88381-10	STM-UP	2269097*	7.52				
280-88381-11	CB	2141861*	7.56				
280-88381-11 MS	CB MS	1614232*	7.57				
280-88381-11 MSD	CB MSD	1577326*	7.50				
280-88381-12	C17	1943588*	7.53				
280-88381-13	D8	1411854*	7.56				
280-88381-14	CB-DUP	1687833*	7.54				
280-88381-15	PFC-MW-2	1178122*	7.52				
CCV 280-344280/46		25088644	7.48				
CCV 280-344348/3		23474761	7.64				
280-88381-6 DL	D27 DL	511859*	7.63				
CCV 280-344348/5		24346835	7.64				

FOSA = 13C8 FOSA (IS)

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: PFC-MW-4 | Lab Sample ID: 280-88381-1

Matrix: Water | Lab File ID: PC516I028104.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 12:40

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 267.8(mL) | Date Analyzed: 09/29/2016 00:46

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0077	U	0.019	0.0077
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0065	U	0.028	0.0065
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.028	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0091	U	0.019	0.0091

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	109		60-155
STL01054	13C8 PFOS	121		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028104.d
Lims ID: 280-88381-A-1-A
Client ID: PFC-MW-4
Sample Type: Client
Inject. Date: 29-Sep-2016 00:46:06 ALS Bottle#: 0 Worklist Smp#: 28
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-1-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:09:00

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.878	3.963	-0.085		23049732	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.184				ND			
298.9 > 98.9		5.184							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.620	5.648	-0.028		19272944	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.054	6.073	-0.019		2172983	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.073				ND			
398.9 > 98.9		6.073							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.074				ND			
363.0 > 168.9		6.074							
$ 14 13C8 PFOA									
421.0 > 375.9	6.394	6.413	-0.019	1.000	24305462	10.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.395	6.413	-0.018		29850545	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.414				ND			
413.0 > 169.0		6.414							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.667	6.676	-0.009		6384763	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.677				ND			
498.9 > 98.9		6.677							
$ 18 13C8 PFOS									
506.9 > 80.0	6.676	6.685	-0.009	1.001	3905858	11.2			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.687	6.696	-0.009		22509303	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.697				ND			
463.0 > 218.9		6.697							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.931	6.941	-0.010		19666092	10.0			
* 26 13C2 PFUnA (IS)									s
564.9 > 520.0	7.148	7.148	0.0		9582480	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.327	7.327	0.0		15925692	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.538	7.548	-0.010		437992	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

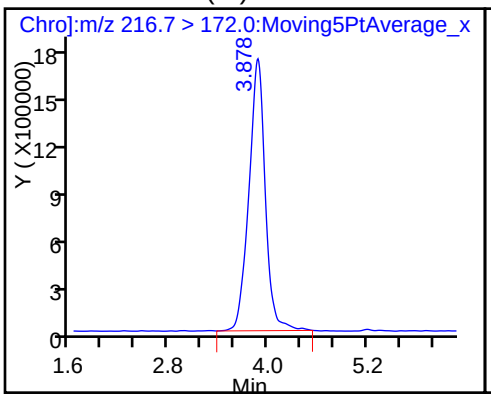
Report Date: 29-Sep-2016 11:41:53 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

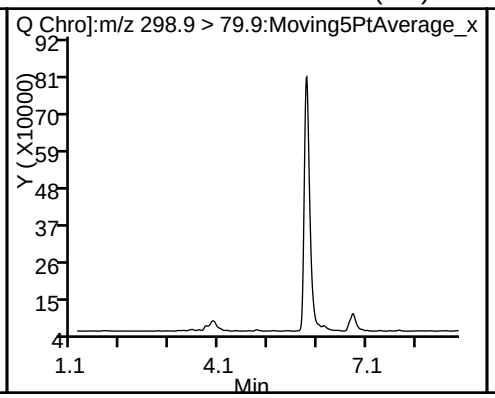
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028104.d

Injection Date:	29-Sep-2016 00:46:06	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-1-A	Lab Sample ID:	280-88381-1		
Client ID:	PFC-MW-4				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	28
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

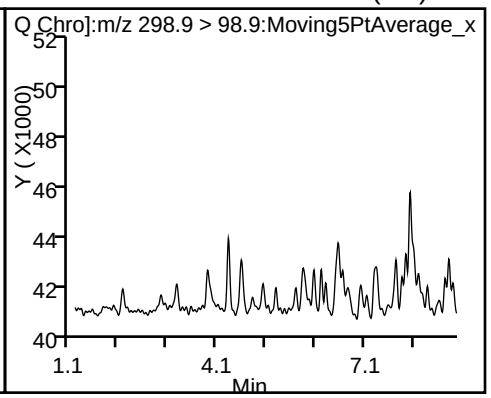
* 1 13C4 PFBA (IS)



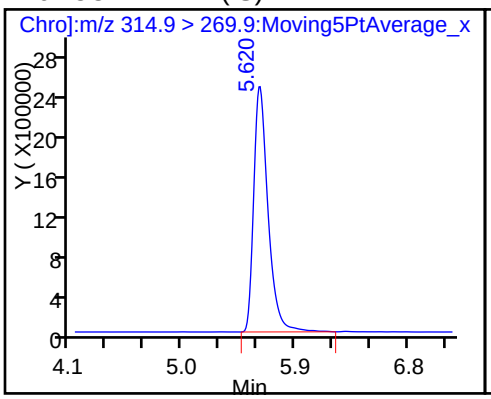
4 Perfluorobutane Sulfonate (ND)



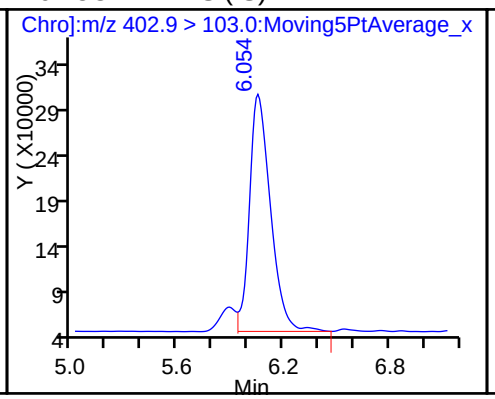
4 Perfluorobutane Sulfonate (ND)



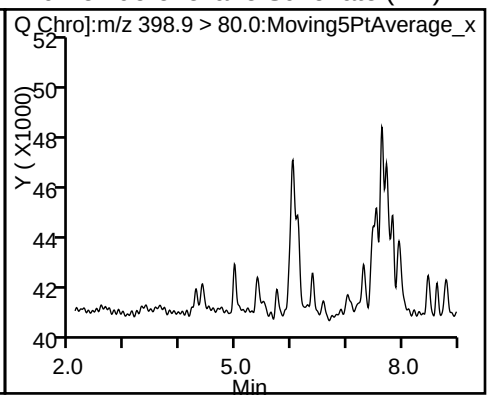
* 6 13C2 PFHxA (IS)



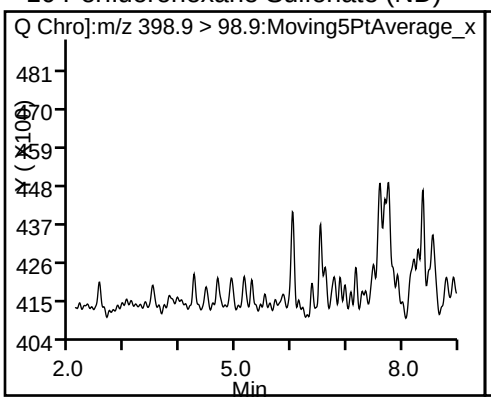
* 9 18O2 PFHxS (IS)



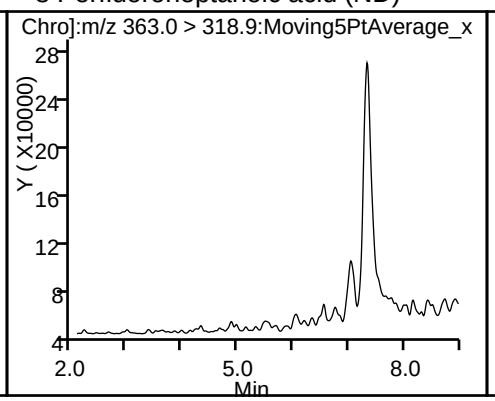
10 Perfluorohexane Sulfonate (ND)



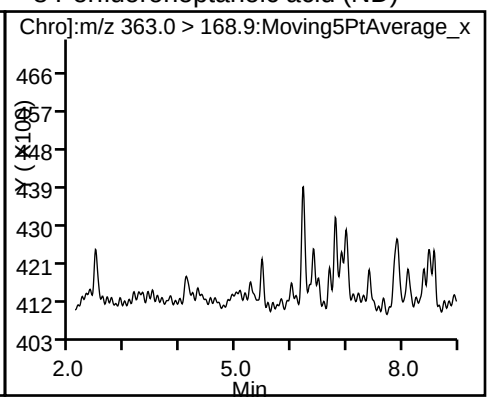
10 Perfluorohexane Sulfonate (ND)



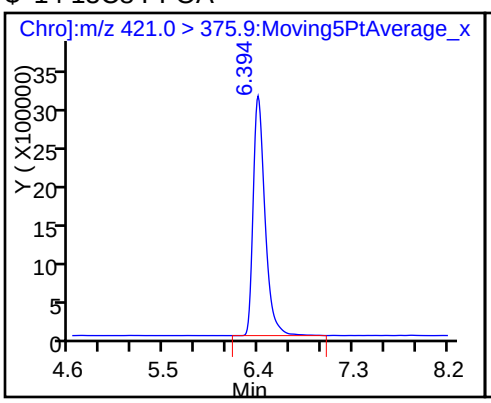
8 Perfluoroheptanoic acid (ND)



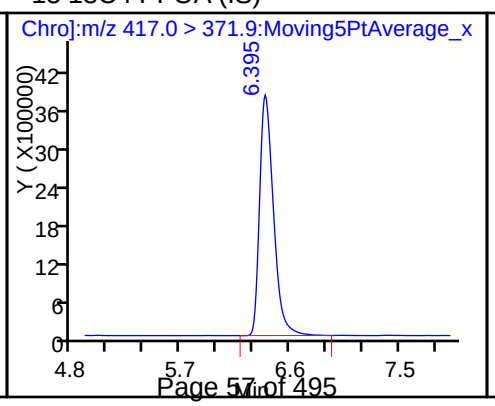
8 Perfluoroheptanoic acid (ND)



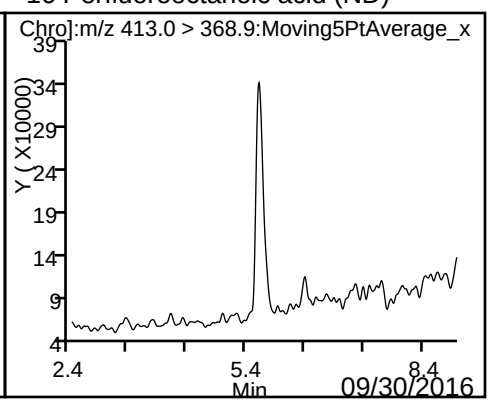
$ 14 13C8 PFOA



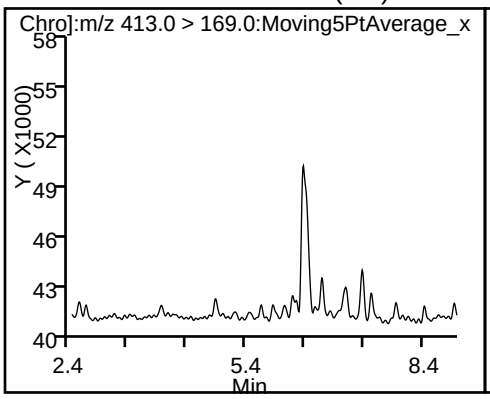
* 15 13C4 PFOA (IS)



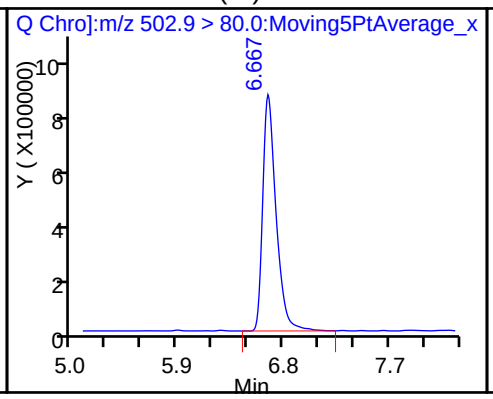
16 Perfluorooctanoic acid (ND)



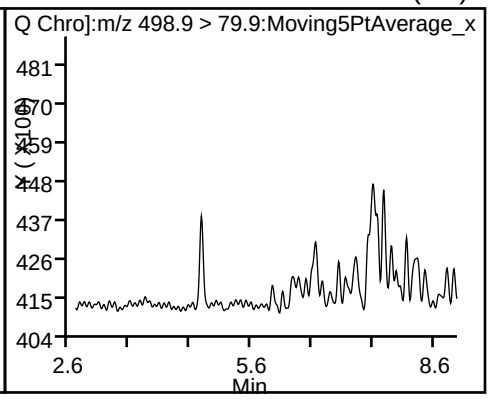
16 Perfluorooctanoic acid (ND)



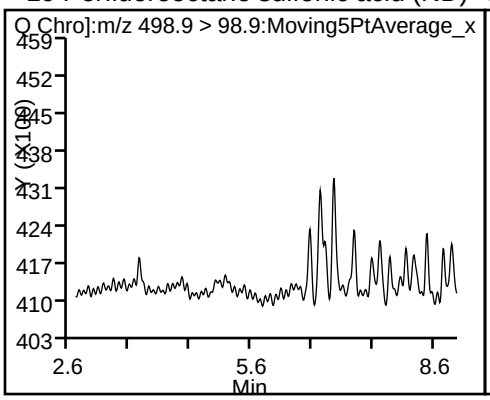
* 17 13C4 PFOS (IS)



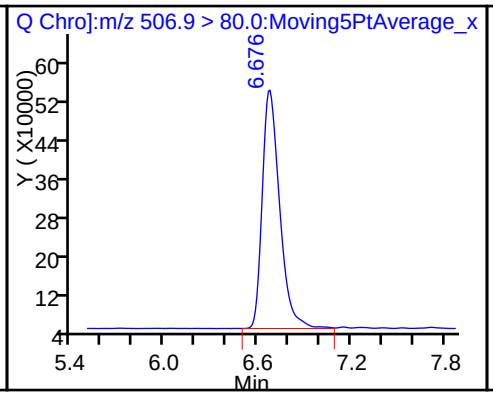
19 Perfluorooctane sulfonic acid (ND)



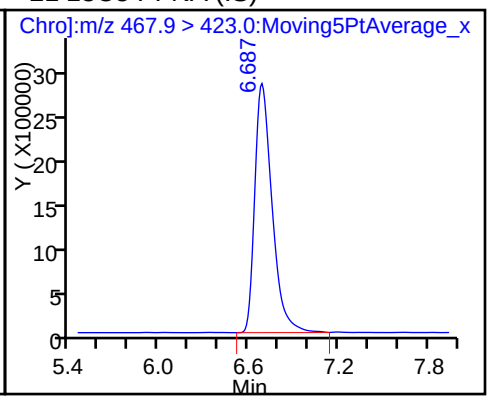
19 Perfluorooctane sulfonic acid (ND)



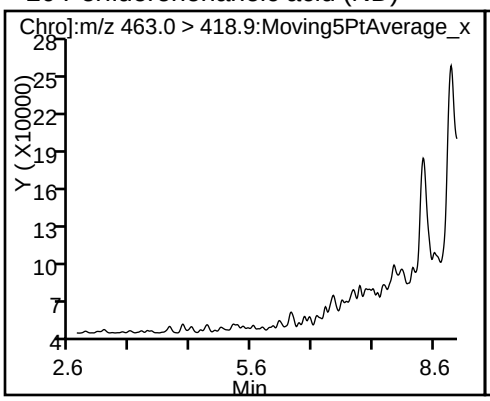
$ 18 13C8 PFOS



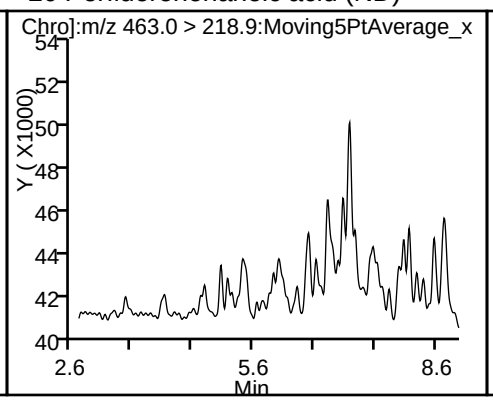
* 21 13C5 PFNA (IS)



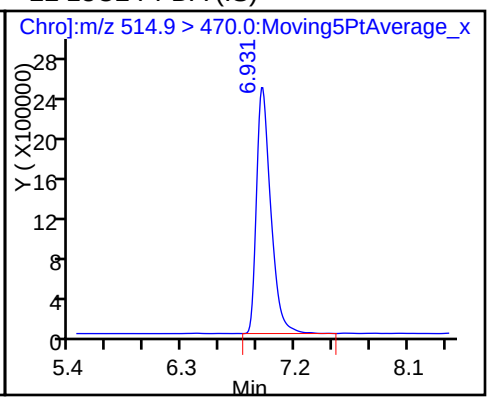
20 Perfluorononanoic acid (ND)



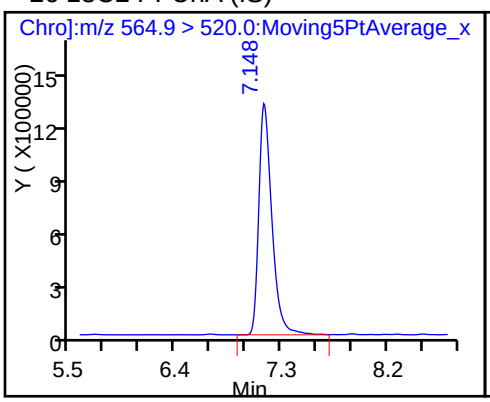
20 Perfluorononanoic acid (ND)



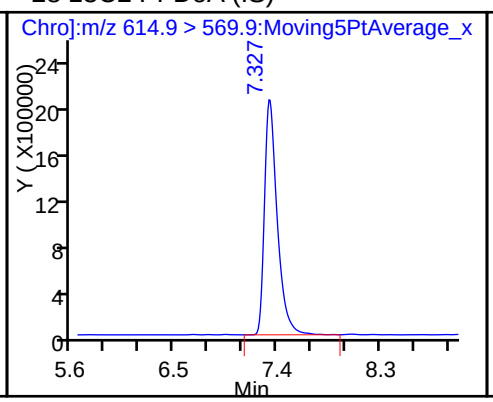
* 22 13C2 PFDA (IS)



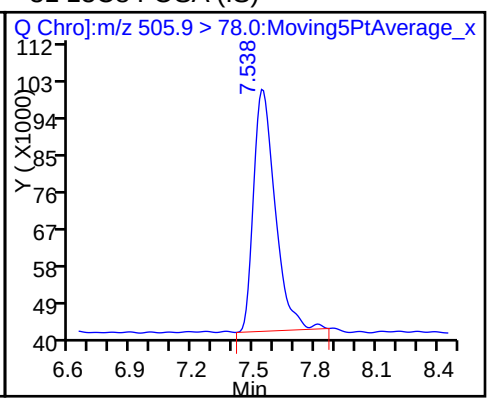
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: CB2K | Lab Sample ID: 280-88381-2

Matrix: Water | Lab File ID: PC516I028105.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 13:40

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 276.4(mL) | Date Analyzed: 09/29/2016 00:58

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0091	J	0.018	0.0075
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.51		0.027	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.064		0.027	0.0063
375-95-1	Perfluorononanoic acid (PFNA)	0.052		0.036	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.071		0.027	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.52		0.018	0.0089

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	124		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028105.d
Lims ID: 280-88381-A-2-A
Client ID: CB2K
Sample Type: Client
Inject. Date: 29-Sep-2016 00:58:23 ALS Bottle#: 0 Worklist Smp#: 29
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:19:00

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.973	3.963	0.010		22422216	10.0			
4 Perfluorobutane Sulfonate									RM
298.9 > 79.9	5.241	5.184	0.057	0.858	525972	0.5042			R
298.9 > 98.9	5.260	5.184	0.076	0.861	95949		5.48(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.695	5.648	0.047		19281692	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.073	0.038		2092656	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.102	6.073	0.029	0.998	2957149	3.55			R
398.9 > 98.9	6.102	6.073	0.029	0.998	973251		3.04(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.093	6.074	0.019	0.949	82531982	28.4			
363.0 > 168.9	6.102	6.074	0.028	0.950	20731107		3.98(3.35-6.23)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.423	6.413	0.010	1.000	24753310	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.423	6.413	0.010		29340979	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.423	6.414	0.009	1.000	87524130	28.9			
413.0 > 169.0	6.423	6.414	0.009	1.000	26728119		3.27(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.695	6.676	0.019		7342993	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.677	6.677	0.0	0.997	3783995	3.95			R
498.9 > 98.9	6.686	6.677	0.009	0.999	1051670		3.60(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.695	6.685	0.010	1.000	4604655	11.5			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.706	6.696	0.010		24666725	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.715	6.697	0.018	1.001	8077827	2.85			
463.0 > 218.9	6.715	6.697	0.018	1.001	1159911		6.96(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.960	6.941	0.019		23417037	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.167	7.148	0.019		13253643	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.346	7.327	0.019		21247358	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.548	7.548	0.0		2655011	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

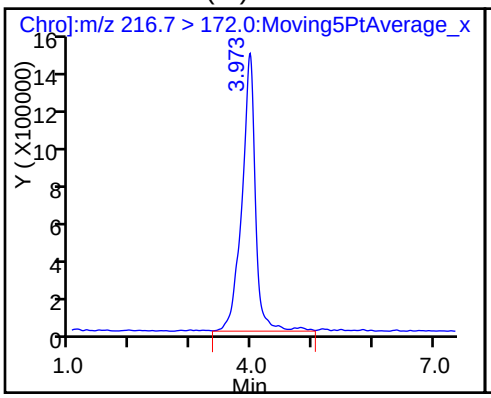
Report Date: 29-Sep-2016 11:41:56 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

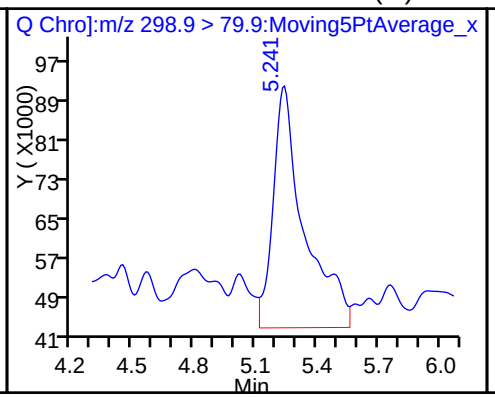
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028105.d

Injection Date:	29-Sep-2016 00:58:23	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-2-A	Lab Sample ID:	280-88381-2		
Client ID:	CB2K				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	29
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

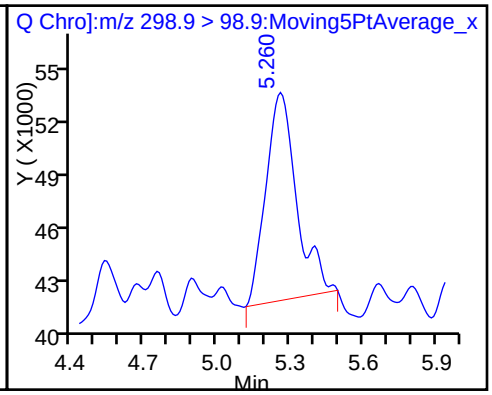
* 1 13C4 PFBA (IS)



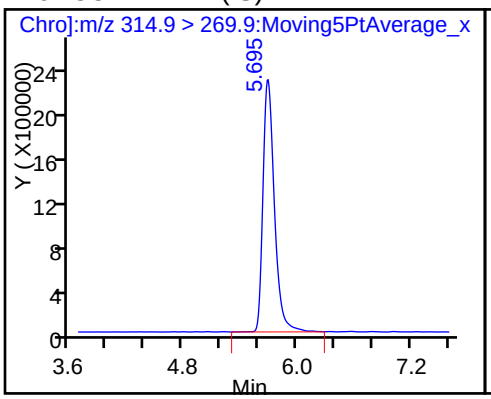
4 Perfluorobutane Sulfonate (M)



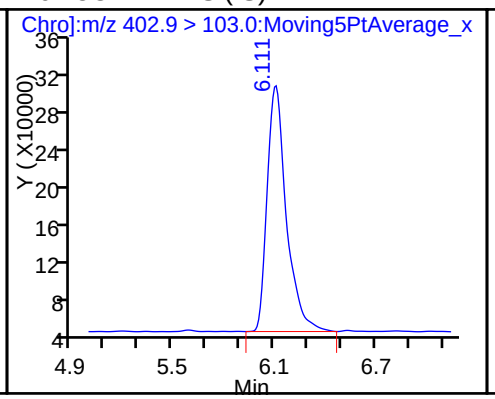
4 Perfluorobutane Sulfonate



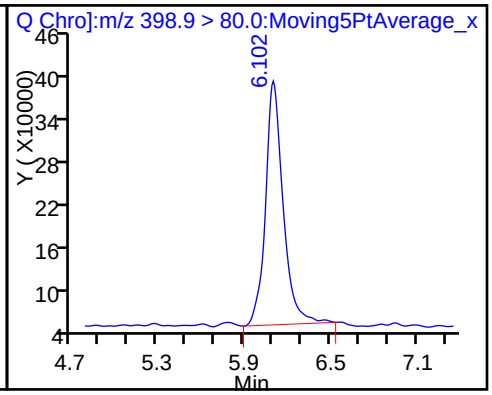
* 6 13C2 PFHxA (IS)



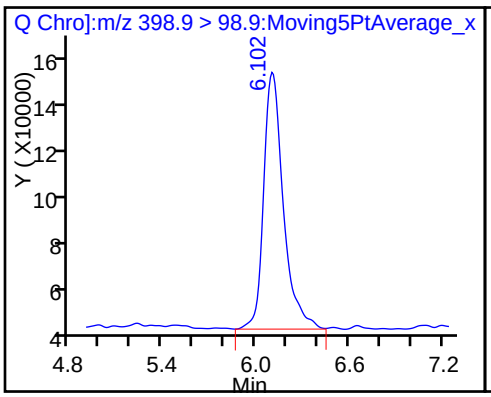
* 9 18O2 PFHxS (IS)



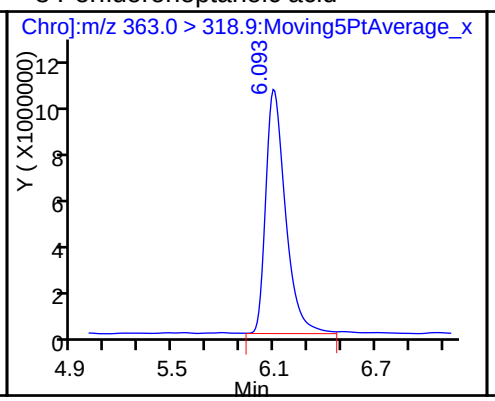
10 Perfluorohexane Sulfonate



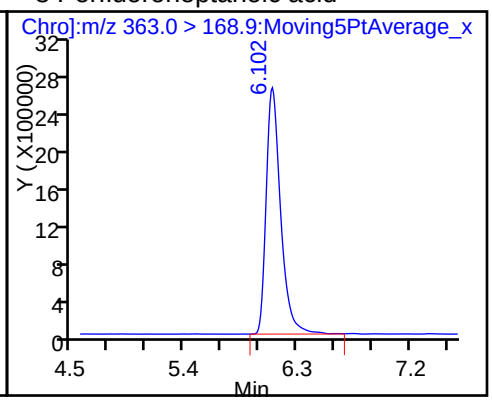
10 Perfluorohexane Sulfonate



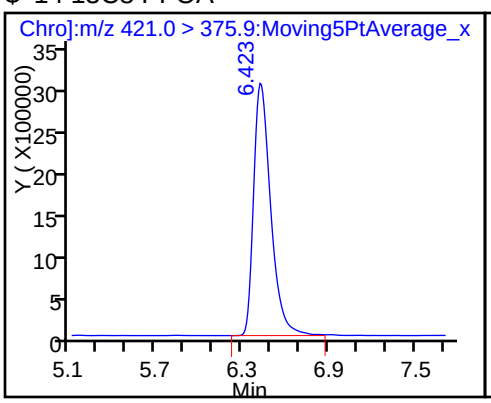
8 Perfluoroheptanoic acid



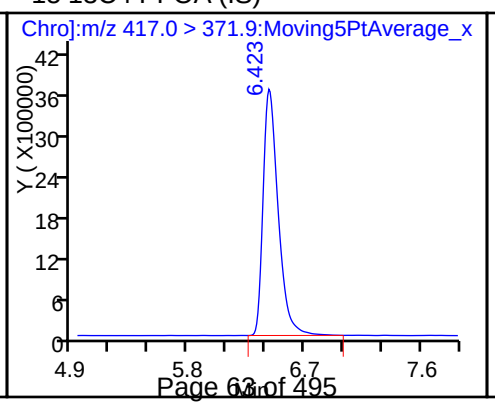
8 Perfluoroheptanoic acid



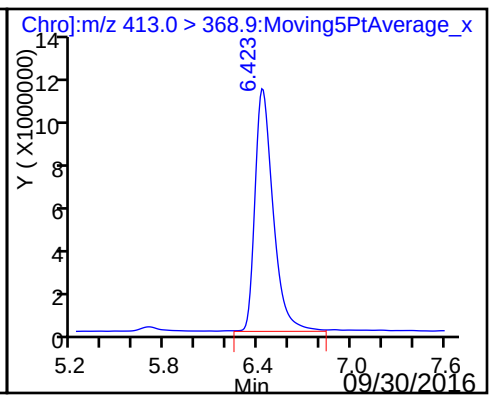
$ 14 13C8 PFOA



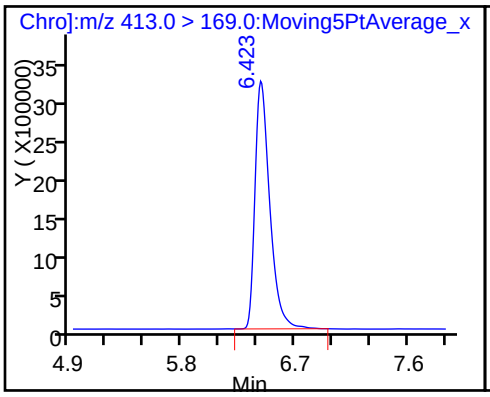
* 15 13C4 PFOA (IS)



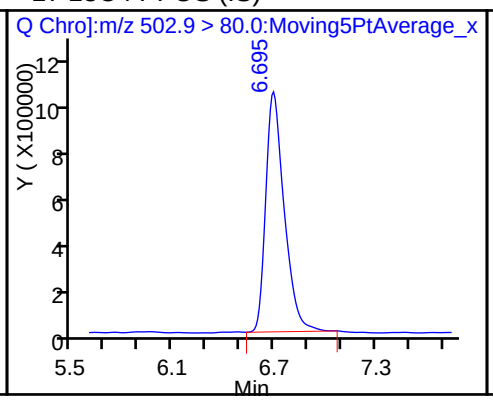
16 Perfluorooctanoic acid



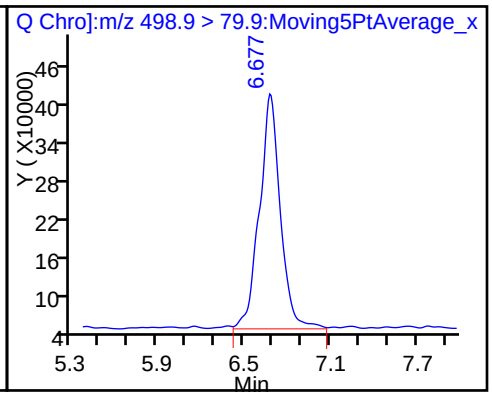
16 Perfluorooctanoic acid



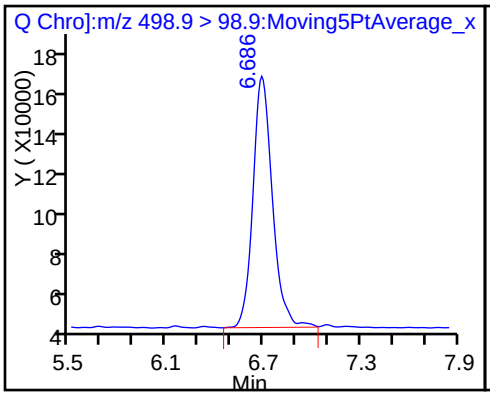
* 17 13C4 PFOS (IS)



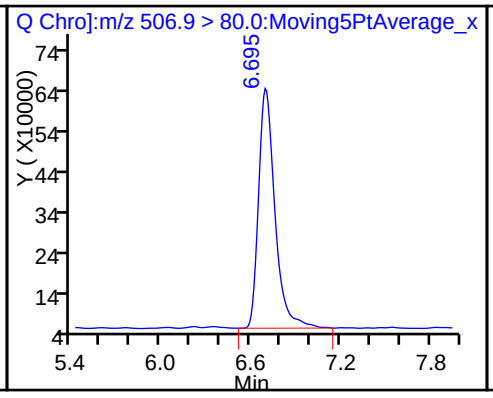
19 Perfluorooctane sulfonic acid



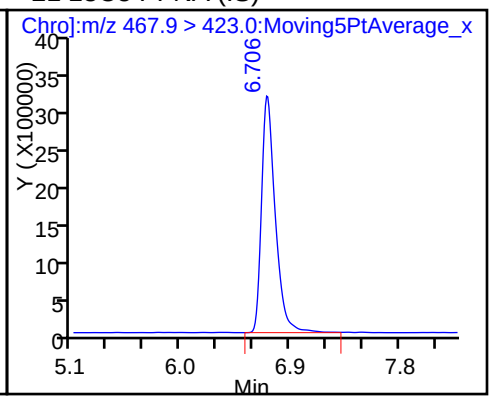
19 Perfluorooctane sulfonic acid



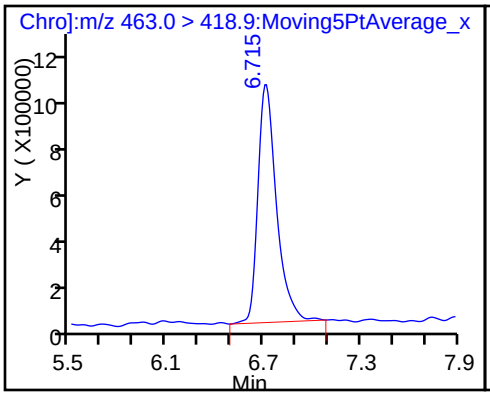
$ 18 13C8 PFOS



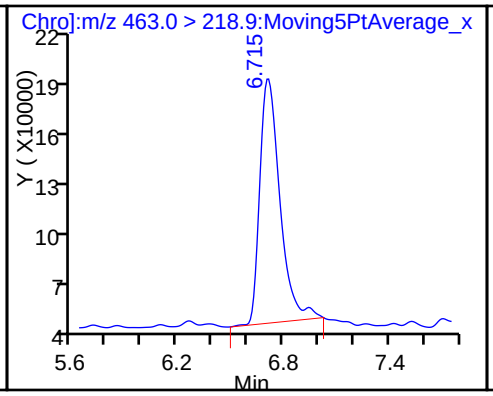
* 21 13C5 PFNA (IS)



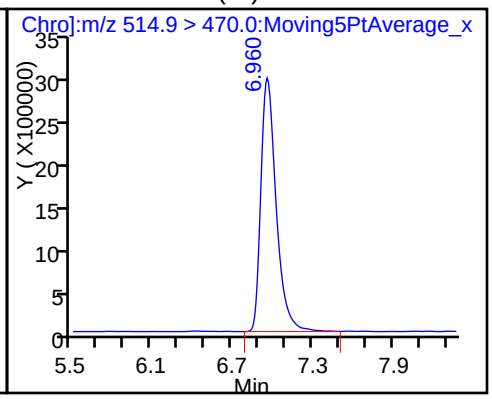
20 Perfluorononanoic acid



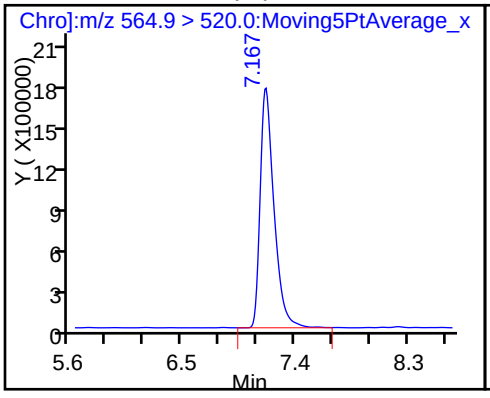
20 Perfluorononanoic acid



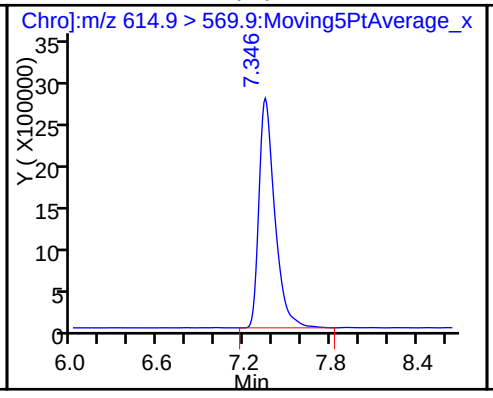
* 22 13C2 PFDA (IS)



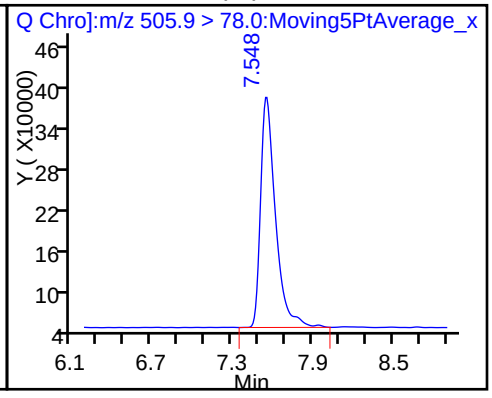
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



Manual Integration/User Assign Peak Report

TestAmerica Denver

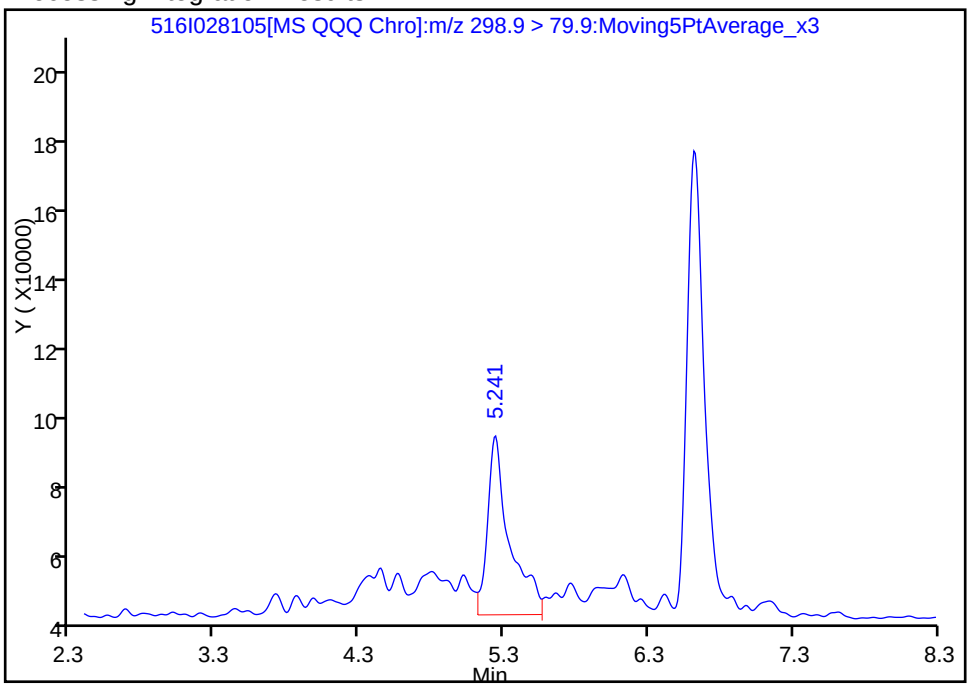
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028105.d				
Injection Date:	29-Sep-2016 00:58:23	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-2-A	Lab Sample ID:	280-88381-2		
Client ID:	CB2K				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	29
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

4 Perfluorobutane Sulfonate, CAS: 29420-43-3

Signal: 1

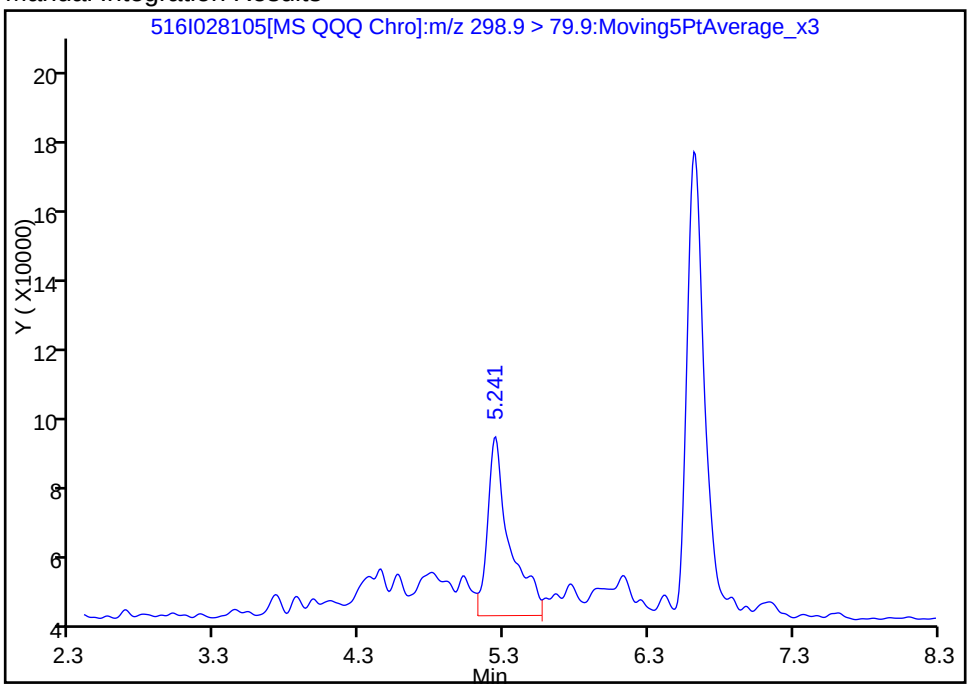
Processing Integration Results

RT: 5.24
Area: 525972
Amount: 0.504192
Amount Units: ug/L



Manual Integration Results

RT: 5.24
Area: 525972
Amount: 0.504192
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:19:00
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: CB9A | Lab Sample ID: 280-88381-3

Matrix: Water | Lab File ID: PC516I028106.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 14:05

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 255.9(mL) | Date Analyzed: 09/29/2016 01:10

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0081	U	0.020	0.0081
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.19		0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.054		0.029	0.0068
375-95-1	Perfluorononanoic acid (PFNA)	0.031	J	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.23		0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.32		0.020	0.0096

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	115		60-155
STL01054	13C8 PFOS	113		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028106.d
Lims ID: 280-88381-A-3-A
Client ID: CB9A
Sample Type: Client
Inject. Date: 29-Sep-2016 01:10:40 ALS Bottle#: 0 Worklist Smp#: 30
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:20:39

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.802	3.963	-0.161		12676479	10.0			
4 Perfluorobutane Sulfonate									M
298.9 > 79.9	5.147	5.184	-0.037	0.855	368453	0.3535			M
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.582	5.648	-0.066		19139137	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.016	6.073	-0.057		2137912	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.016	6.073	-0.057	1.000	2352488	2.77			R
398.9 > 98.9	6.016	6.073	-0.057	1.000	882713		2.67(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.007	6.074	-0.067	0.946	27890076	9.81			
363.0 > 168.9	6.007	6.074	-0.067	0.946	6911701		4.04(3.35-6.23)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.347	6.413	-0.066	1.000	24553324	11.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.347	6.413	-0.066		28793665	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.347	6.414	-0.067	1.000	48204560	16.2			
413.0 > 169.0	6.347	6.414	-0.067	1.000	14947061		3.23(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.629	6.676	-0.047		7329976	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.620	6.677	-0.057	0.999	11252918	11.7			R
498.9 > 98.9	6.620	6.677	-0.057	0.999	3856709		2.92(1.31-2.43)		
$ 18 13C8 PFOS									M
506.9 > 80.0	6.629	6.685	-0.056	1.000	4173219	10.5			M
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.639	6.696	-0.057		23666471	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
20 Perfluorononanoic acid									
463.0 > 418.9	6.649	6.697	-0.048	1.001	4228780	1.58			
463.0 > 218.9	6.630	6.697	-0.067	0.999	695263		6.08(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.893	6.941	-0.048		21827887	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.110	7.148	-0.038		11290757	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.289	7.327	-0.038		18148854	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.491	7.548	-0.057		1765922	10.0			

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- s - Failed ISTD Recovery Test

Review Flags
- M - Manually Integrated

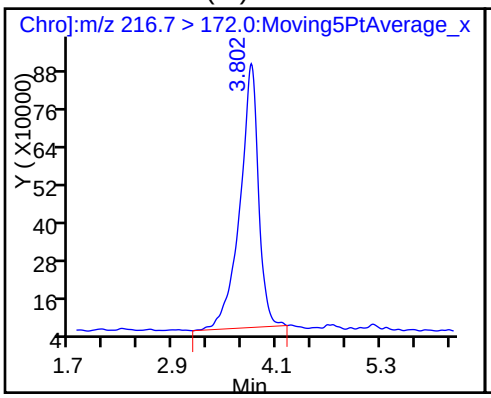
Report Date: 29-Sep-2016 11:41:58 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

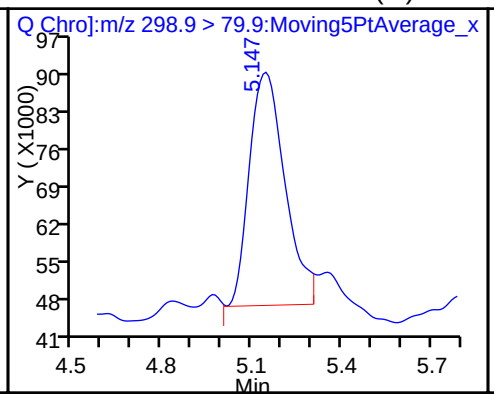
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028106.d

Injection Date:	29-Sep-2016 01:10:40	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-3-A	Lab Sample ID:	280-88381-3		
Client ID:	CB9A				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	30
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

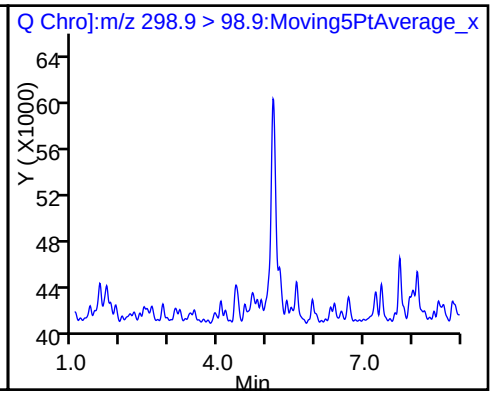
* 1 13C4 PFBA (IS)



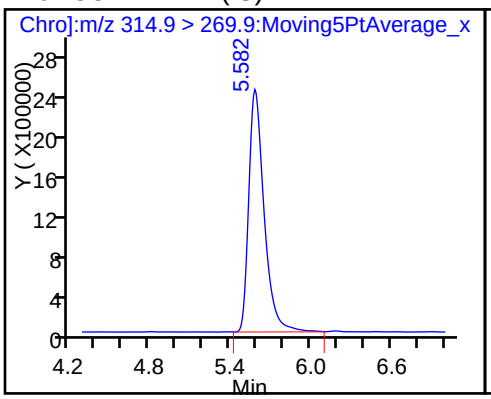
4 Perfluorobutane Sulfonate (M)



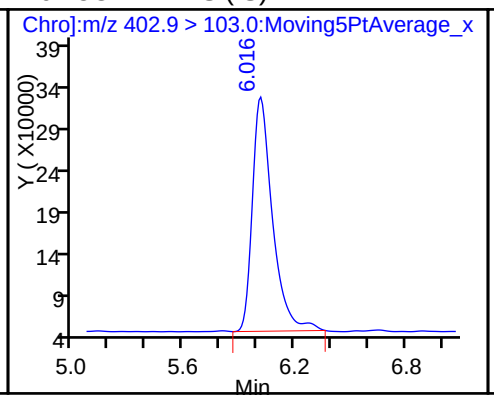
4 Perfluorobutane Sulfonate



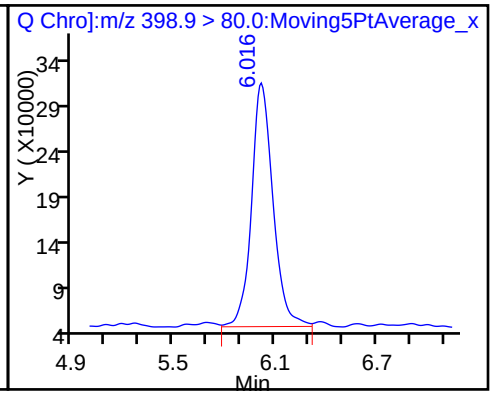
* 6 13C2 PFHxA (IS)



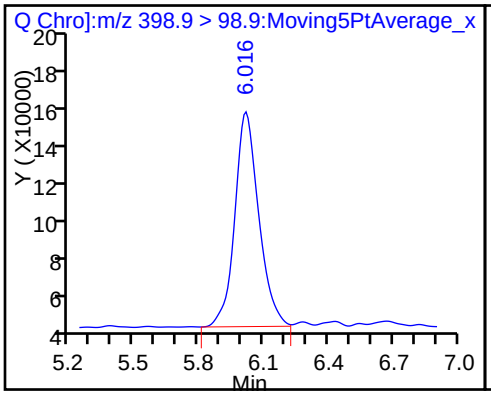
* 9 18O2 PFHxS (IS)



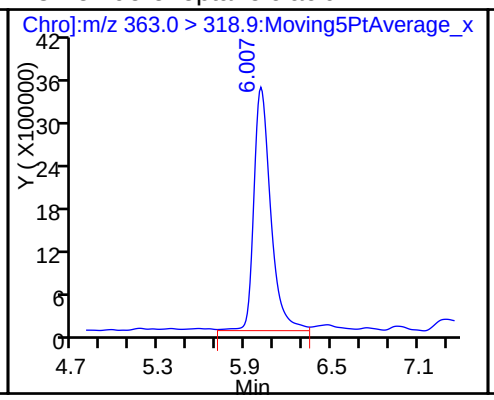
10 Perfluorohexane Sulfonate



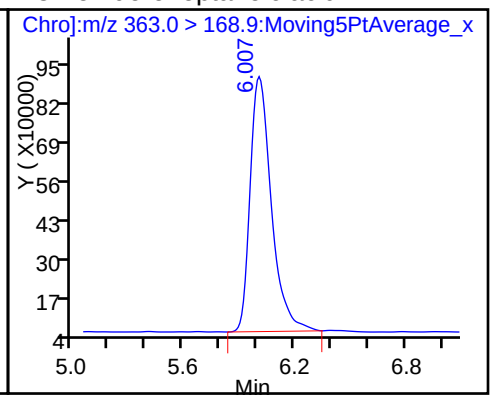
10 Perfluorohexane Sulfonate



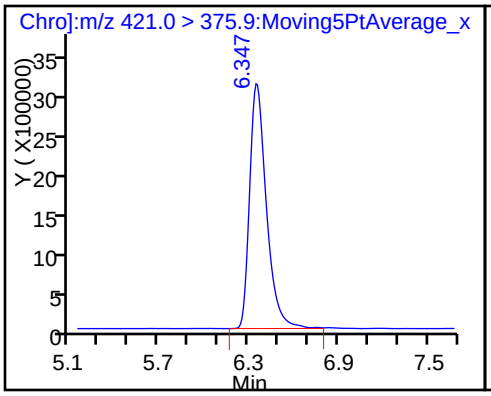
8 Perfluoroheptanoic acid



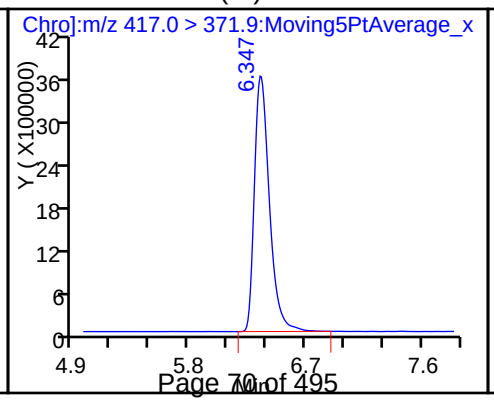
8 Perfluoroheptanoic acid



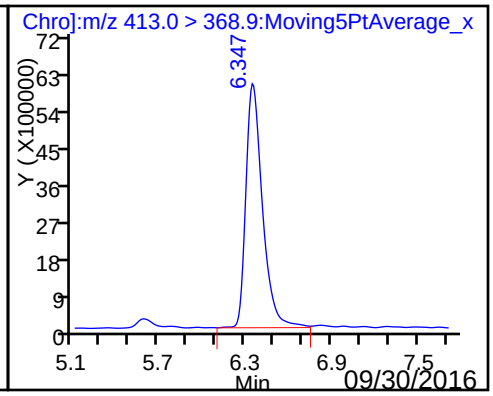
$ 14 13C8 PFOA



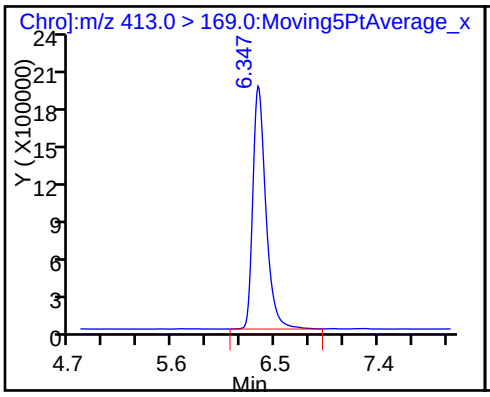
* 15 13C4 PFOA (IS)



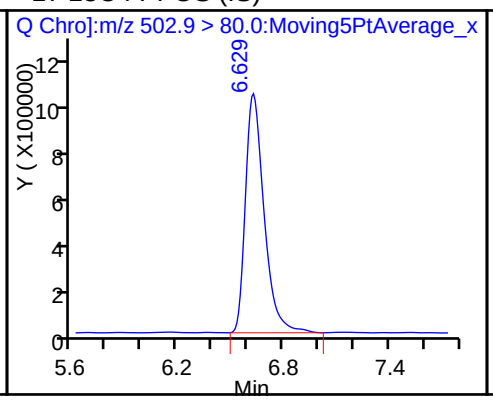
16 Perfluorooctanoic acid



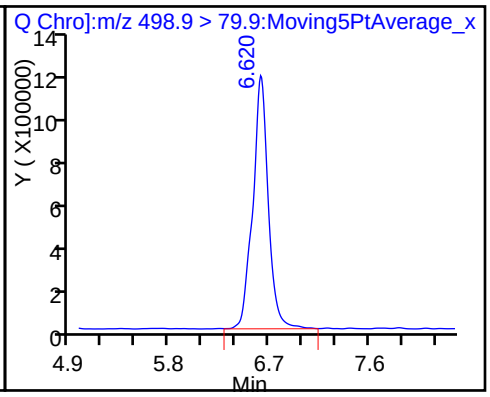
16 Perfluorooctanoic acid



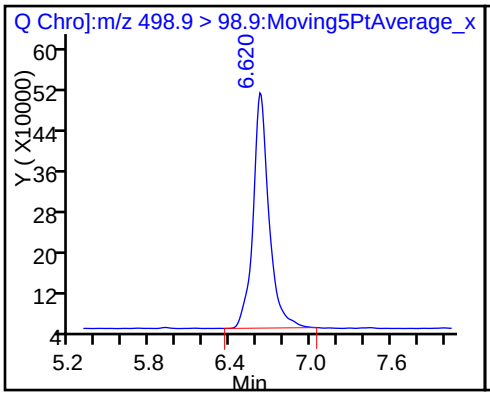
* 17 13C4 PFOS (IS)



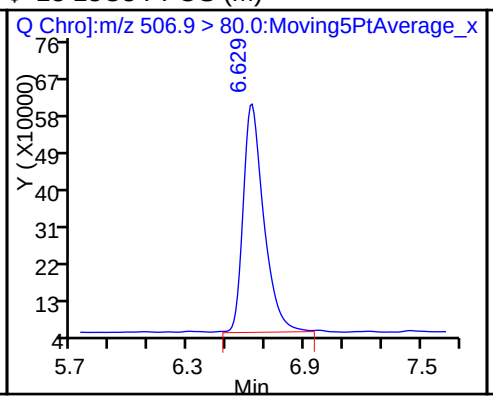
19 Perfluorooctane sulfonic acid



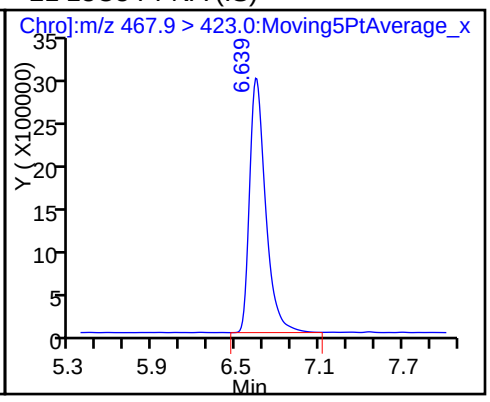
19 Perfluorooctane sulfonic acid



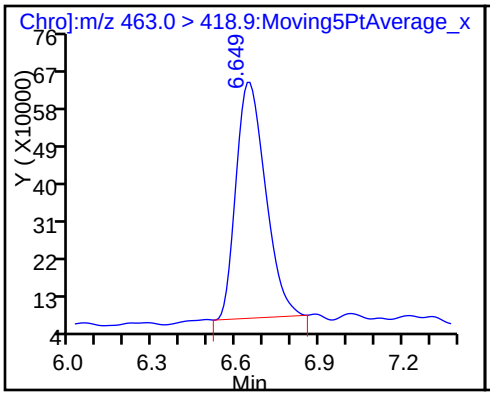
$ 18 13C8 PFOS (M)



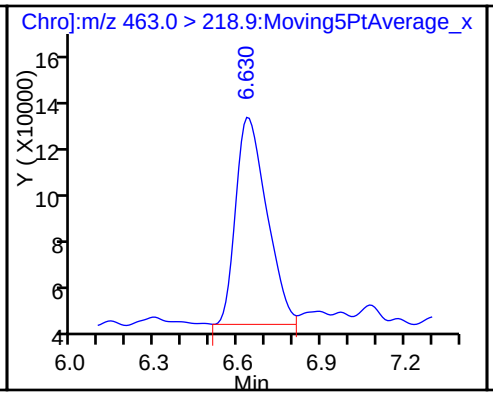
* 21 13C5 PFNA (IS)



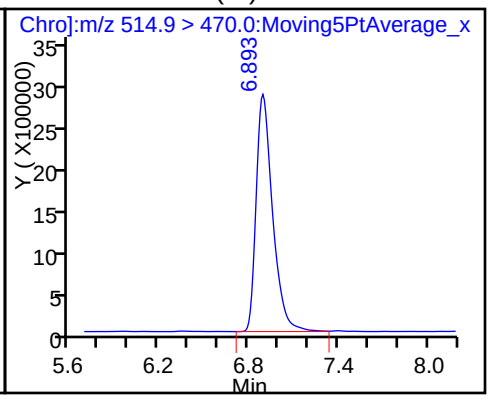
20 Perfluorononanoic acid



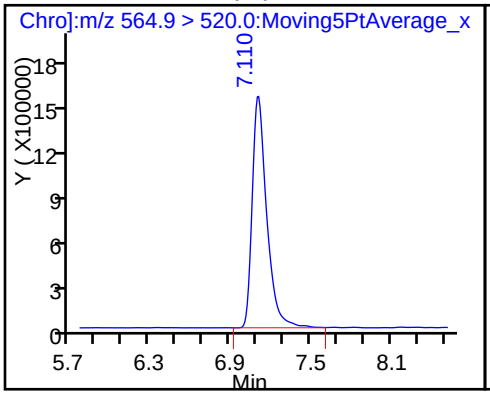
20 Perfluorononanoic acid



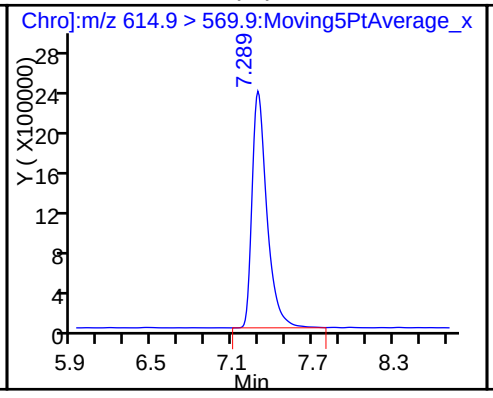
* 22 13C2 PFDA (IS)



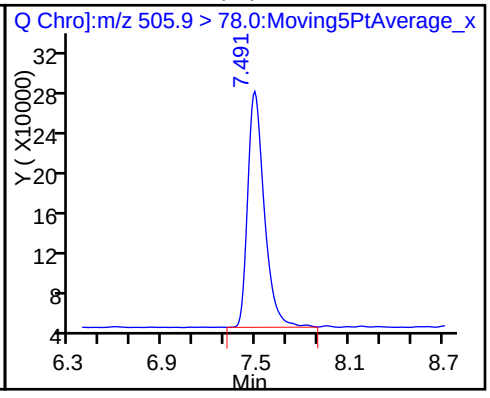
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



Manual Integration/User Assign Peak Report

TestAmerica Denver

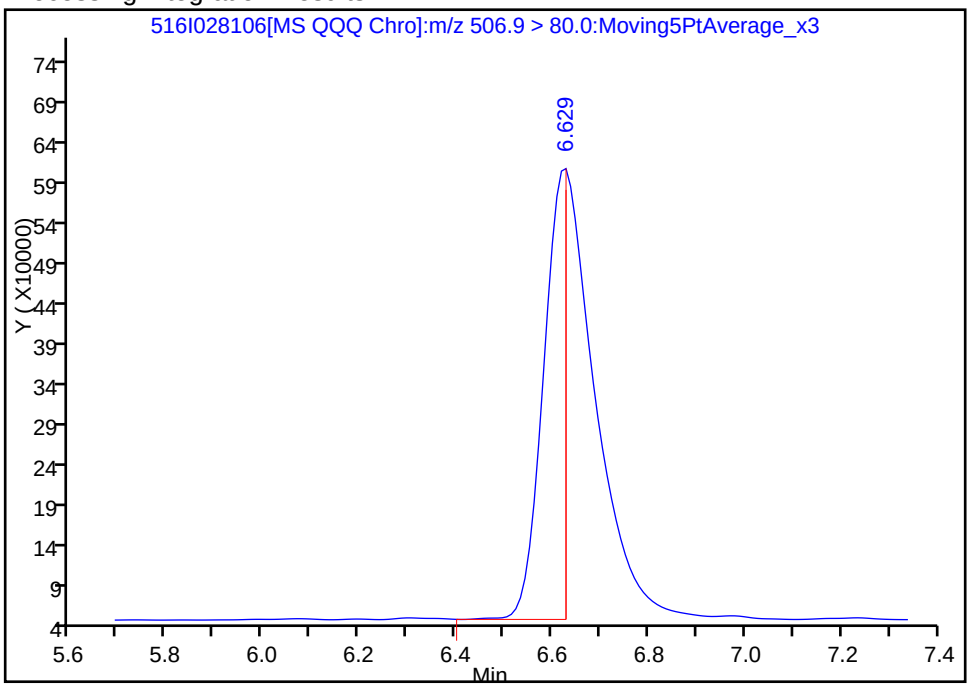
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028106.d				
Injection Date:	29-Sep-2016 01:10:40	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-3-A	Lab Sample ID:	280-88381-3		
Client ID:	CB9A				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	30
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

$ 18 13C8 PFOS, CAS: STL01054

Signal: 1

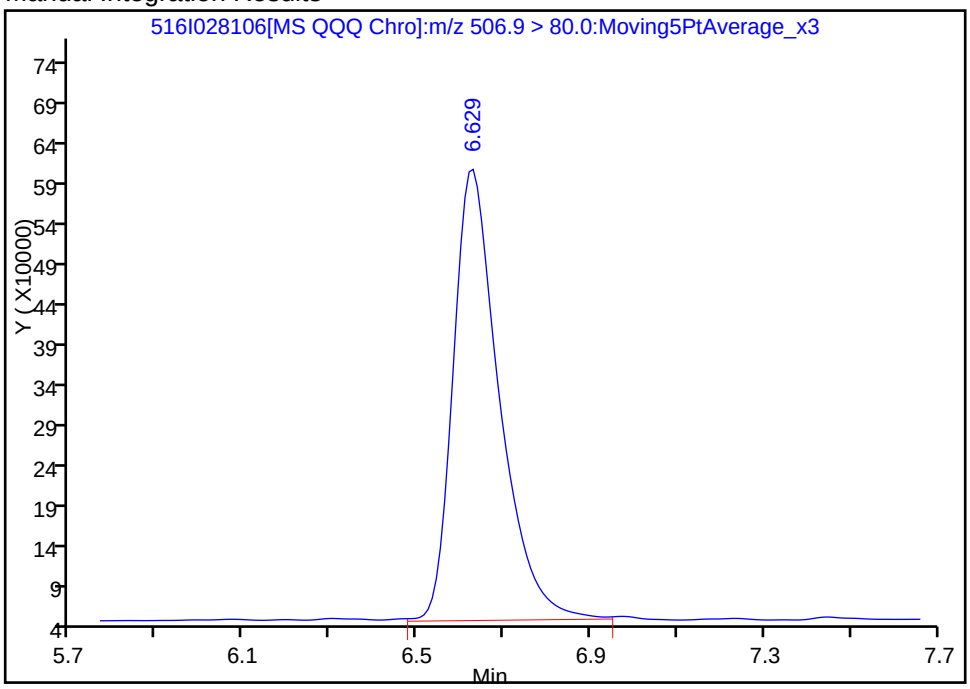
Processing Integration Results

RT: 6.63
Area: 1754367
Amount: 4.374524
Amount Units: ug/L



Manual Integration Results

RT: 6.63
Area: 4173219
Amount: 10.460413
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:20:39

Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver

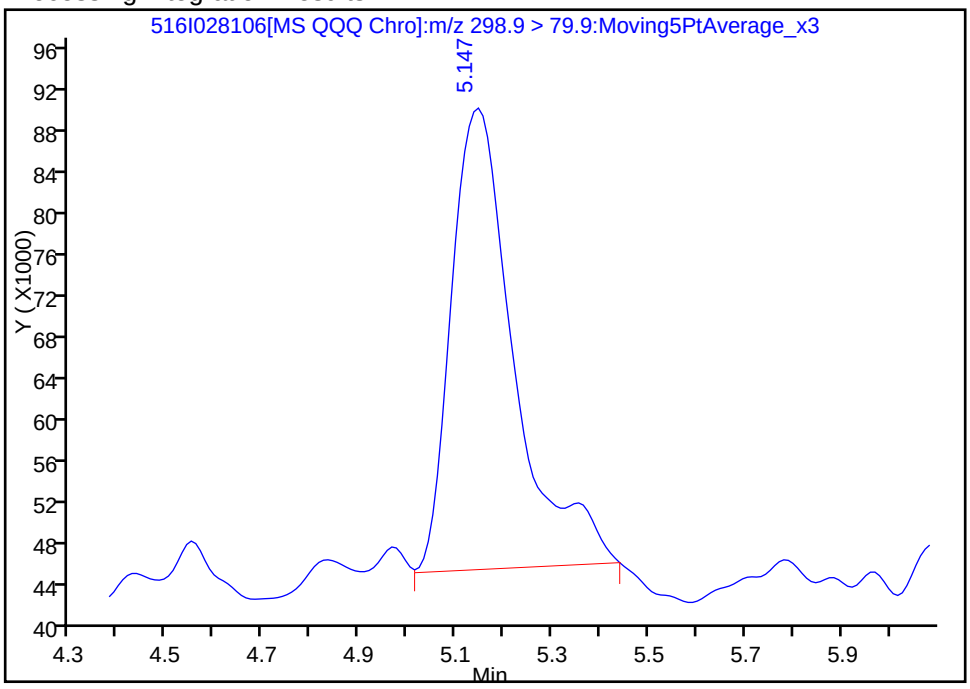
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028106.d				
Injection Date:	29-Sep-2016 01:10:40	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-3-A	Lab Sample ID:	280-88381-3		
Client ID:	CB9A				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	30
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

4 Perfluorobutane Sulfonate, CAS: 29420-43-3

Signal: 1

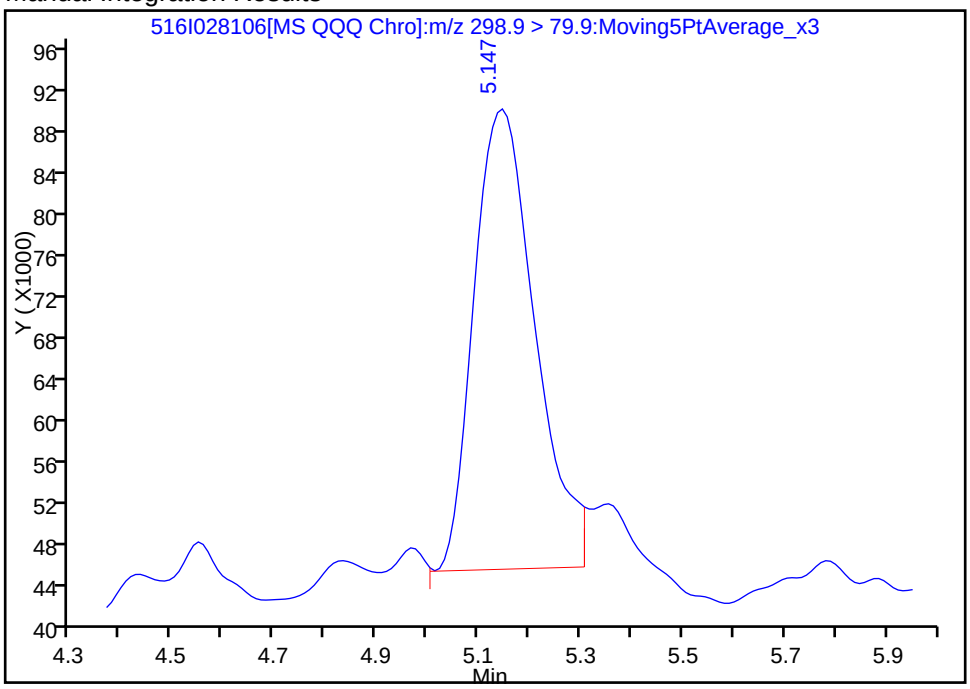
Processing Integration Results

RT: 5.15
Area: 401239
Amount: 0.382728
Amount Units: ug/L



Manual Integration Results

RT: 5.15
Area: 368453
Amount: 0.353470
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:20:39
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: W6 | Lab Sample ID: 280-88381-4

Matrix: Water | Lab File ID: PC516I028107.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 14:35

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 268.7(mL) | Date Analyzed: 09/29/2016 01:22

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0077	U	0.019	0.0077
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.014	J	0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.020	J	0.028	0.0065
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.017	J	0.028	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.023		0.019	0.0091

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	109		60-155
STL01054	13C8 PFOS	109		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028107.d
Lims ID: 280-88381-A-4-A
Client ID: W6
Sample Type: Client
Inject. Date: 29-Sep-2016 01:22:58 ALS Bottle#: 0 Worklist Smp#: 31
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-4-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:28:00

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.906	3.963	-0.057		22856379	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.232	5.184	0.048	0.861	106525	0.1209			
298.9 > 98.9	5.194	5.184	0.010	0.855	43454		2.45(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.648	5.648	0.0		20468396	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.073	6.073	0.0		2110939	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.073	6.073	0.0	1.000	892076	1.06			R
398.9 > 98.9	6.064	6.073	-0.009	0.998	255950		3.49(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.074	6.074	0.0	0.948	2312194	0.7779			
363.0 > 168.9	6.064	6.074	-0.010	0.947	572298		4.04(3.35-6.23)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.394	6.413	-0.019	0.998	25206287	10.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.404	6.413	-0.009		30946193	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.404	6.414	-0.010	1.000	4283023	1.24			
413.0 > 169.0	6.404	6.414	-0.010	1.000	1301892		3.29(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.667	6.676	-0.009		7300123	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.667	6.677	-0.010	1.000	871892	0.9327			R
498.9 > 98.9	6.648	6.677	-0.029	0.997	353156		2.47(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.667	6.685	-0.018	1.000	4024433	10.1			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.687	6.696	-0.009		24184268	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.697	6.697	0.0	1.001	753022	0.3217			R
463.0 > 218.9	6.678	6.697	-0.019	0.999	172260		4.37(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.931	6.941	-0.010		22489577	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.129	7.148	-0.019		11786192	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.308	7.327	-0.019		18698337	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.519	7.548	-0.029		1689738	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 29-Sep-2016 11:42:02 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028107.d

Injection Date: 29-Sep-2016 01:22:58 Instrument ID: LC_LCMS5

Lims ID: 280-88381-A-4-A Lab Sample ID: 280-88381-4

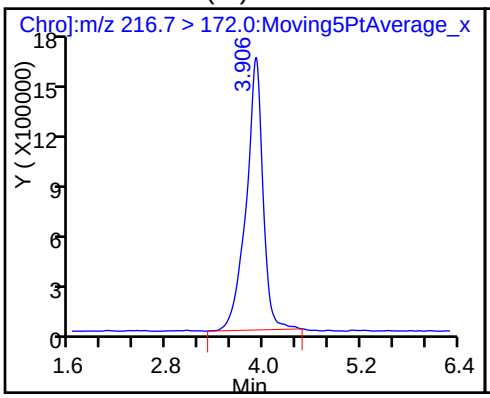
Client ID: W6

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 31

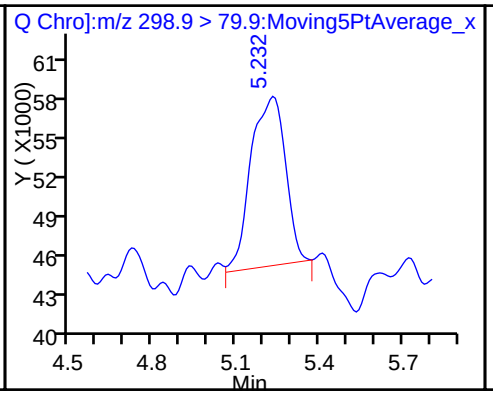
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

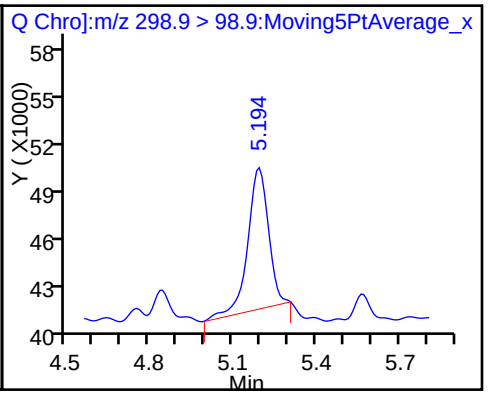
* 1 13C4 PFBA (IS)



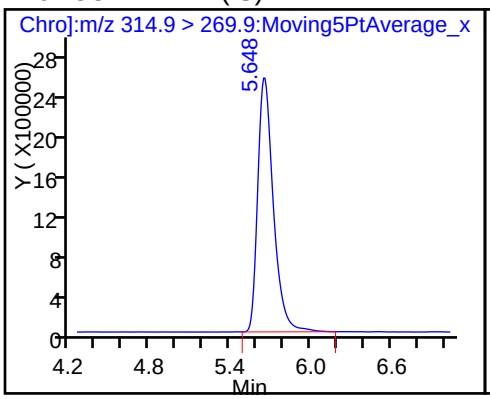
4 Perfluorobutane Sulfonate



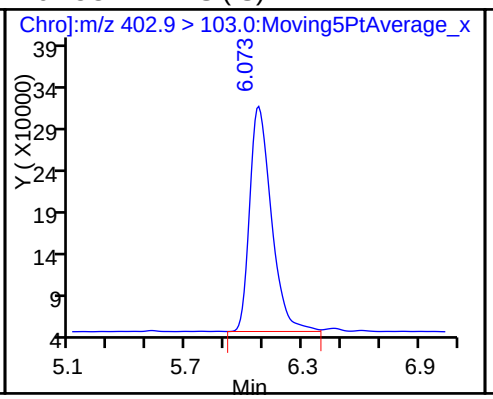
4 Perfluorobutane Sulfonate



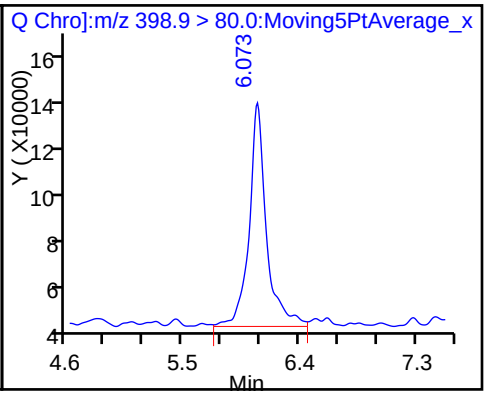
* 6 13C2 PFHxA (IS)



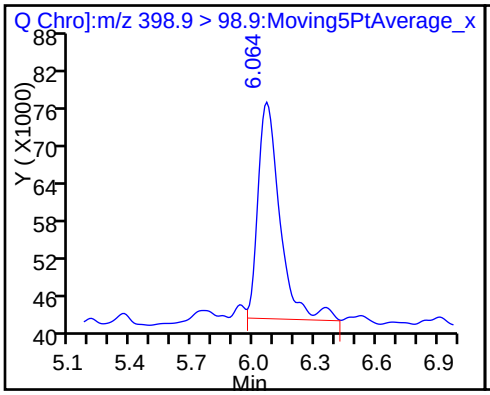
* 9 18O2 PFHxS (IS)



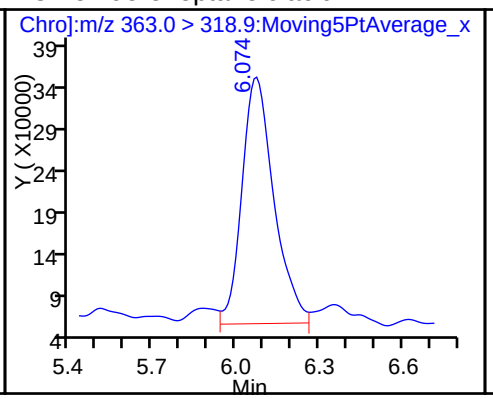
10 Perfluorohexane Sulfonate



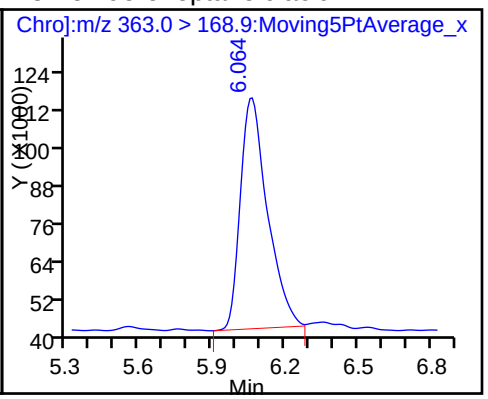
10 Perfluorohexane Sulfonate



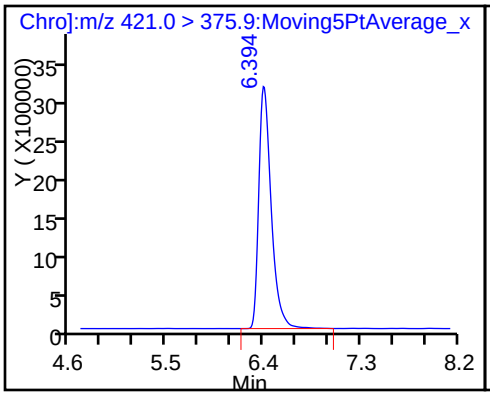
8 Perfluoroheptanoic acid



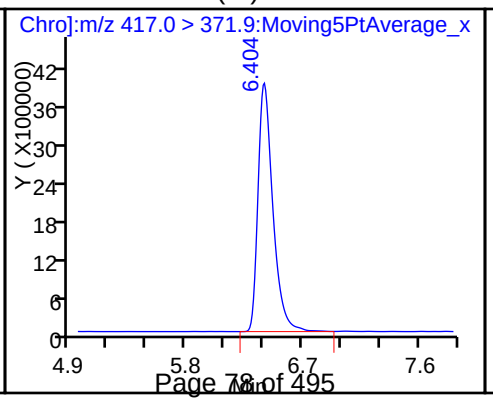
8 Perfluoroheptanoic acid



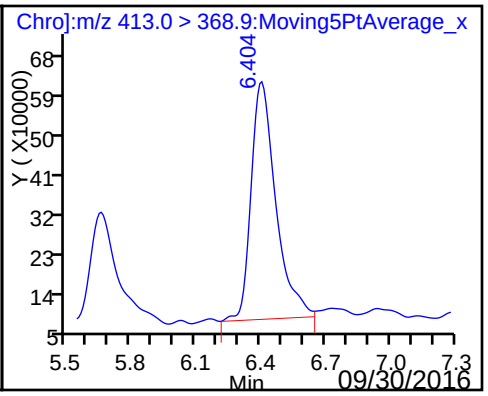
$ 14 13C8 PFOA



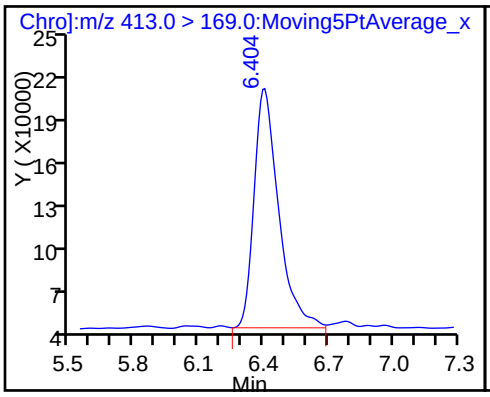
* 15 13C4 PFOA (IS)



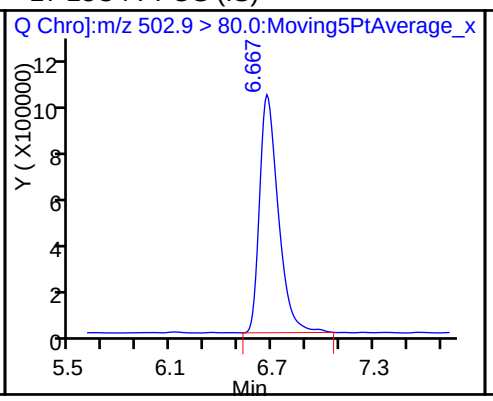
16 Perfluorooctanoic acid



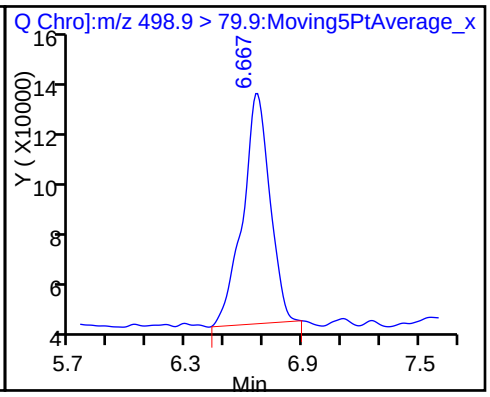
16 Perfluorooctanoic acid



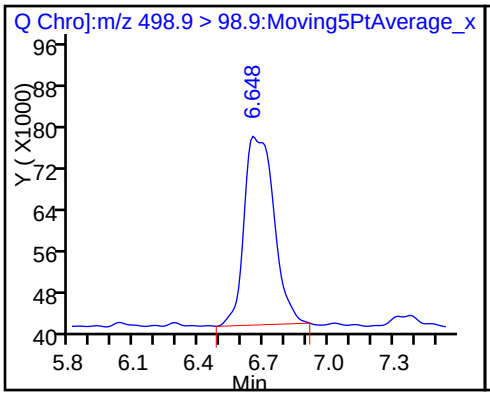
* 17 13C4 PFOS (IS)



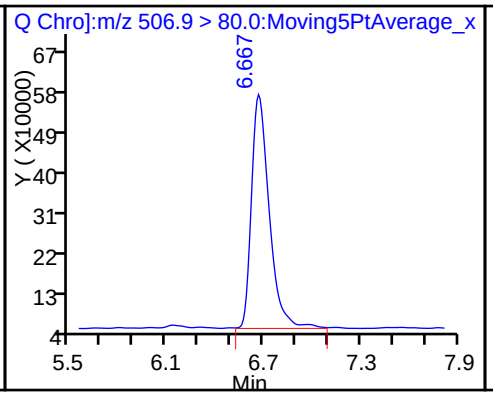
19 Perfluorooctane sulfonic acid



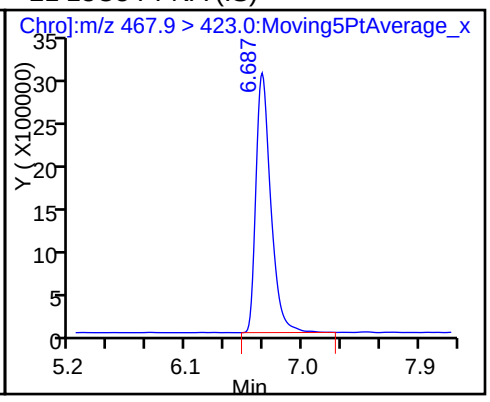
19 Perfluorooctane sulfonic acid



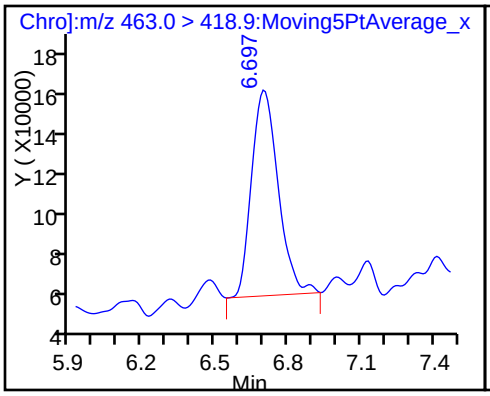
$ 18 13C8 PFOS



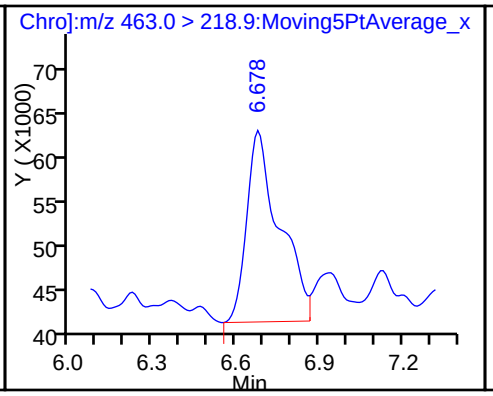
* 21 13C5 PFNA (IS)



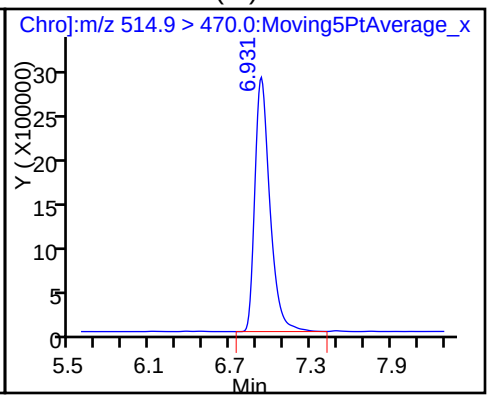
20 Perfluorononanoic acid



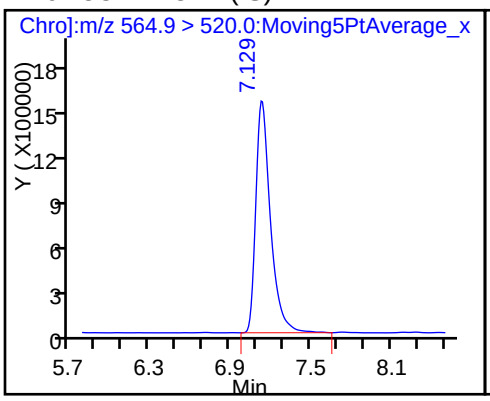
20 Perfluorononanoic acid



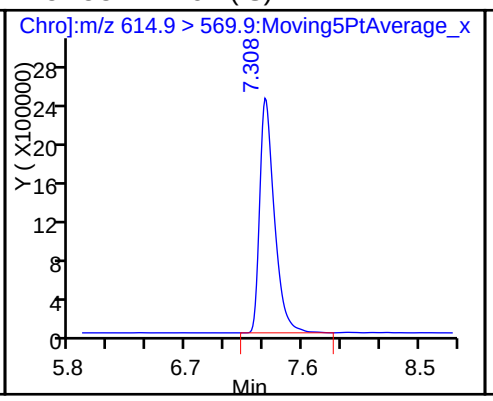
* 22 13C2 PFDA (IS)



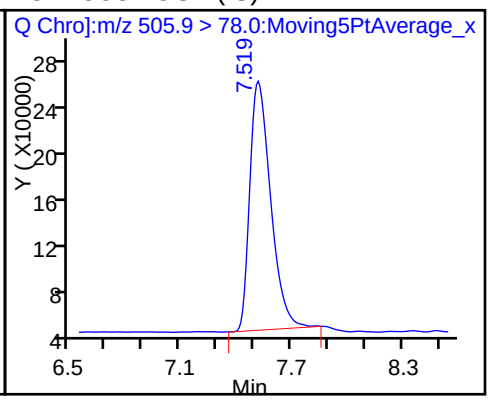
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: ANG-CB-EB-091516 | Lab Sample ID: 280-88381-5

Matrix: Water | Lab File ID: PC516I028108.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 14:45

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 293(mL) | Date Analyzed: 09/29/2016 01:35

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0070	U	0.017	0.0070
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.011	U	0.026	0.011
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0059	U	0.026	0.0059
375-95-1	Perfluorononanoic acid (PFNA)	0.015	U	0.034	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.011	U	0.026	0.011
335-67-1	Perfluorooctanoic acid (PFOA)	0.0084	U	0.017	0.0084

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	108		60-155
STL01054	13C8 PFOS	113		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028108.d
Lims ID: 280-88381-A-5-A
Client ID: ANG-CB-EB-091516
Sample Type: Client
Inject. Date: 29-Sep-2016 01:35:16 ALS Bottle#: 0 Worklist Smp#: 32
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-5-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:28:36

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.878	3.963	-0.085		28043475	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.184				ND			
298.9 > 98.9		5.184							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.638	5.648	-0.010		21303217	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.073	6.073	0.0		2180001	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.073				ND			
398.9 > 98.9		6.073							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.074				ND			
363.0 > 168.9		6.074							
$ 14 13C8 PFOA									
421.0 > 375.9	6.404	6.413	-0.009	1.000	26136049	10.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.404	6.413	-0.009		32502560	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.414				ND			
413.0 > 169.0		6.414							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.676	6.676	0.0		8147507	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.677				ND			
498.9 > 98.9		6.677							
$ 18 13C8 PFOS									
506.9 > 80.0	6.676	6.685	-0.009	1.000	4657519	10.5			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.696	6.696	0.0		25538461	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.697				ND			
463.0 > 218.9		6.697							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.941	6.941	0.0		27224740	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.148	7.148	0.0		17921477	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.337	7.327	0.010		38640256	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.548	7.548	0.0		1667686	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

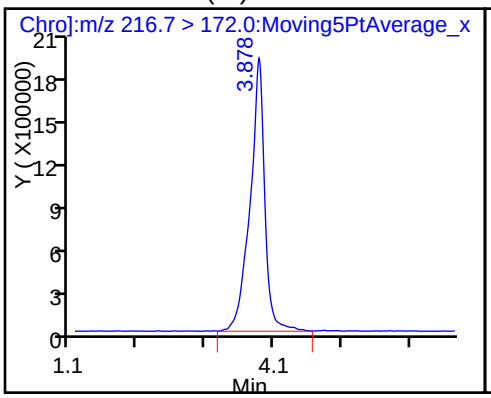
Report Date: 29-Sep-2016 11:42:05 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

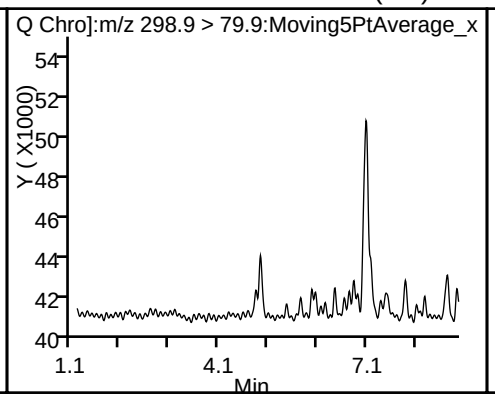
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028108.d

Injection Date:	29-Sep-2016 01:35:16	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-5-A	Lab Sample ID:	280-88381-5		
Client ID:	ANG-CB-EB-091516				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	32
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

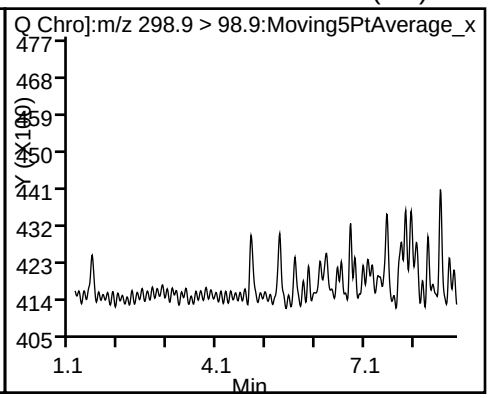
* 1 13C4 PFBA (IS)



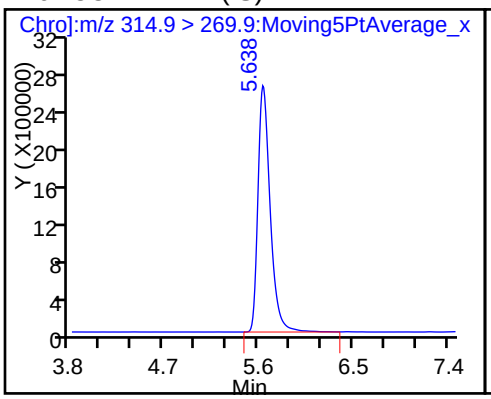
4 Perfluorobutane Sulfonate (ND)



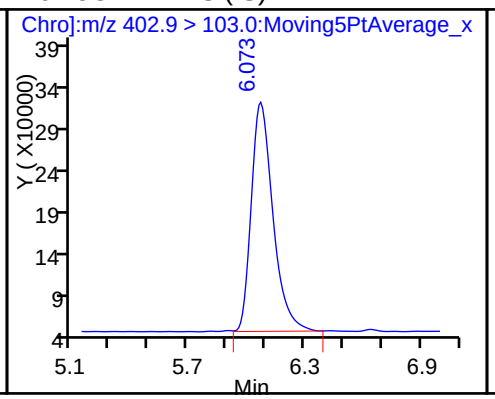
4 Perfluorobutane Sulfonate (ND)



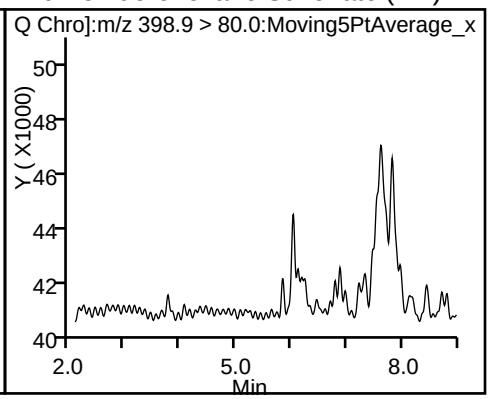
* 6 13C2 PFHxA (IS)



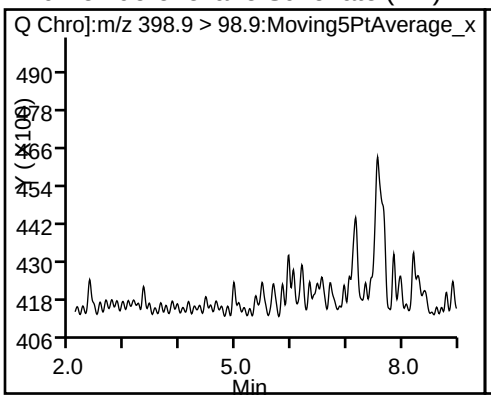
* 9 18O2 PFHxS (IS)



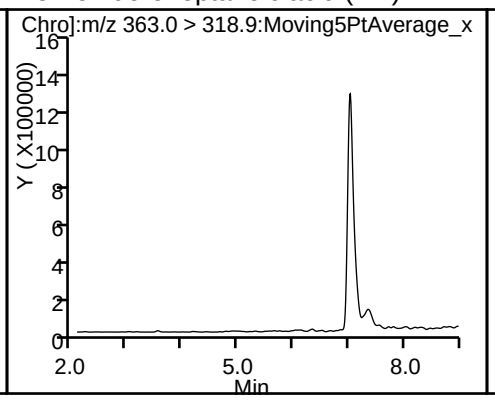
10 Perfluorohexane Sulfonate (ND)



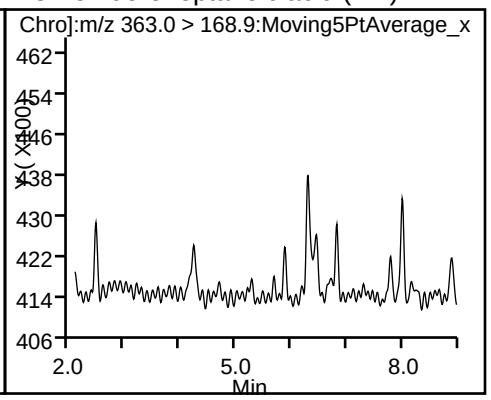
10 Perfluorohexane Sulfonate (ND)



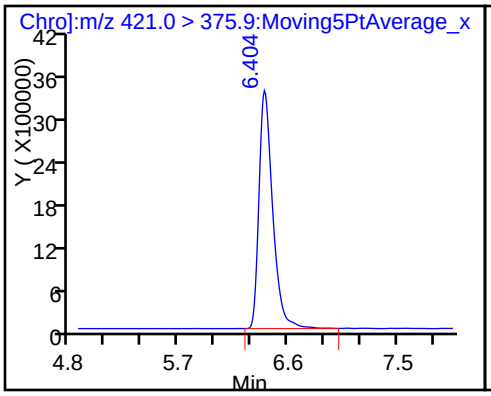
8 Perfluoroheptanoic acid (ND)



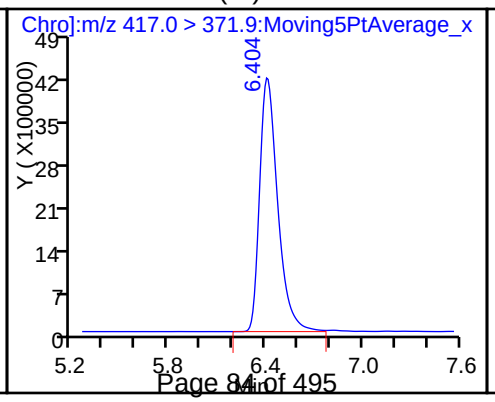
8 Perfluoroheptanoic acid (ND)



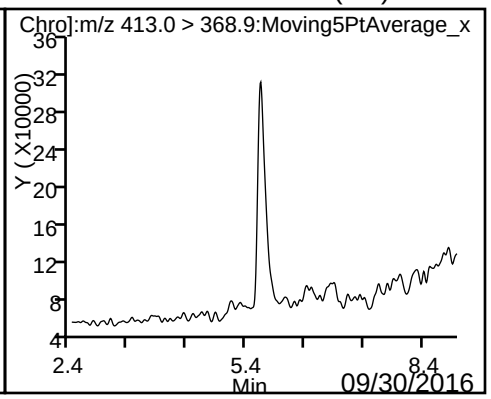
$ 14 13C8 PFOA



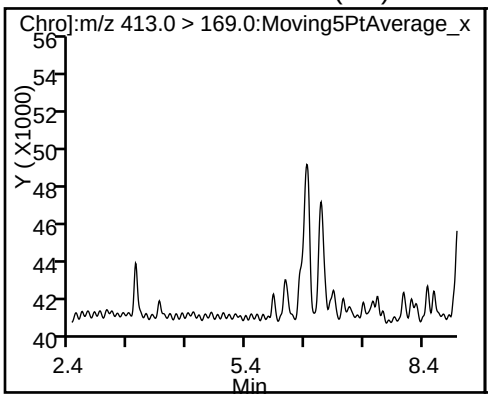
* 15 13C4 PFOA (IS)



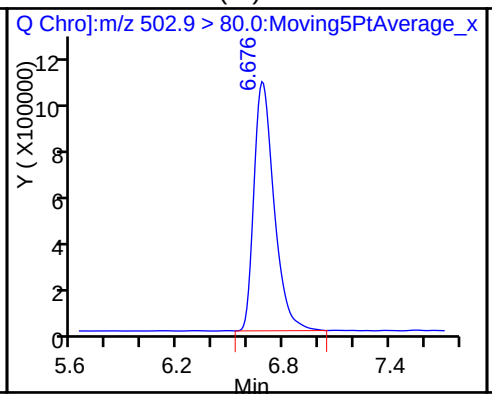
16 Perfluorooctanoic acid (ND)



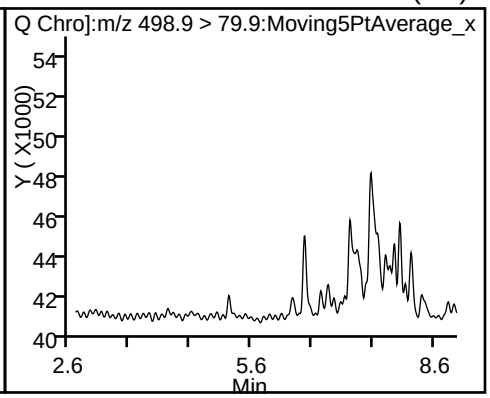
16 Perfluorooctanoic acid (ND)



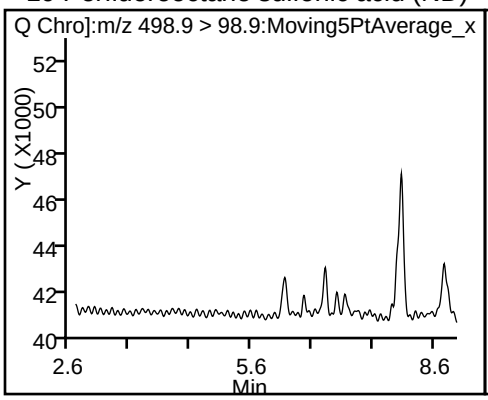
* 17 13C4 PFOS (IS)



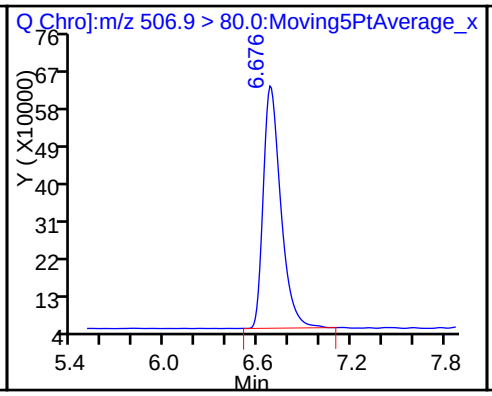
19 Perfluorooctane sulfonic acid (ND)



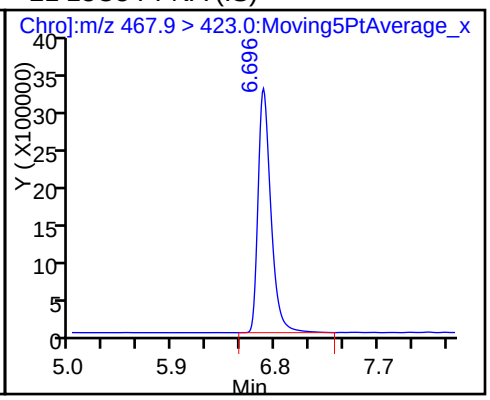
19 Perfluorooctane sulfonic acid (ND)



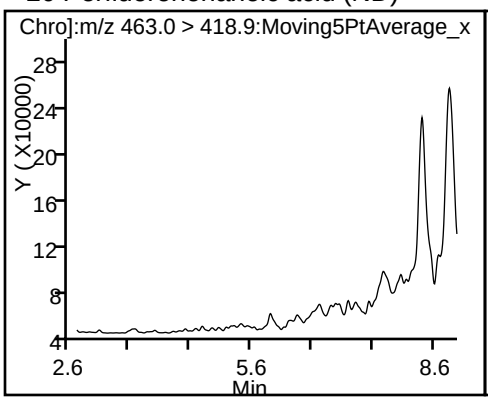
$ 18 13C8 PFOS



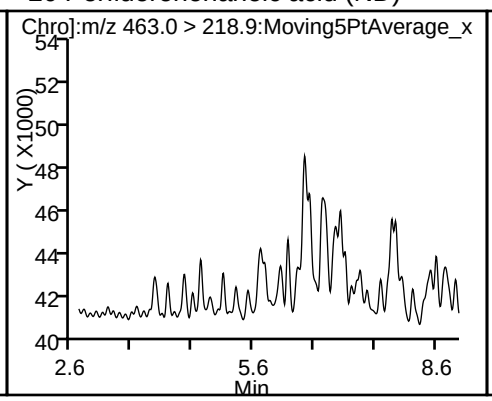
* 21 13C5 PFNA (IS)



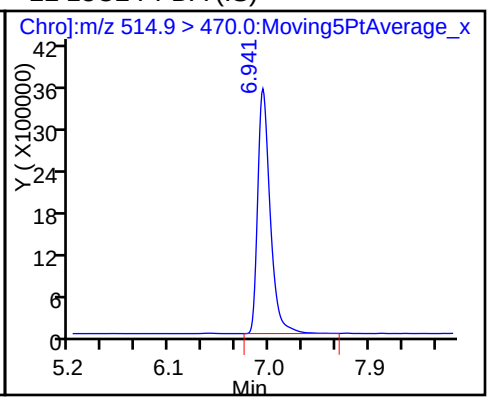
20 Perfluorononanoic acid (ND)



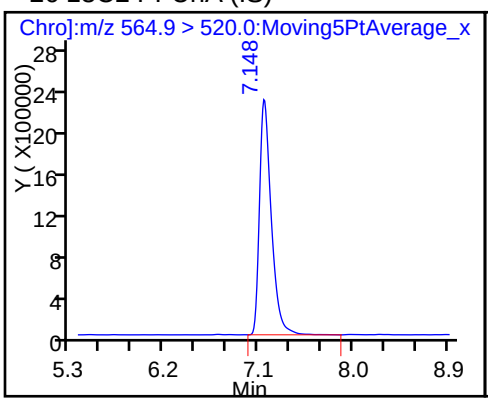
20 Perfluorononanoic acid (ND)



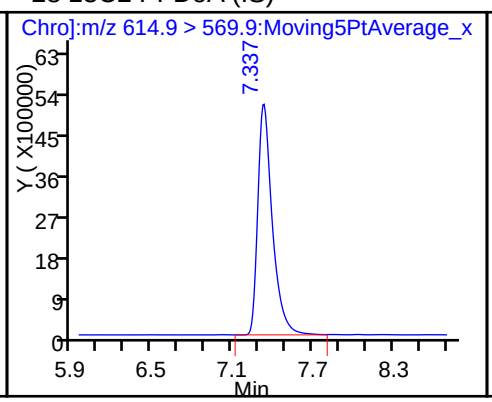
* 22 13C2 PFDA (IS)



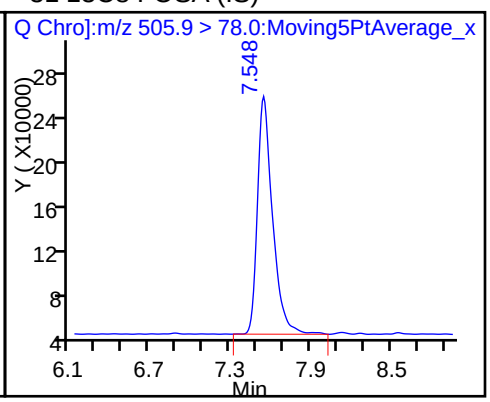
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: D27 | Lab Sample ID: 280-88381-6

Matrix: Water | Lab File ID: PC516I028109.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 15:15

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 284.2(mL) | Date Analyzed: 09/29/2016 01:47

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.15		0.018	0.0072
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.56		0.026	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	1.22		0.026	0.0061
375-95-1	Perfluorononanoic acid (PFNA)	0.023	J	0.035	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.28		0.018	0.0086

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	112		60-155
STL01054	13C8 PFOS	122		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028109.d
Lims ID: 280-88381-A-6-A
Client ID: D27
Sample Type: Client
Inject. Date: 29-Sep-2016 01:47:34 ALS Bottle#: 0 Worklist Smp#: 33
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-6-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:30:11

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.935	3.963	-0.028		23392930	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.213	5.184	0.029	0.854	8420724	8.51			
298.9 > 98.9	5.213	5.184	0.029	0.854	2600138		3.24(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.667	5.648	0.019		18115967	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.102	6.073	0.029		1894416	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.102	6.073	0.029	1.000	52283950	69.4			R
398.9 > 98.9	6.102	6.073	0.029	1.000	18183731		2.88(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.102	6.074	0.028	0.947	69133914	31.6			
363.0 > 168.9	6.102	6.074	0.028	0.947	17774608		3.89(3.35-6.23)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.413	0.029	1.000	18511412	11.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.413	0.029		22145761	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.414	0.028	1.000	36326069	15.9			
413.0 > 169.0	6.442	6.414	0.028	1.000	11581395		3.14(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.714	6.676	0.038		6653055	9.56			
19 Perfluorooctane sulfonic acid									RE
498.9 > 79.9	6.658	6.677	-0.019	0.992	176424348	202.2			RE
498.9 > 98.9	6.705	6.677	0.028	0.999	44556439		3.96(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.714	6.685	0.029	1.000	4102395	11.3			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.696	0.038		18343857	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.697	0.047	1.001	2656679	1.29			
463.0 > 218.9	6.744	6.697	0.047	1.001	433637		6.13(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.969	6.941	0.028		21455836	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.148	0.038		11974708	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.365	7.327	0.038		20896250	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.576	7.548	0.028		2233303	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

E - Exceeded Maximum Amount

s - Failed ISTD Recovery Test

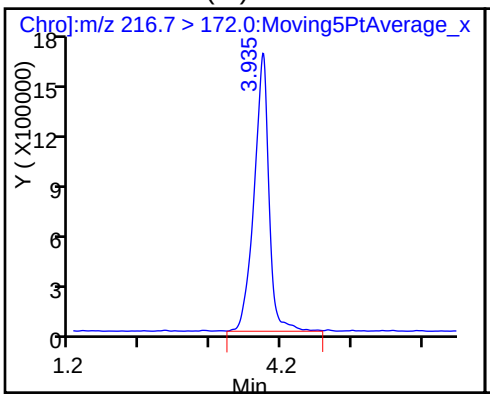
Report Date: 29-Sep-2016 11:42:09 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

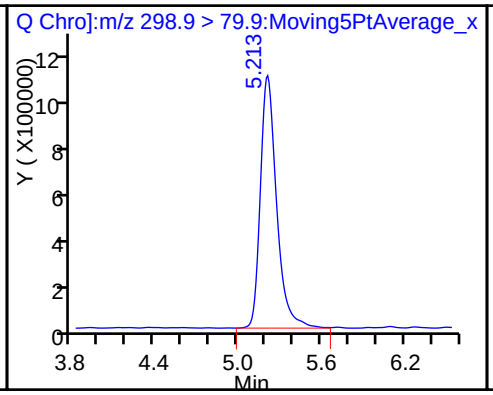
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028109.d

Injection Date:	29-Sep-2016 01:47:34	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-6-A	Lab Sample ID:	280-88381-6		
Client ID:	D27				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	33
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

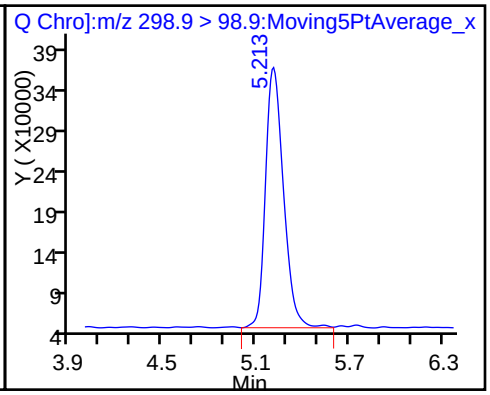
* 1 13C4 PFBA (IS)



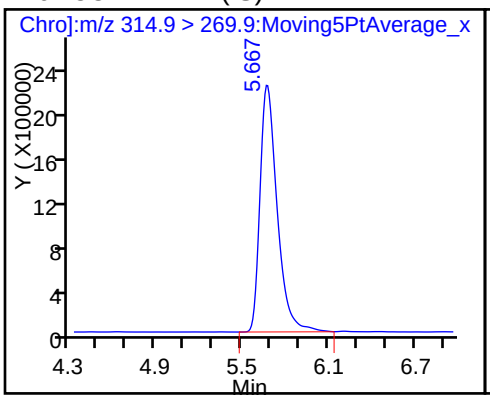
4 Perfluorobutane Sulfonate



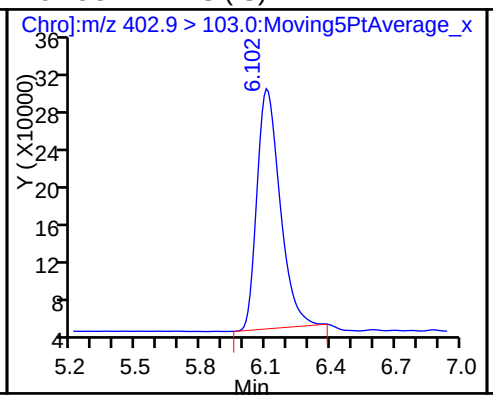
4 Perfluorobutane Sulfonate



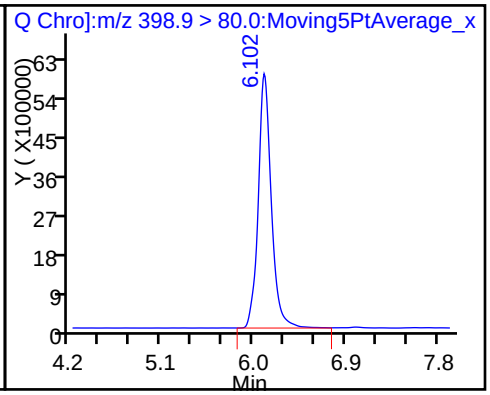
* 6 13C2 PFHxA (IS)



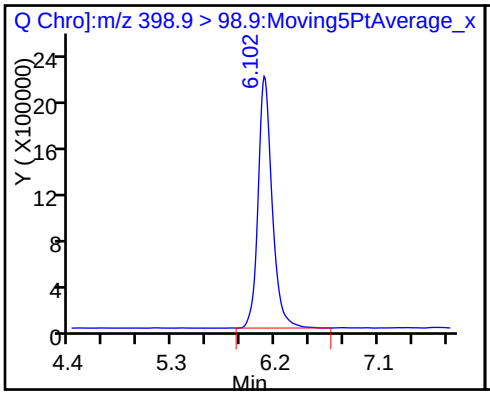
* 9 18O2 PFHxS (IS)



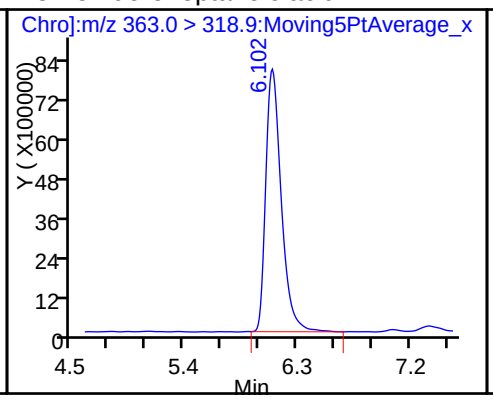
10 Perfluorohexane Sulfonate



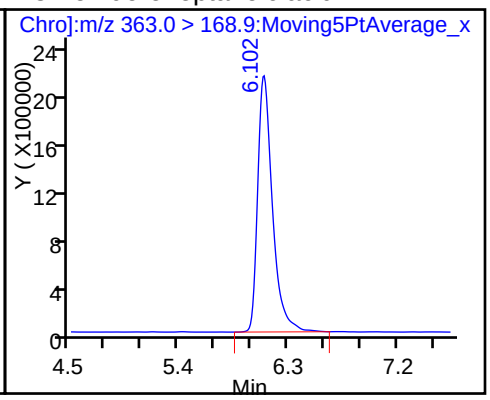
10 Perfluorohexane Sulfonate



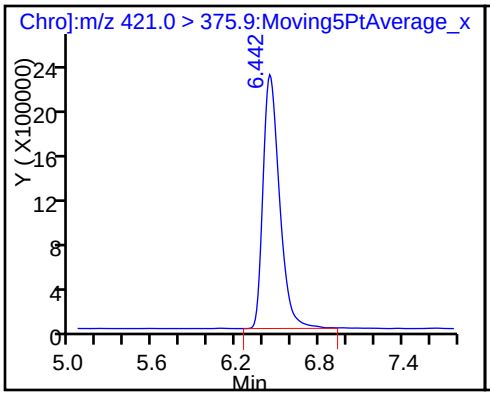
8 Perfluoroheptanoic acid



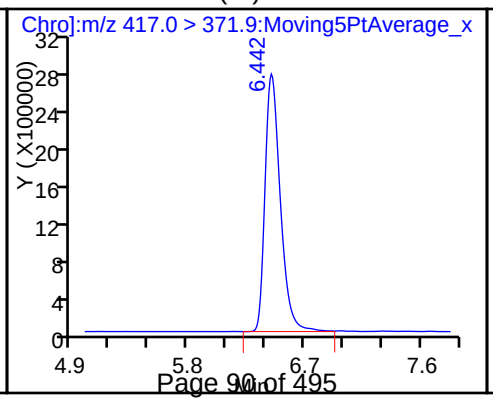
8 Perfluoroheptanoic acid



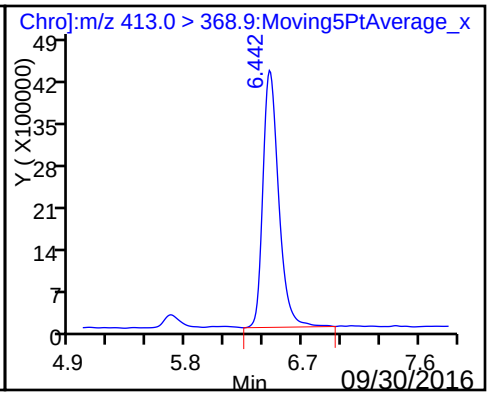
$ 14 13C8 PFOA



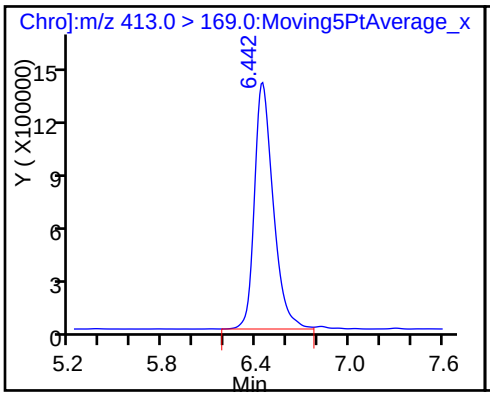
* 15 13C4 PFOA (IS)



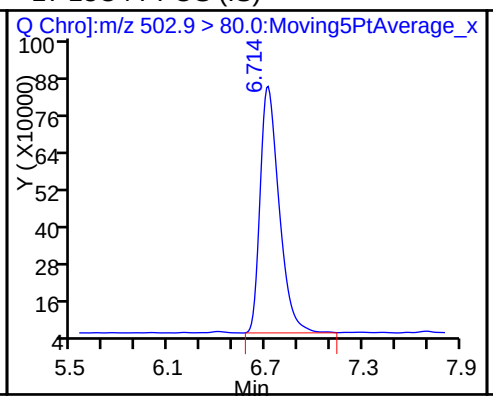
16 Perfluorooctanoic acid



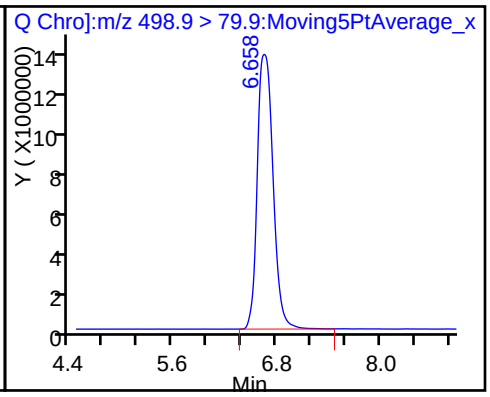
16 Perfluorooctanoic acid



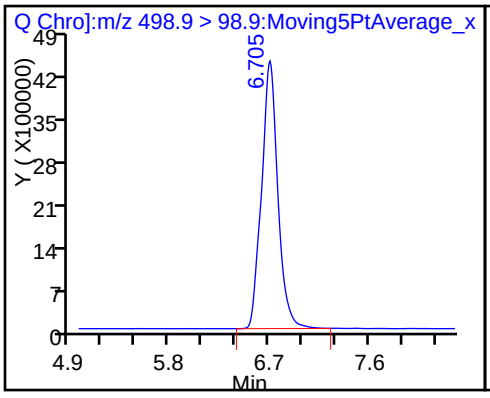
* 17 13C4 PFOS (IS)



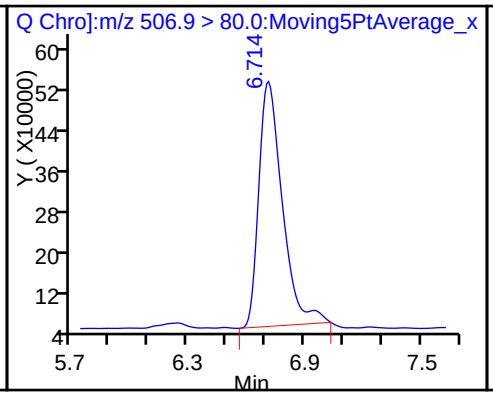
19 Perfluorooctane sulfonic acid



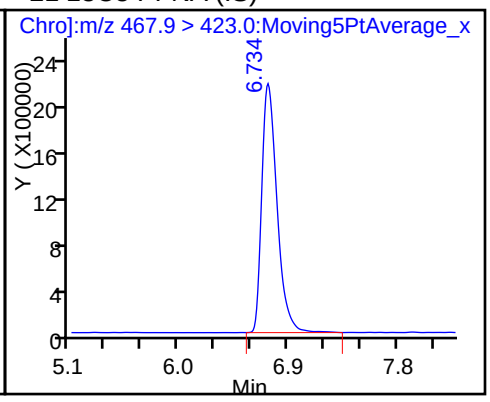
19 Perfluorooctane sulfonic acid



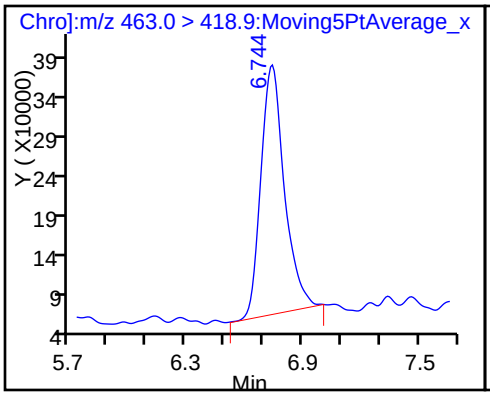
$ 18 13C8 PFOS



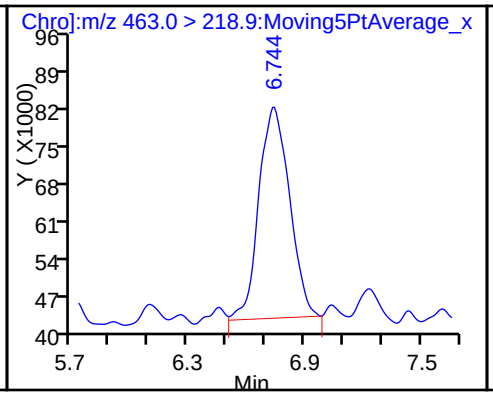
* 21 13C5 PFNA (IS)



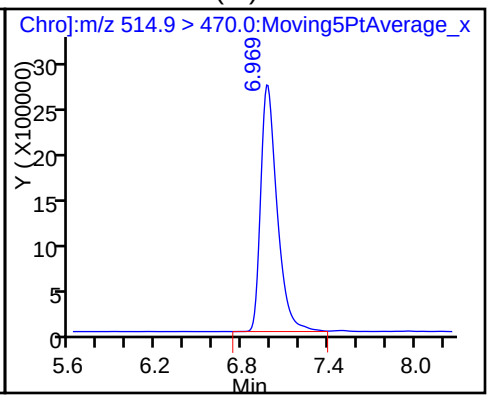
20 Perfluorononanoic acid



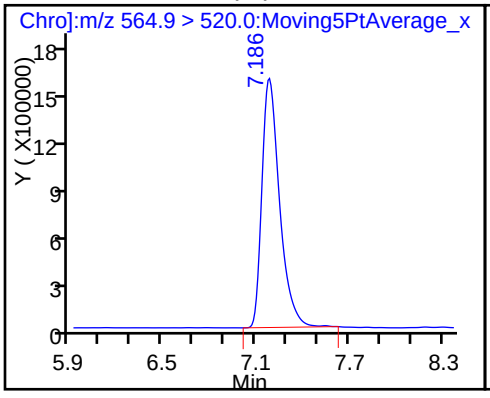
20 Perfluorononanoic acid



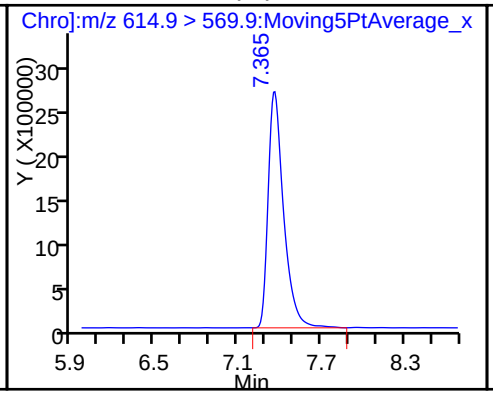
* 22 13C2 PFDA (IS)



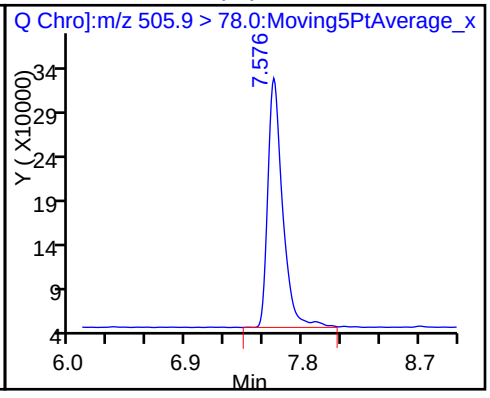
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: D27 DL | Lab Sample ID: 280-88381-6 DL

Matrix: Water | Lab File ID: PC516I029040.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 15:15

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 284.2(mL) | Date Analyzed: 09/29/2016 14:05

Con. Extract Vol.: 5(mL) | Dilution Factor: 4

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344348 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.61	D	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	108	D	60-155
STL01054	13C8 PFOS	102	D	45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51395.b\PC516I029040.d
Lims ID: 280-88381-A-6-A
Client ID: D27
Sample Type: Client
Inject. Date: 29-Sep-2016 14:05:20 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 4.0000
Sample Info: 280-88381-A-6-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51395.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 14:34:19 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 14:33:45

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.077	4.115	-0.038		5818020	2.50			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.289	5.298	-0.009	0.855	2036800	2.40			R
298.9 > 98.9	5.308	5.298	0.010	0.858	593234		3.43(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.752	5.762	-0.010		4467043	2.50			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.178	6.197	-0.019	0.947	18609864	7.57			
363.0 > 168.9	6.178	6.197	-0.019	0.947	4702471		3.96(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.187	6.196	-0.009		409548	2.37			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.178	6.196	-0.018	0.999	12286148	18.9			R
398.9 > 98.9	6.178	6.196	-0.018	0.999	4645301		2.64(1.30-2.41)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.527	6.536	-0.009	1.000	5078092	2.64			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.527	6.537	-0.010		6231540	2.50			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.518	6.537	-0.019	0.999	10851542	4.13			
413.0 > 169.0	6.527	6.537	-0.010	1.000	3043680		3.57(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.809	-0.019		1648983	2.39			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.762	6.809	-0.047	0.996	44353733	51.3			R
498.9 > 98.9	6.790	6.809	-0.019	1.000	11767320		3.77(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.809	-0.019	1.000	858454	2.36			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.829	-0.019		5354547	2.50			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.810	6.829	-0.019	1.000	778679	0.3663			R
463.0 > 218.9	6.801	6.829	-0.028	0.999	67904		11.47(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.073	-0.019		4909886	2.50			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.281	-0.010		2798257	2.50			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.441	7.460	-0.019		4544436	2.50			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.633	7.642	-0.009		511859	2.50			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

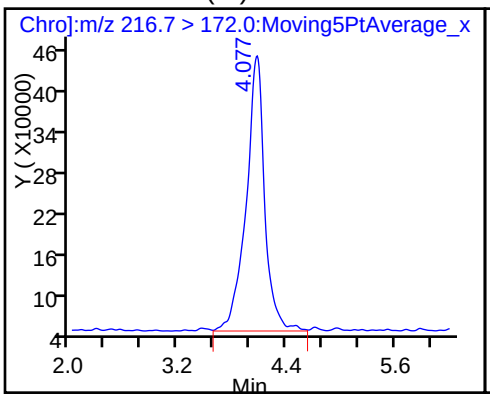
Report Date: 29-Sep-2016 14:34:24 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

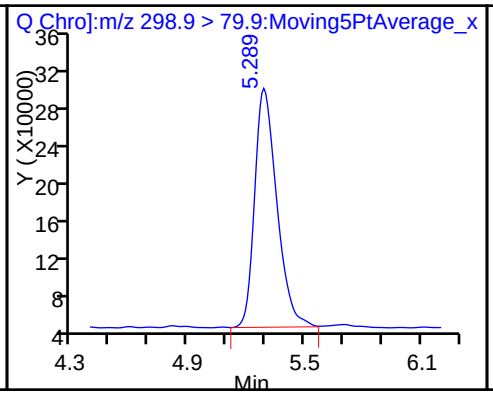
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51395.b\PC516I029040.d

Injection Date:	29-Sep-2016 14:05:20	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-6-A	Lab Sample ID:	280-88381-6		
Client ID:	D27				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	25.0 ul	Dil. Factor:	4.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

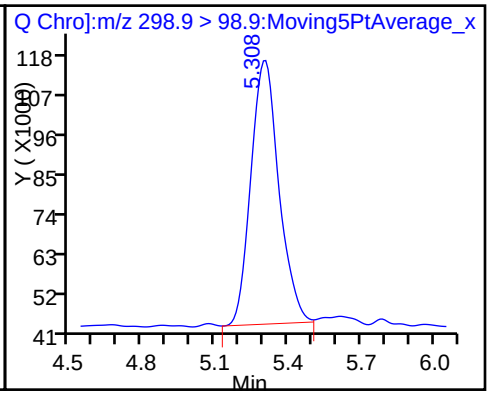
* 1 13C4 PFBA (IS)



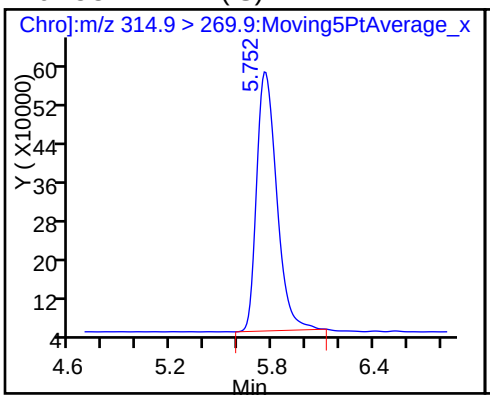
4 Perfluorobutane Sulfonate



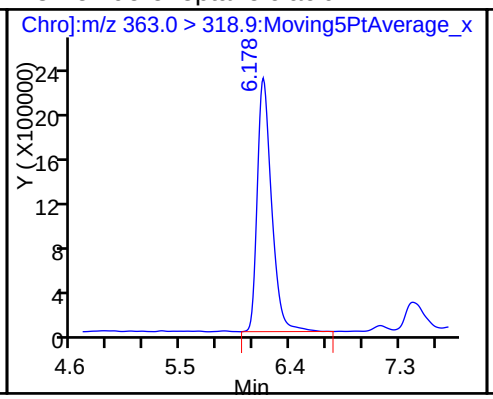
4 Perfluorobutane Sulfonate



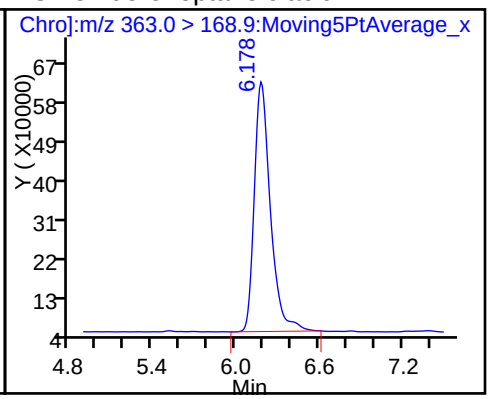
* 6 13C2 PFHxA (IS)



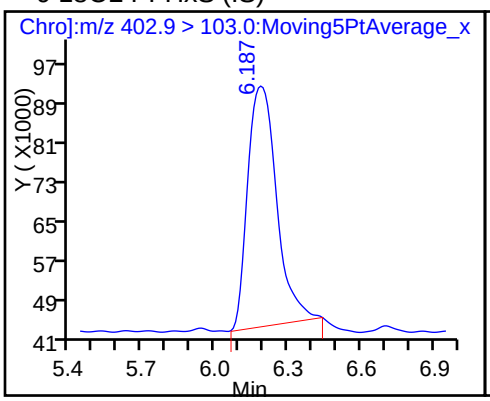
8 Perfluoroheptanoic acid



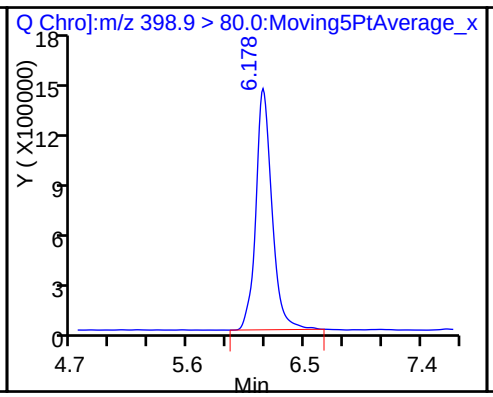
8 Perfluoroheptanoic acid



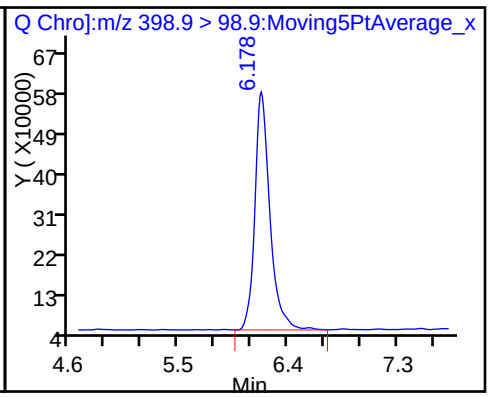
* 9 18O2 PFHxS (IS)



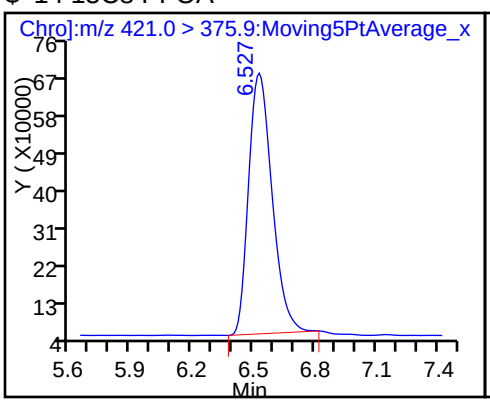
10 Perfluorohexane Sulfonate



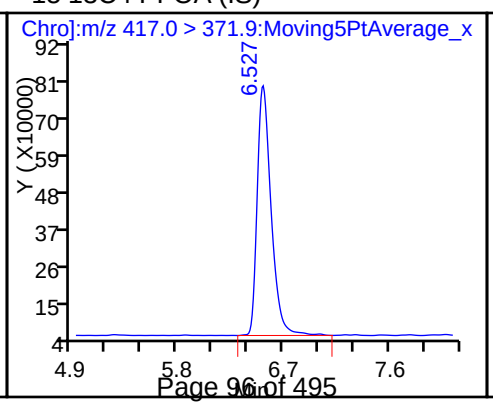
10 Perfluorohexane Sulfonate



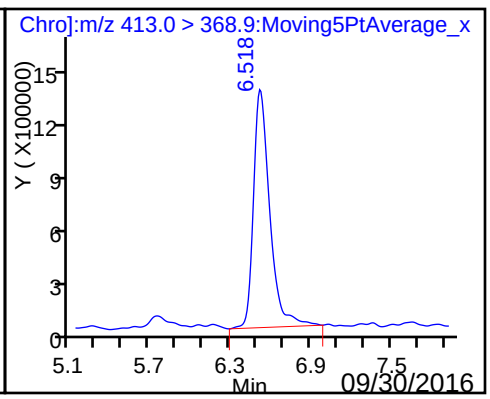
$ 14 13C8 PFOA



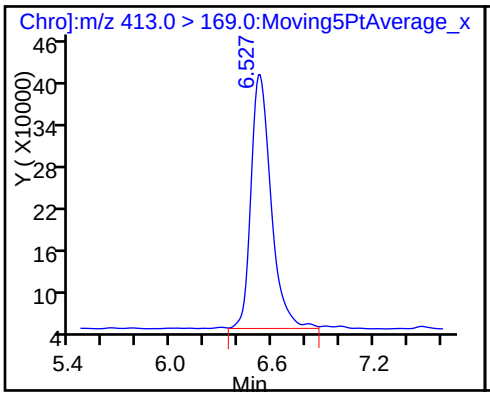
* 15 13C4 PFOA (IS)



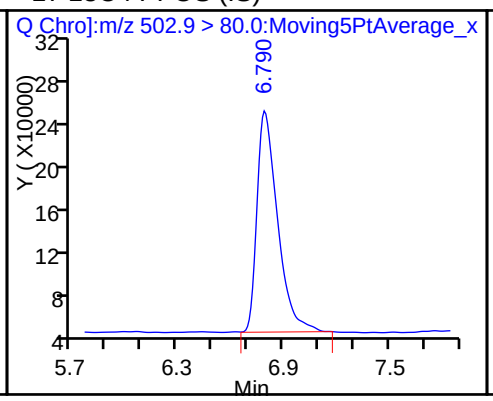
16 Perfluorooctanoic acid



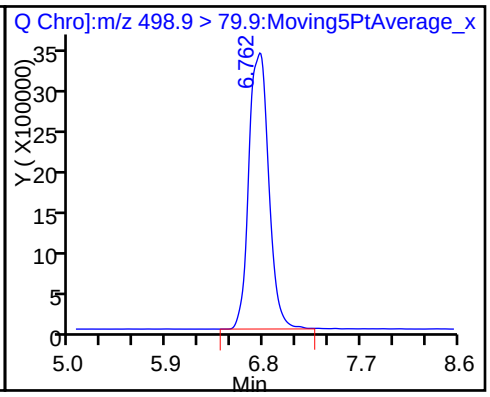
16 Perfluorooctanoic acid



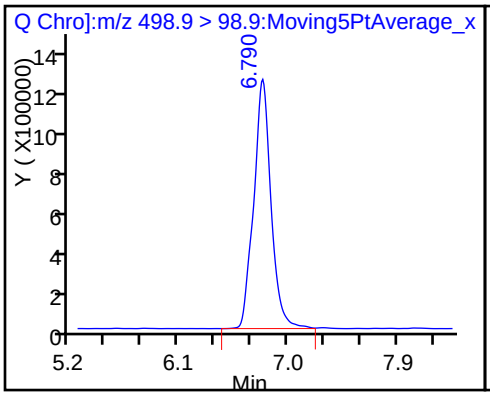
* 17 13C4 PFOS (IS)



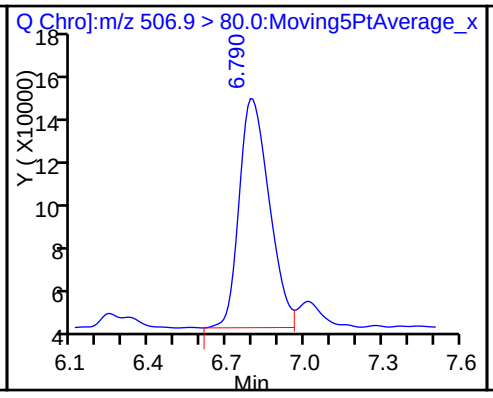
19 Perfluorooctane sulfonic acid



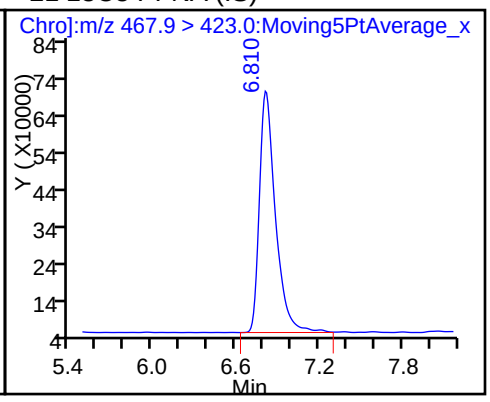
19 Perfluorooctane sulfonic acid



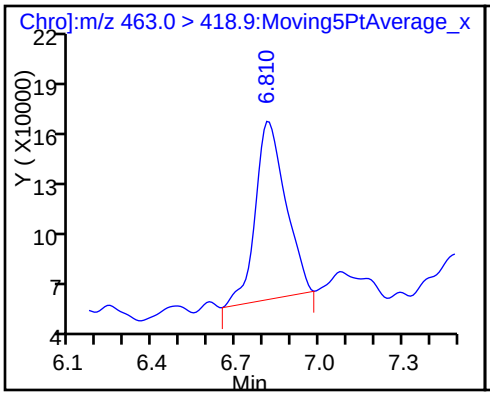
$ 18 13C8 PFOS



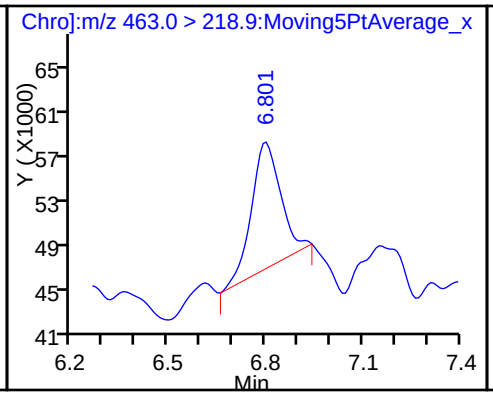
* 21 13C5 PFNA (IS)



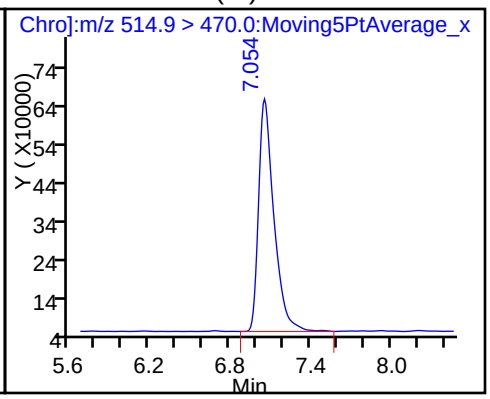
20 Perfluorononanoic acid



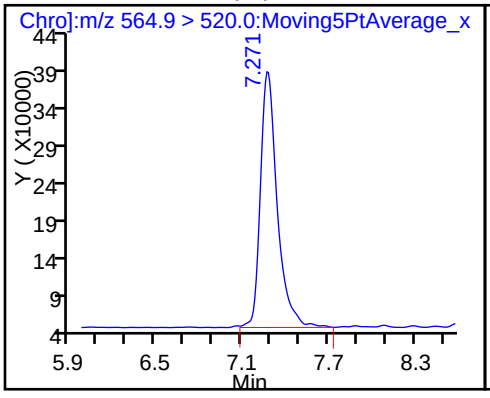
20 Perfluorononanoic acid



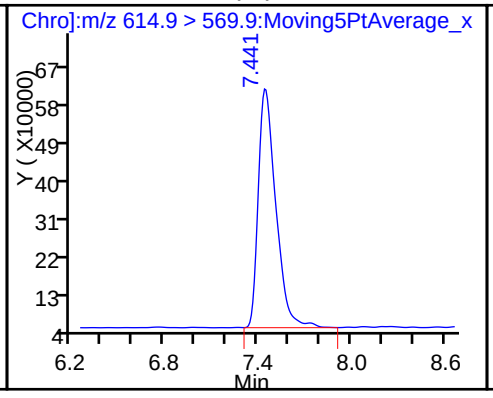
* 22 13C2 PFDA (IS)



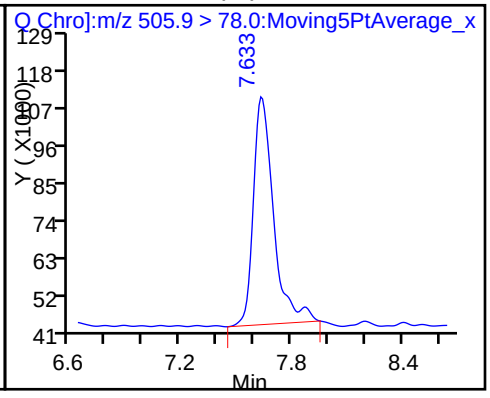
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: D15-A | Lab Sample ID: 280-88381-7

Matrix: Water | Lab File ID: PC516I028110.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 16:00

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 271.5(mL) | Date Analyzed: 09/29/2016 01:59

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0076	U	0.018	0.0076
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.15		0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.051		0.028	0.0064
375-95-1	Perfluorononanoic acid (PFNA)	0.016	J	0.037	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.037		0.028	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.22		0.018	0.0090

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	115		60-155
STL01054	13C8 PFOS	111		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028110.d
Lims ID: 280-88381-A-7-A
Client ID: D15-A
Sample Type: Client
Inject. Date: 29-Sep-2016 01:59:53 ALS Bottle#: 0 Worklist Smp#: 34
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-7-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:30:59

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.973	3.963	0.010		12071744	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.251	5.184	0.067	0.857	319651	0.3169			
298.9 > 98.9	5.232	5.184	0.048	0.853	127629		2.50(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.648	0.057		19911139	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.130	6.073	0.057		2086644	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.121	6.073	0.048	0.998	2319785	2.79			R
398.9 > 98.9	6.121	6.073	0.048	0.998	754107		3.08(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.121	6.074	0.047	0.947	24169493	8.08			
363.0 > 168.9	6.121	6.074	0.047	0.947	6393055		3.78(3.35-6.23)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.413	0.048	1.000	25872858	11.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.461	6.413	0.048		30320675	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.461	6.414	0.047	1.000	36835209	11.7			
413.0 > 169.0	6.452	6.414	0.038	0.999	10251210		3.59(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.676	0.048		7625108	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.715	6.677	0.038	0.999	1988333	2.01			R
498.9 > 98.9	6.724	6.677	0.047	1.000	543578		3.66(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.685	0.038	1.000	4280740	10.3			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.696	0.048		23084672	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.697	0.047	1.000	2186715	0.8647			
463.0 > 218.9	6.753	6.697	0.056	1.001	370567		5.90(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.978	6.941	0.037		21729949	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.186	7.148	0.038		12216993	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.375	7.327	0.048		20366483	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.586	7.548	0.038		1939182	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 29-Sep-2016 11:42:12 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028110.d

Injection Date: 29-Sep-2016 01:59:53 Instrument ID: LC_LCMS5

Lims ID: 280-88381-A-7-A Lab Sample ID: 280-88381-7

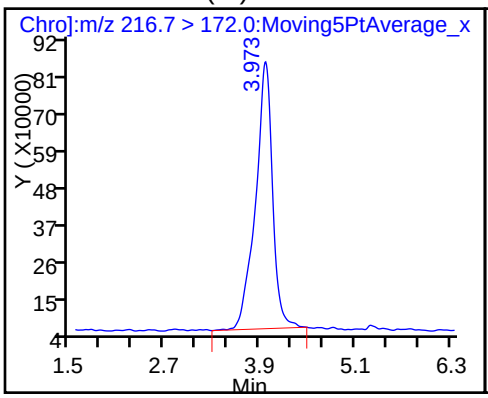
Client ID: D15-A

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 34

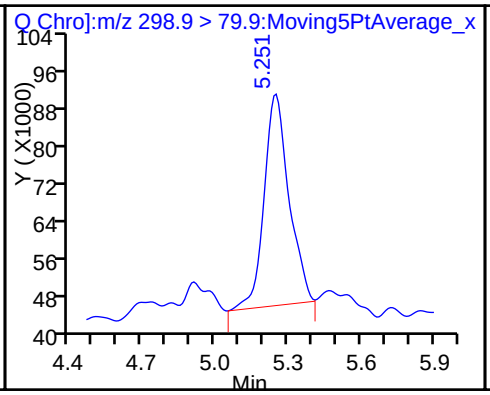
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

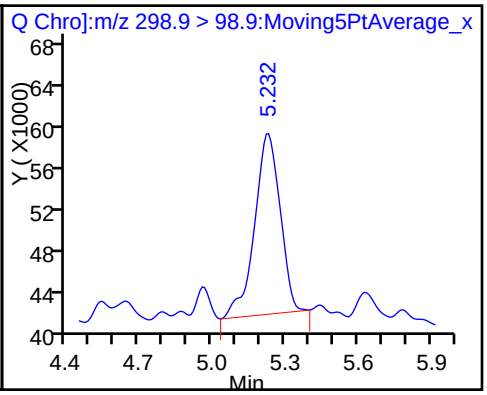
* 1 13C4 PFBA (IS)



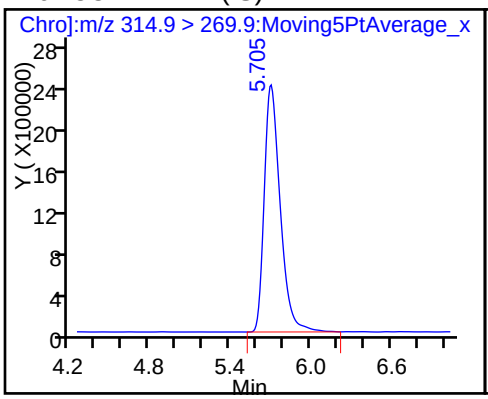
4 Perfluorobutane Sulfonate



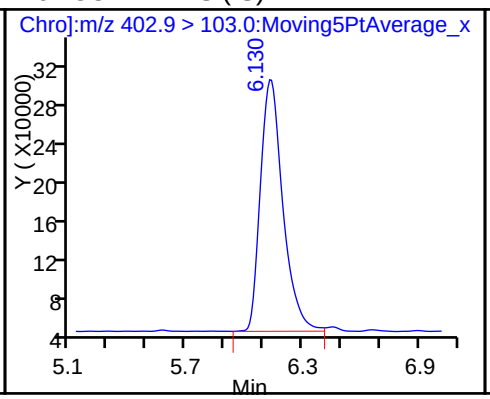
4 Perfluorobutane Sulfonate



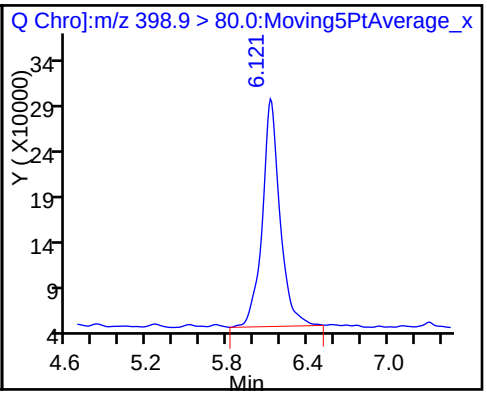
* 6 13C2 PFHxA (IS)



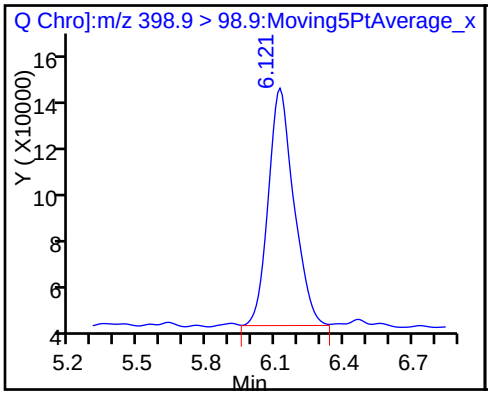
* 9 18O2 PFHxS (IS)



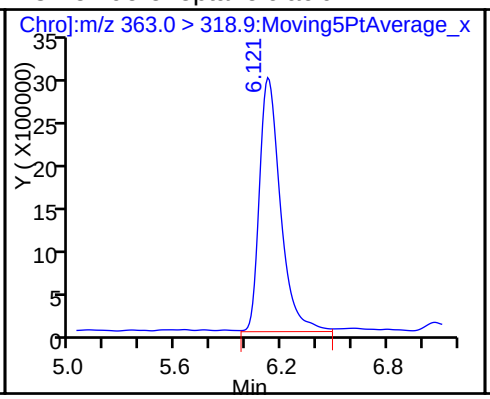
10 Perfluorohexane Sulfonate



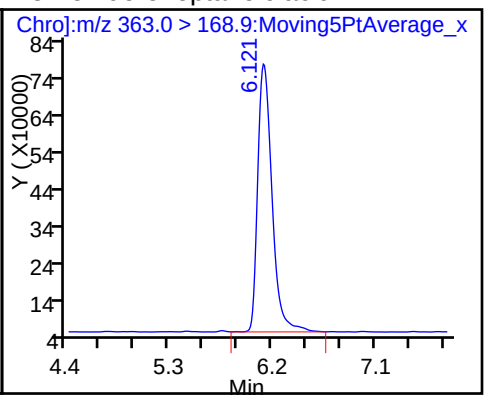
10 Perfluorohexane Sulfonate



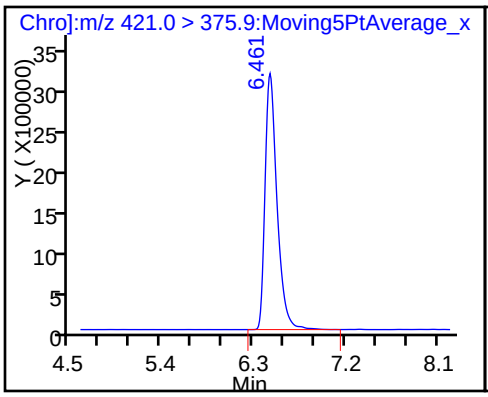
8 Perfluoroheptanoic acid



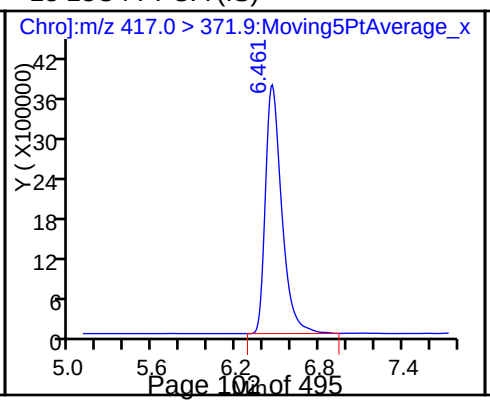
8 Perfluoroheptanoic acid



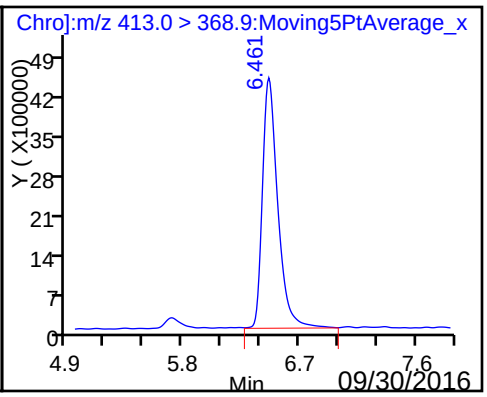
$ 14 13C8 PFOA



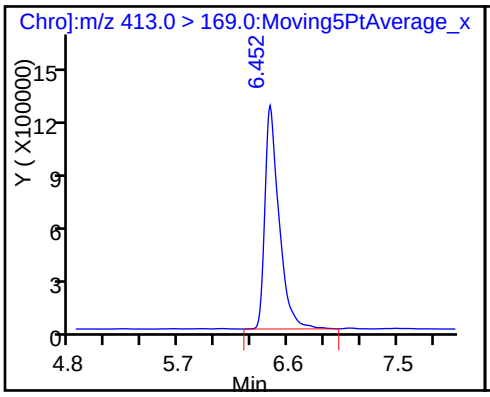
* 15 13C4 PFOA (IS)



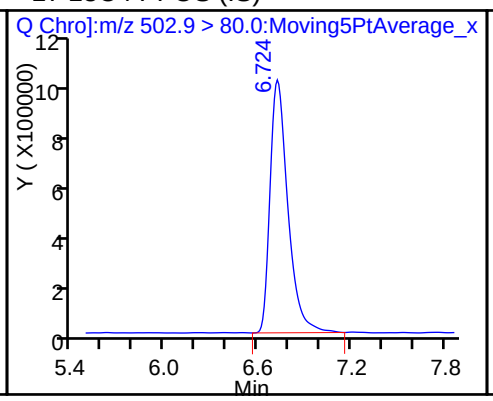
16 Perfluorooctanoic acid



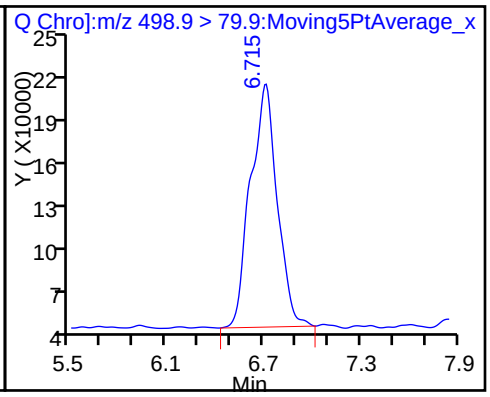
16 Perfluorooctanoic acid



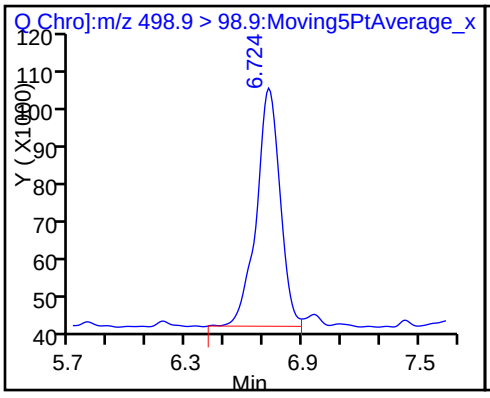
* 17 13C4 PFOS (IS)



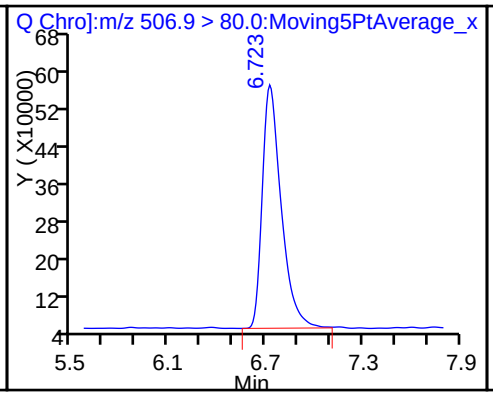
19 Perfluorooctane sulfonic acid



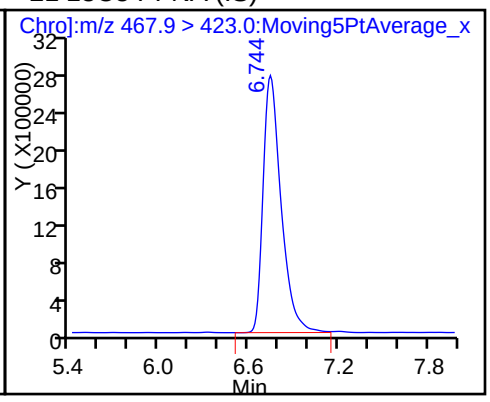
19 Perfluorooctane sulfonic acid



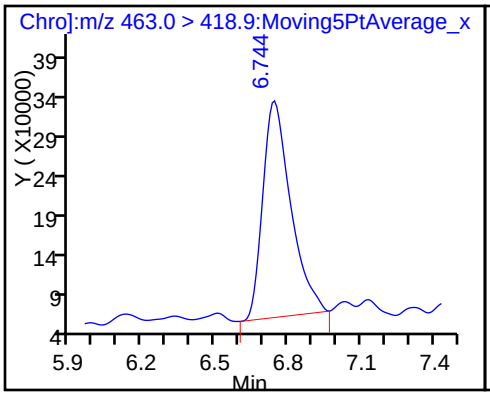
$ 18 13C8 PFOS



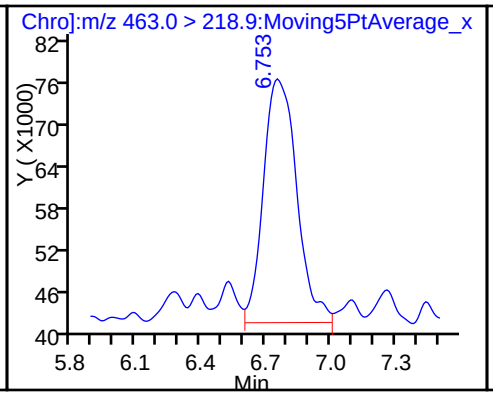
* 21 13C5 PFNA (IS)



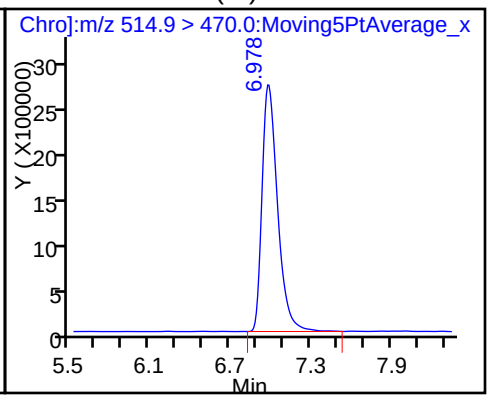
20 Perfluorononanoic acid



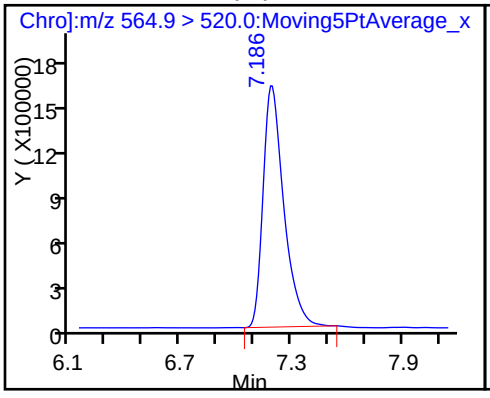
20 Perfluorononanoic acid



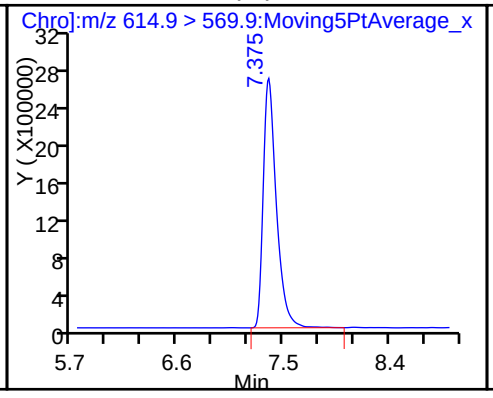
* 22 13C2 PFDA (IS)



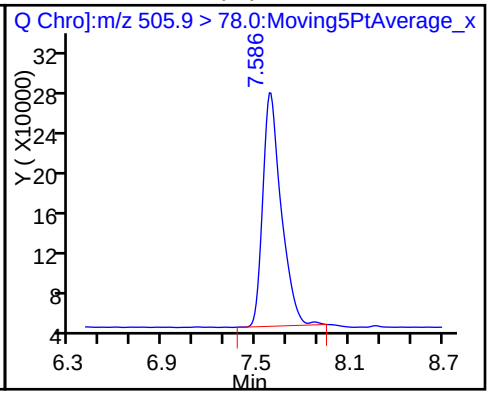
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: ANG-MW-EB-091516 | Lab Sample ID: 280-88381-8

Matrix: Water | Lab File ID: PC516I028112.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 13:00

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 264.8(mL) | Date Analyzed: 09/29/2016 02:24

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0066	U	0.028	0.0066
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.028	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0092	U	0.019	0.0092

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	117		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028112.d
Lims ID: 280-88381-A-8-A
Client ID: ANG-MW-EB-091516
Sample Type: Client
Inject. Date: 29-Sep-2016 02:24:29 ALS Bottle#: 0 Worklist Smp#: 36
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-8-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:31:44

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.906	4.029	-0.123		26273475	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.232				ND			
298.9 > 98.9		5.232							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.676	5.686	-0.010		19461735	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.102	6.111	-0.009		1747102	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.111				ND			
398.9 > 98.9		6.111							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.112				ND			
363.0 > 168.9		6.112							
$ 14 13C8 PFOA									
421.0 > 375.9	6.423	6.442	-0.019	1.001	25653551	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.413	6.442	-0.029		30450228	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.442				ND			
413.0 > 169.0		6.442							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.686	6.705	-0.019		7395735	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.705				ND			
498.9 > 98.9		6.705							
$ 18 13C8 PFOS									
506.9 > 80.0	6.685	6.704	-0.019	1.000	4369368	10.9			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.706	6.725	-0.019		24248869	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.725				ND			
463.0 > 218.9		6.725							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.941	6.960	-0.019		25188177	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.148	7.167	-0.019		17165325	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.337	7.346	-0.009		29209679	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.548	7.567	-0.019		1194747	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

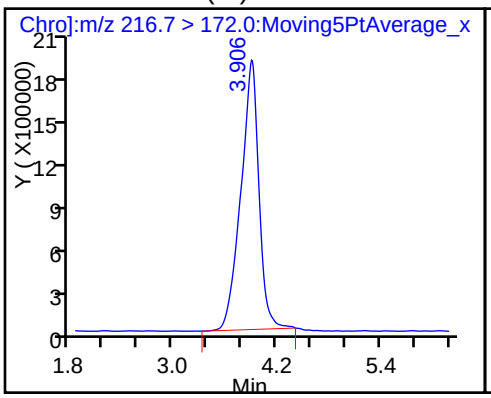
Report Date: 29-Sep-2016 11:42:18 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

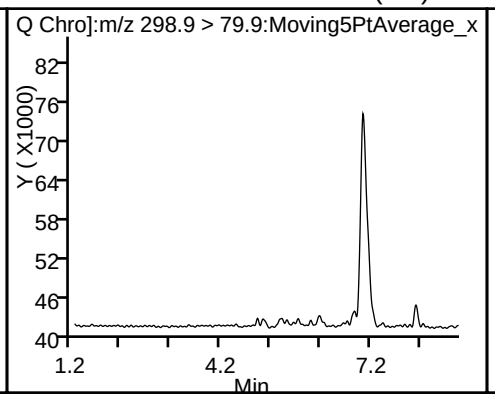
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028112.d

Injection Date:	29-Sep-2016 02:24:29	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-8-A	Lab Sample ID:	280-88381-8		
Client ID:	ANG-MW-EB-091516				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	36
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

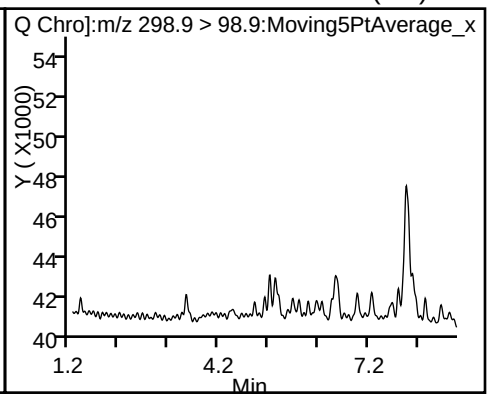
* 1 13C4 PFBA (IS)



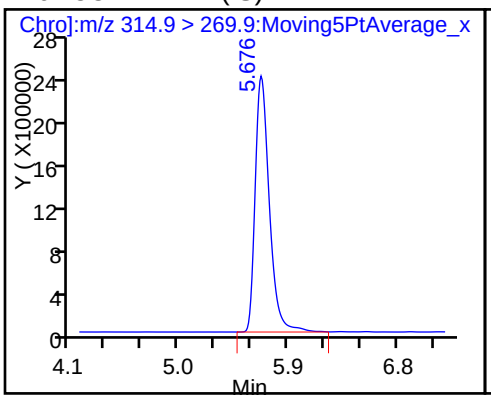
4 Perfluorobutane Sulfonate (ND)



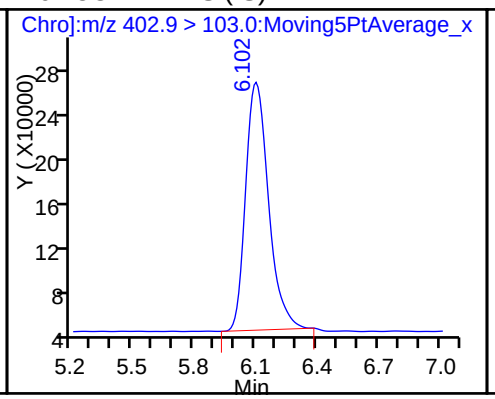
4 Perfluorobutane Sulfonate (ND)



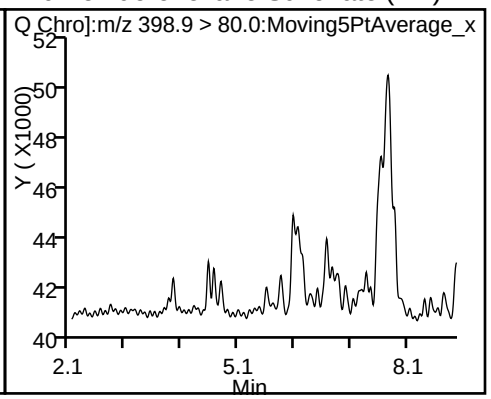
* 6 13C2 PFHxA (IS)



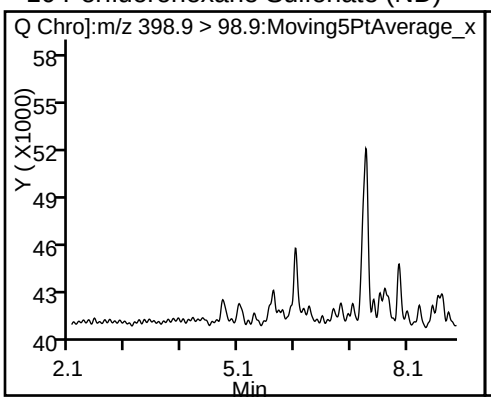
* 9 18O2 PFHxS (IS)



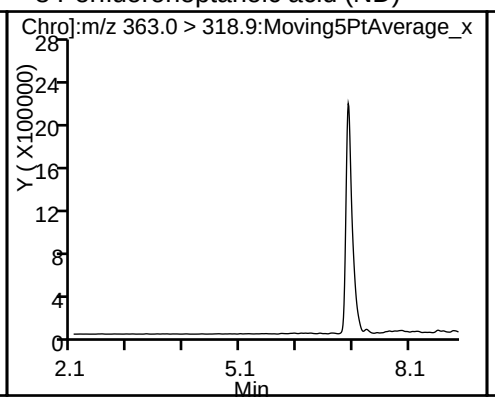
10 Perfluorohexane Sulfonate (ND)



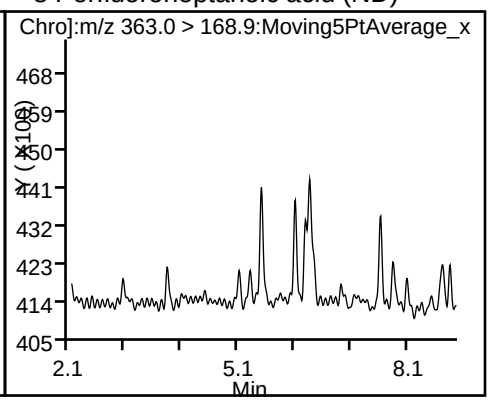
10 Perfluorohexane Sulfonate (ND)



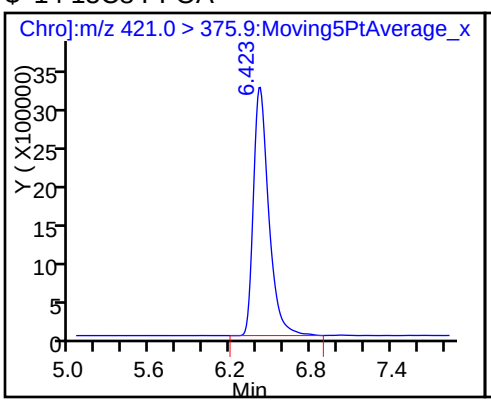
8 Perfluoroheptanoic acid (ND)



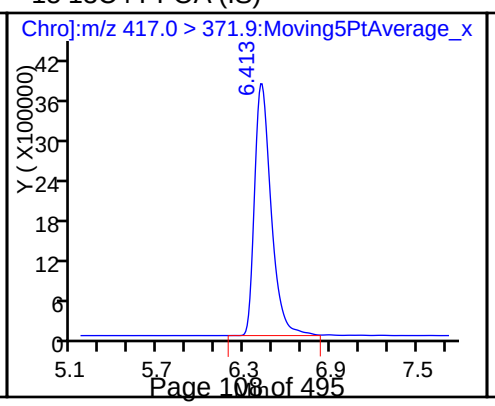
8 Perfluoroheptanoic acid (ND)



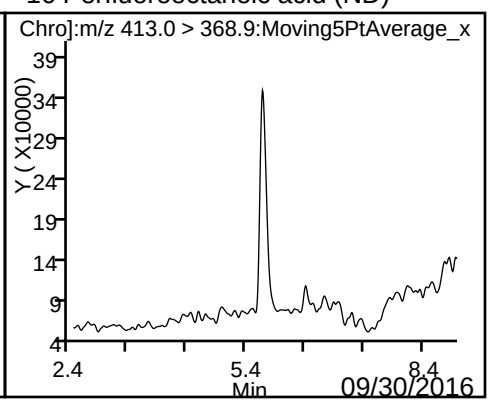
$ 14 13C8 PFOA



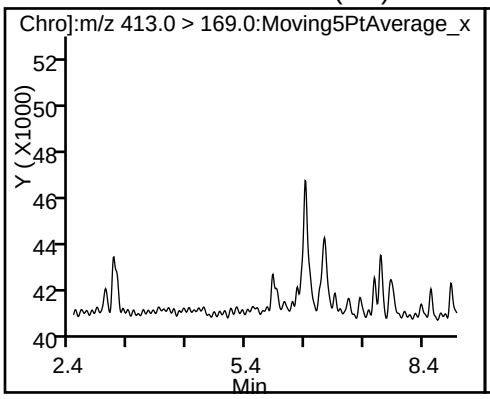
* 15 13C4 PFOA (IS)



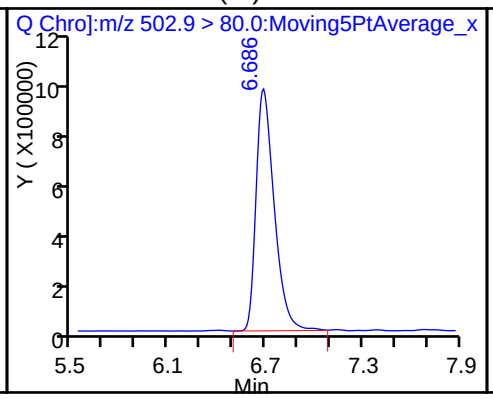
16 Perfluorooctanoic acid (ND)



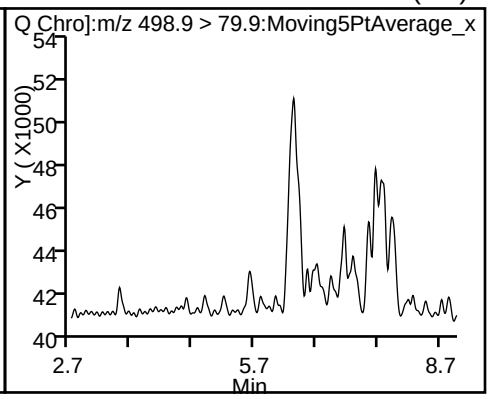
16 Perfluorooctanoic acid (ND)



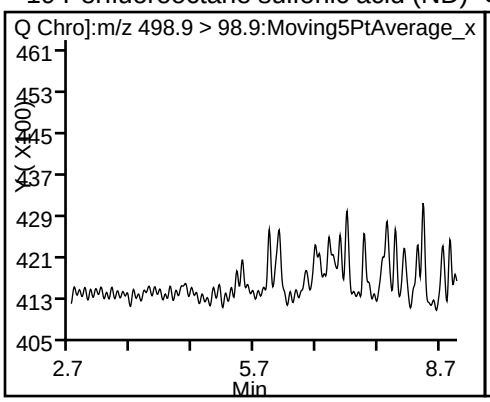
* 17 13C4 PFOS (IS)



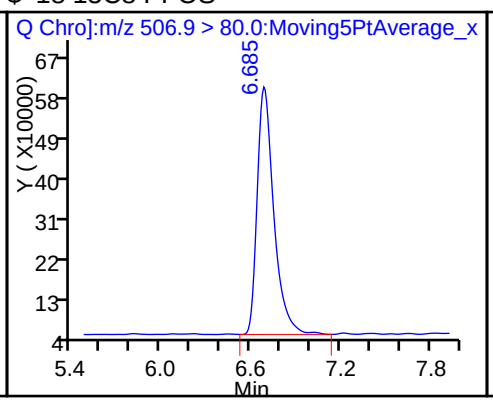
19 Perfluorooctane sulfonic acid (ND)



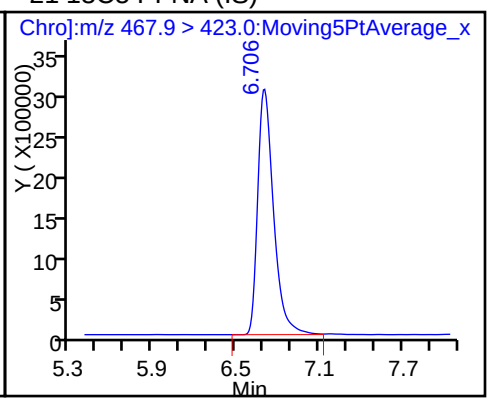
19 Perfluorooctane sulfonic acid (ND)



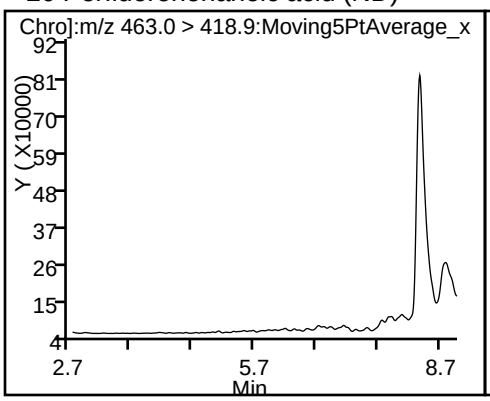
$ 18 13C8 PFOS



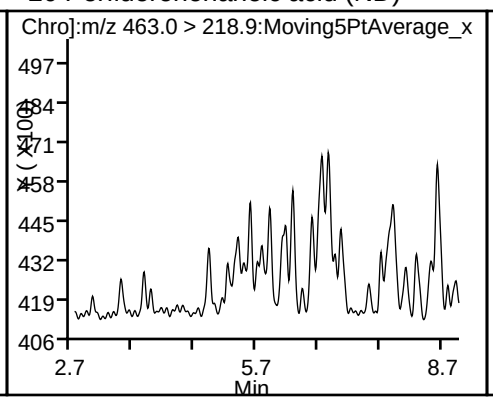
* 21 13C5 PFNA (IS)



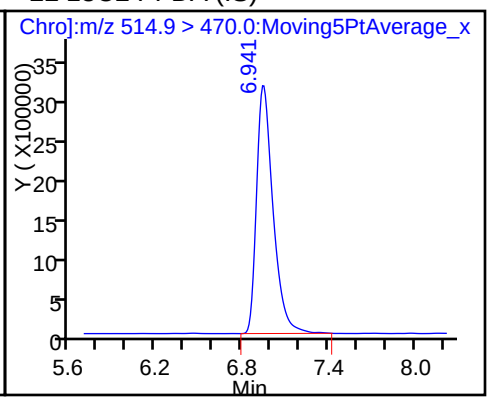
20 Perfluorononanoic acid (ND)



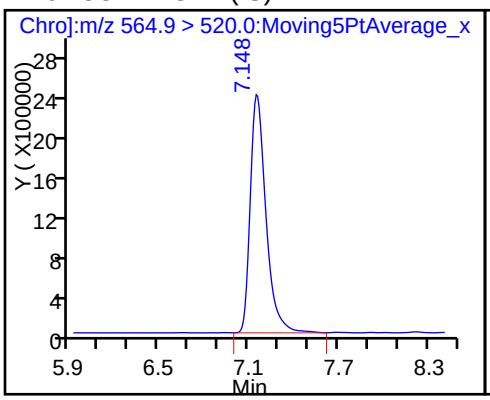
20 Perfluorononanoic acid (ND)



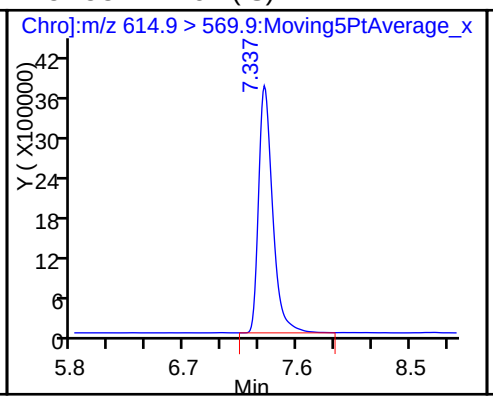
* 22 13C2 PFDA (IS)



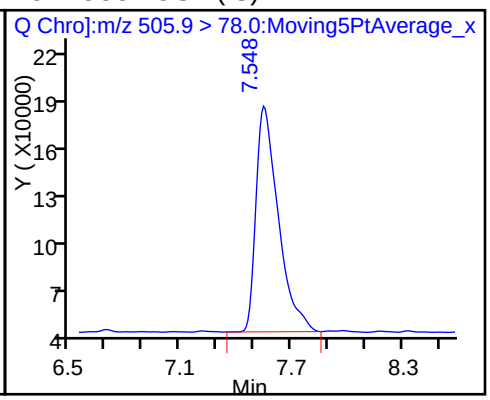
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: ANG-CB-FB-091516 | Lab Sample ID: 280-88381-9

Matrix: Water | Lab File ID: PC516I028113.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 16:10

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 285.9(mL) | Date Analyzed: 09/29/2016 02:36

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0072	U	0.017	0.0072
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.026	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0061	U	0.026	0.0061
375-95-1	Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0086	U	0.017	0.0086

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	114		60-155
STL01054	13C8 PFOS	115		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028113.d
Lims ID: 280-88381-A-9-A
Client ID: ANG-CB-FB-091516
Sample Type: Client
Inject. Date: 29-Sep-2016 02:36:47 ALS Bottle#: 0 Worklist Smp#: 37
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-9-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:32:10

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.783	4.029	-0.246		25757166	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.232				ND			
298.9 > 98.9		5.232							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.553	5.686	-0.133		18919623	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.988	6.111	-0.123		1965558	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.111				ND			
398.9 > 98.9		6.111							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.112				ND			
363.0 > 168.9		6.112							
$ 14 13C8 PFOA									
421.0 > 375.9	6.337	6.442	-0.105	1.001	24474019	11.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.328	6.442	-0.114		28783431	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.442				ND			
413.0 > 169.0		6.442							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.610	6.705	-0.095		7433694	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.705				ND			
498.9 > 98.9		6.705							
$ 18 13C8 PFOS									
506.9 > 80.0	6.610	6.704	-0.094	1.000	4308120	10.6			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.621	6.725	-0.104		23566306	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.725				ND			
463.0 > 218.9		6.725							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.874	6.960	-0.086		22949628	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.091	7.167	-0.076		12695989	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.270	7.346	-0.076		18392024	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.462	7.567	-0.105		533252	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

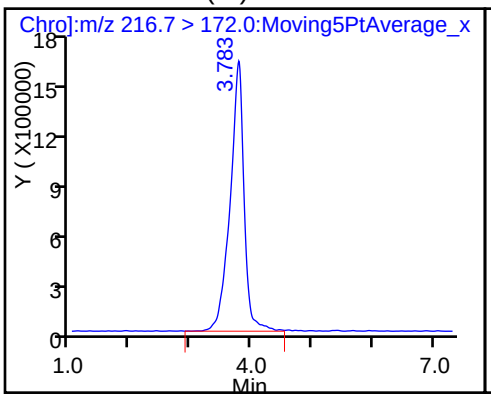
Report Date: 29-Sep-2016 11:42:21 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

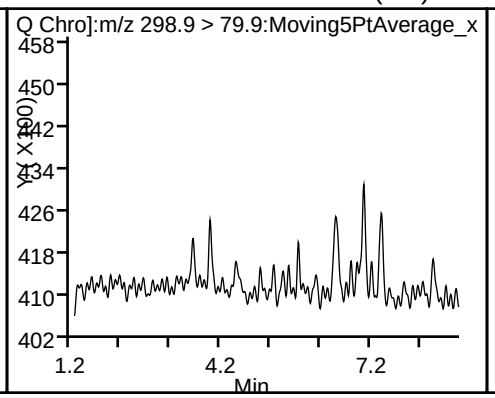
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028113.d

Injection Date:	29-Sep-2016 02:36:47	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-9-A	Lab Sample ID:	280-88381-9		
Client ID:	ANG-CB-FB-091516				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	37
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

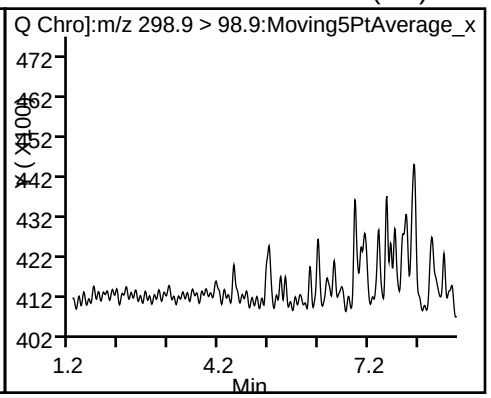
* 1 13C4 PFBA (IS)



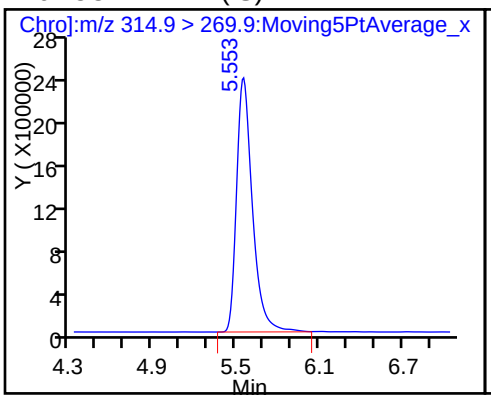
4 Perfluorobutane Sulfonate (ND)



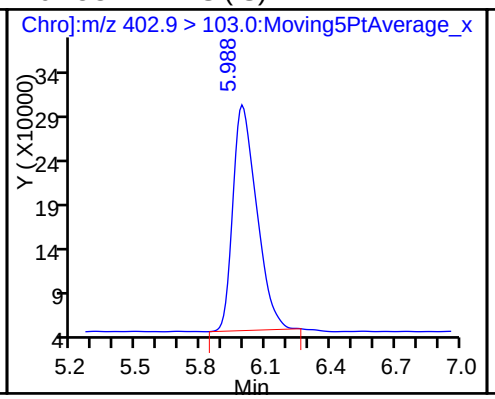
4 Perfluorobutane Sulfonate (ND)



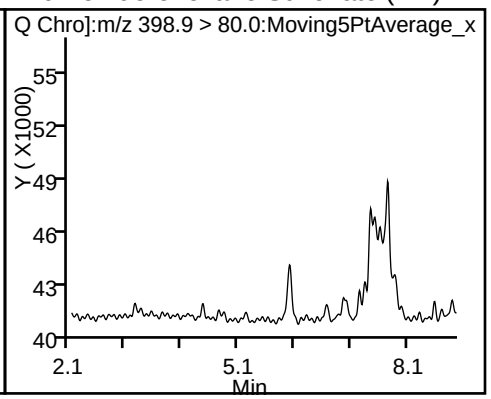
* 6 13C2 PFHxA (IS)



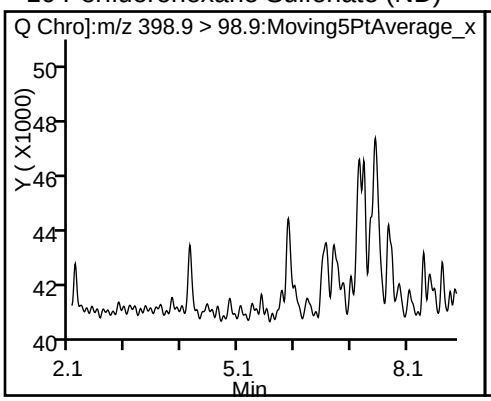
* 9 18O2 PFHxS (IS)



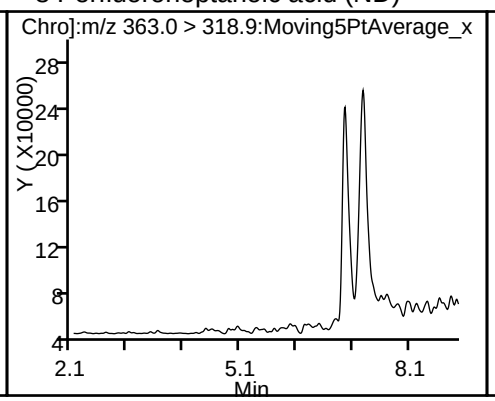
10 Perfluorohexane Sulfonate (ND)



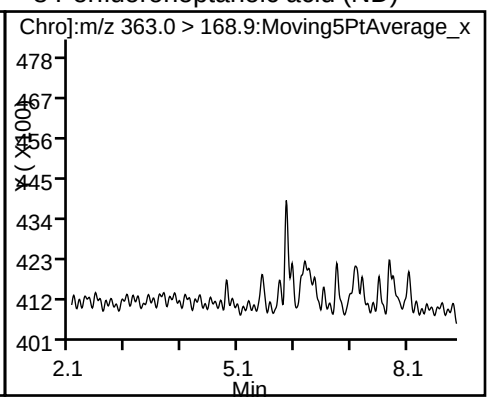
10 Perfluorohexane Sulfonate (ND)



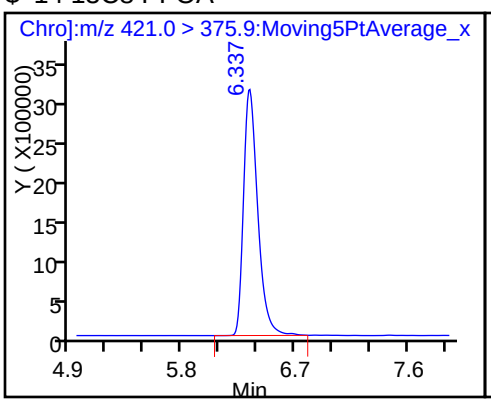
8 Perfluoroheptanoic acid (ND)



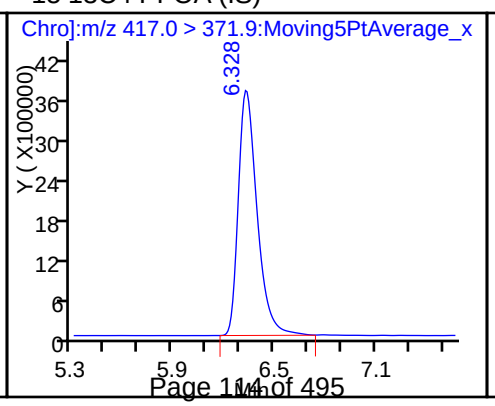
8 Perfluoroheptanoic acid (ND)



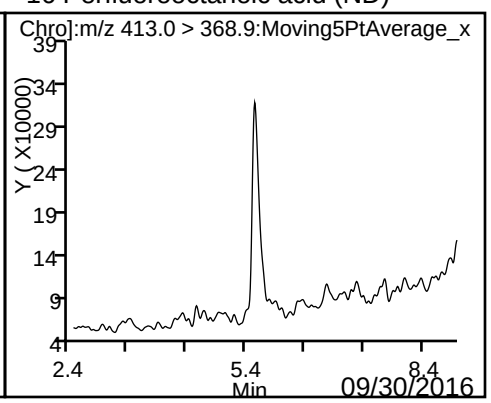
$ 14 13C8 PFOA



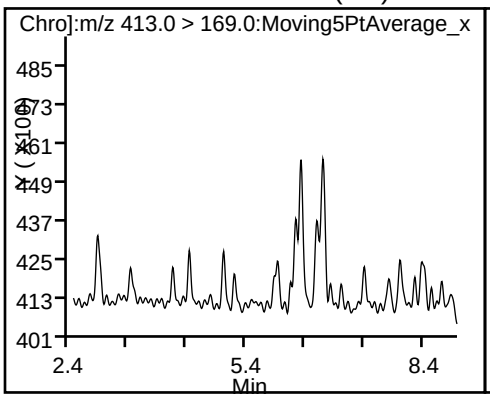
* 15 13C4 PFOA (IS)



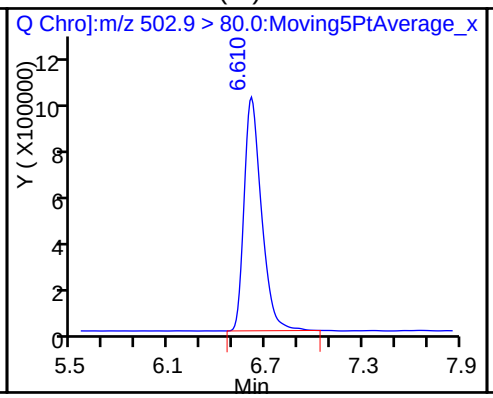
16 Perfluorooctanoic acid (ND)



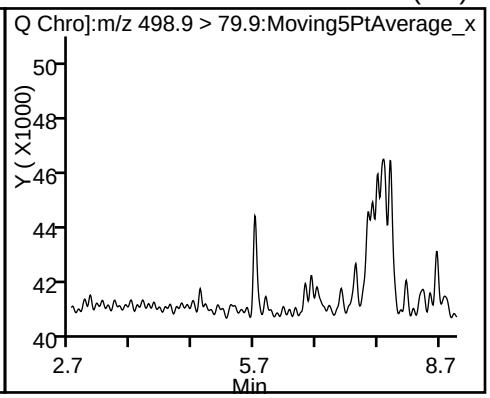
16 Perfluorooctanoic acid (ND)



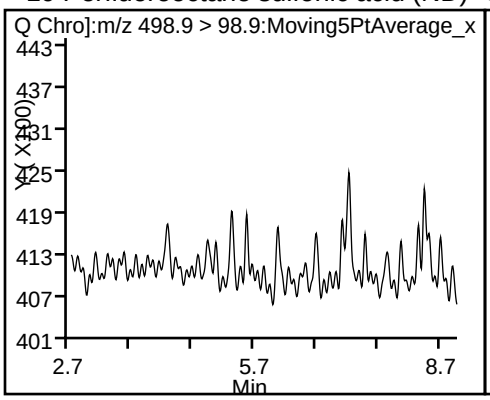
* 17 13C4 PFOS (IS)



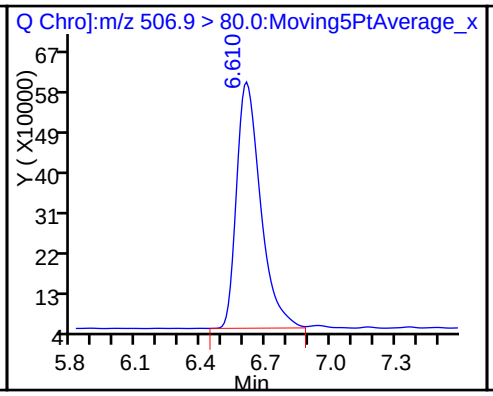
19 Perfluorooctane sulfonic acid (ND)



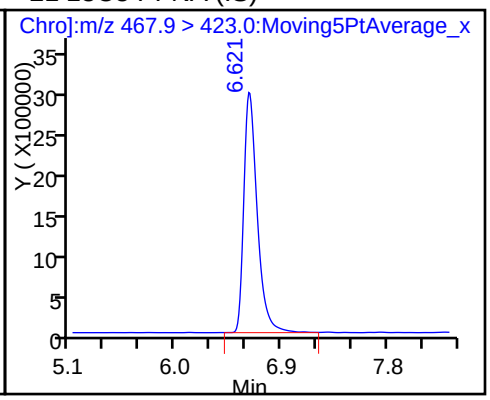
19 Perfluorooctane sulfonic acid (ND)



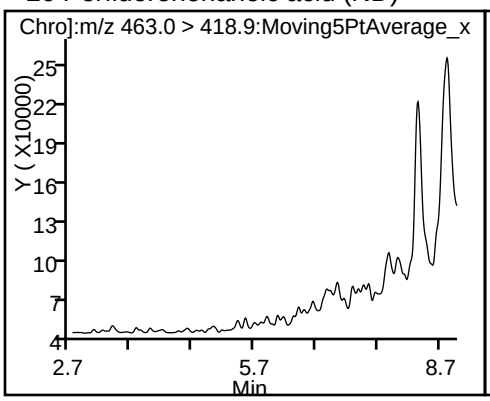
$ 18 13C8 PFOS



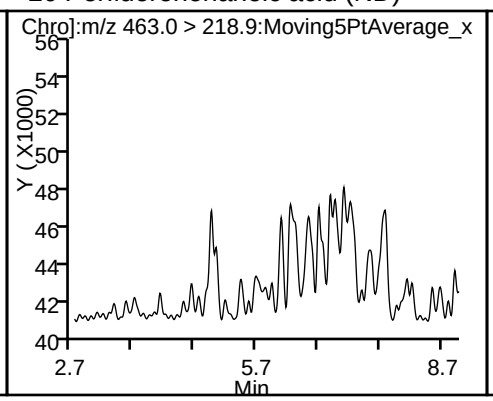
* 21 13C5 PFNA (IS)



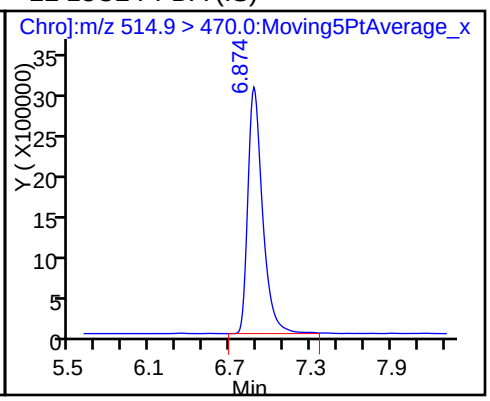
20 Perfluorononanoic acid (ND)



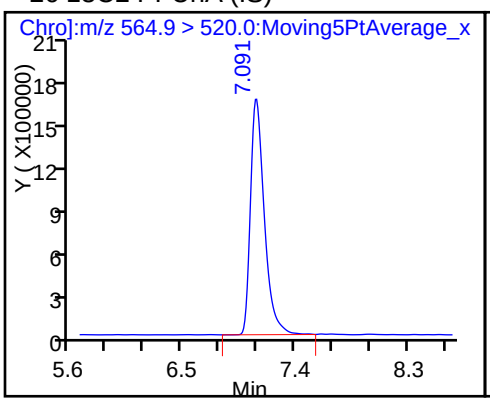
20 Perfluorononanoic acid (ND)



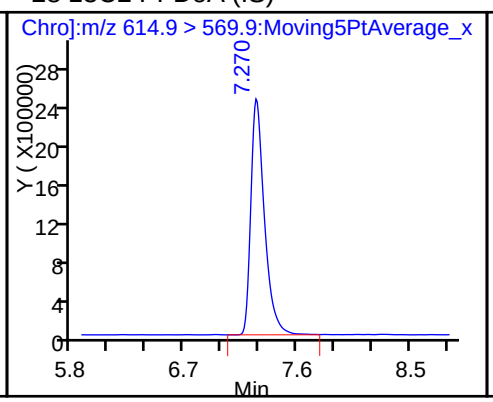
* 22 13C2 PFDA (IS)



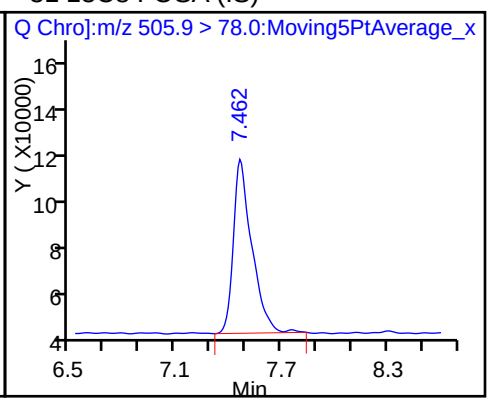
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: STM-UP | Lab Sample ID: 280-88381-10

Matrix: Water | Lab File ID: PC516I028114.d

Analysis Method: DV-LC-0012 | Date Collected: 09/15/2016 13:50

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 276(mL) | Date Analyzed: 09/29/2016 02:49

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.022		0.018	0.0075
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.033		0.027	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.14		0.027	0.0063
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.22		0.027	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.029		0.018	0.0089

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	116		60-155
STL01054	13C8 PFOS	114		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028114.d
Lims ID: 280-88381-B-10-A
Client ID: STM-UP
Sample Type: Client
Inject. Date: 29-Sep-2016 02:49:11 ALS Bottle#: 0 Worklist Smp#: 38
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-B-10-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:33:22

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.774	4.029	-0.255		12123301	10.0			
4 Perfluorobutane Sulfonate									M
298.9 > 79.9	5.118	5.232	-0.114	0.848	1436773	1.23			M
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.591	5.686	-0.095		20713687	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.035	6.111	-0.076		2266627	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.035	6.111	-0.076	1.000	6864022	7.61			R
398.9 > 98.9	6.045	6.111	-0.066	1.002	2292882		2.99(1.30-2.41)		
8 Perfluoroheptanoic acid									M
363.0 > 318.9	6.036	6.112	-0.076	0.947	5716979	1.84			M
$ 14 13C8 PFOA									
421.0 > 375.9	6.375	6.442	-0.067	1.000	27538342	11.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.376	6.442	-0.066		31853078	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.385	6.442	-0.057	1.002	5575850	1.60			
413.0 > 169.0	6.376	6.442	-0.066	1.000	1695602		3.29(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.658	6.705	-0.047		8280589	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.648	6.705	-0.057	0.999	13273159	12.2			R
498.9 > 98.9	6.658	6.705	-0.047	1.000	4009740		3.31(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.657	6.704	-0.047	1.000	4752625	10.5			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.677	6.725	-0.048		26362232	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
20 Perfluorononanoic acid									
463.0 > 418.9	6.668	6.725	-0.057	0.999	1195204	0.4430			
463.0 > 218.9	6.668	6.725	-0.057	0.999	135483		8.82(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.922	6.960	-0.038		26349840	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.139	7.167	-0.028		16011790	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.318	7.346	-0.028		24445342	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.519	7.567	-0.048		2269097	10.0			

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- s - Failed ISTD Recovery Test

Review Flags
- M - Manually Integrated

Report Date: 29-Sep-2016 11:42:24 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028114.d

Injection Date: 29-Sep-2016 02:49:11 Instrument ID: LC_LCMS5

Lims ID: 280-88381-B-10-A Lab Sample ID: 280-88381-10

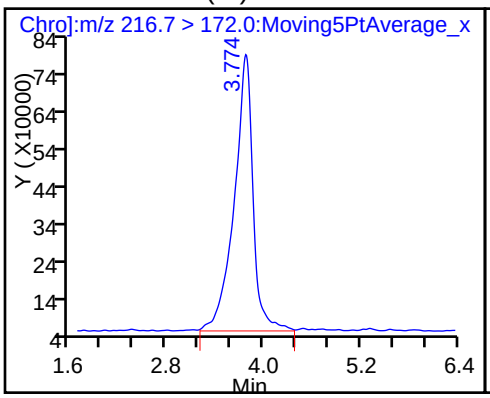
Client ID: STM-UP

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 38

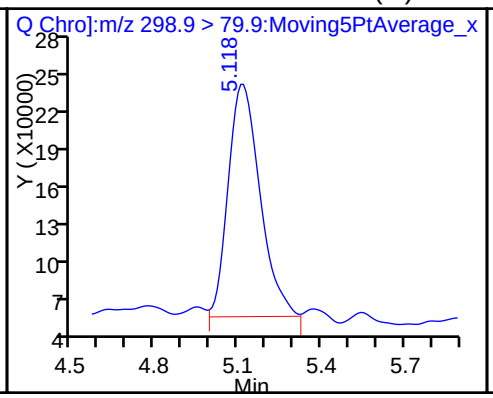
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

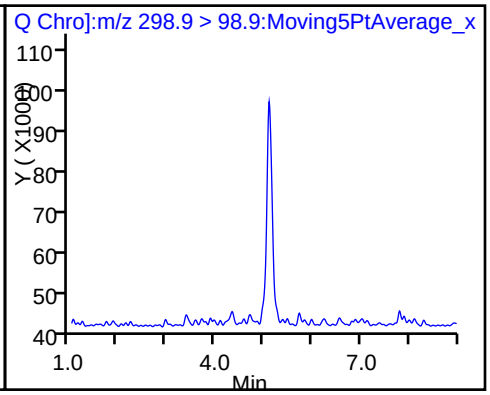
* 1 13C4 PFBA (IS)



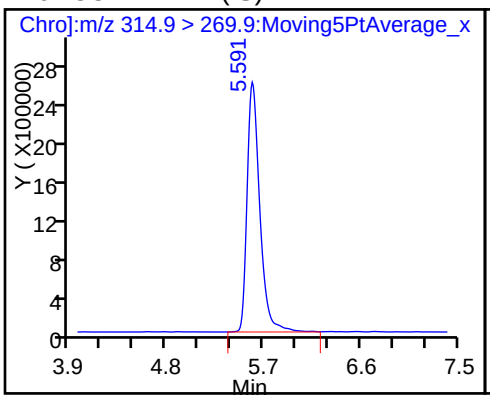
4 Perfluorobutane Sulfonate (M)



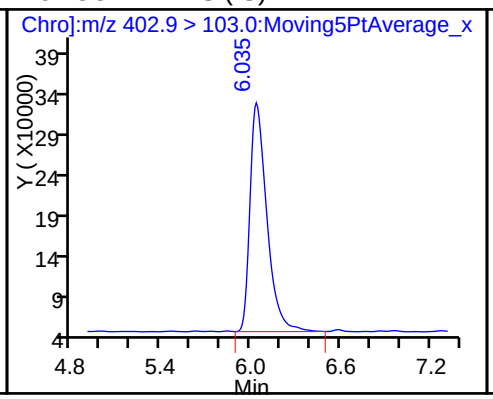
4 Perfluorobutane Sulfonate



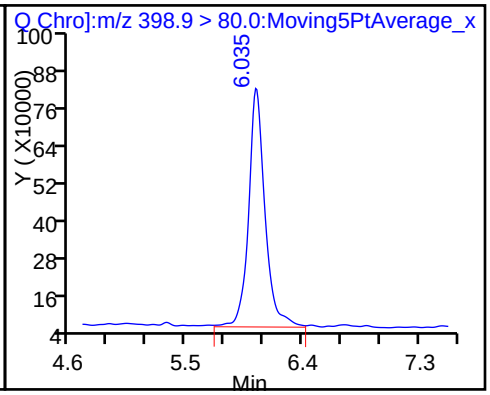
* 6 13C2 PFHxA (IS)



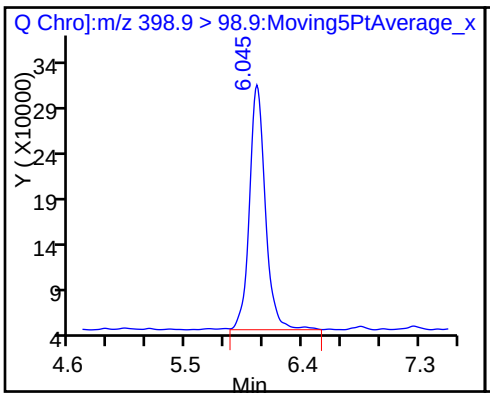
* 9 18O2 PFHxS (IS)



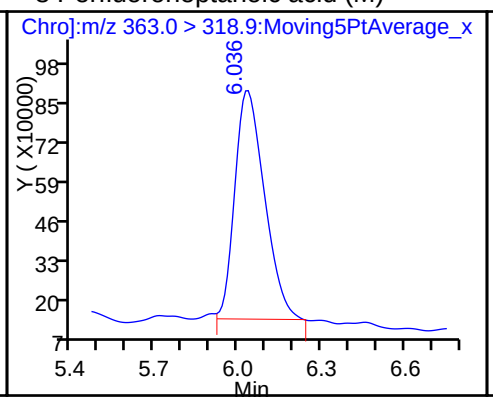
10 Perfluorohexane Sulfonate



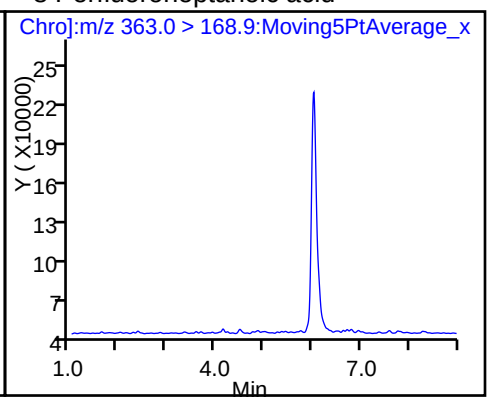
10 Perfluorohexane Sulfonate



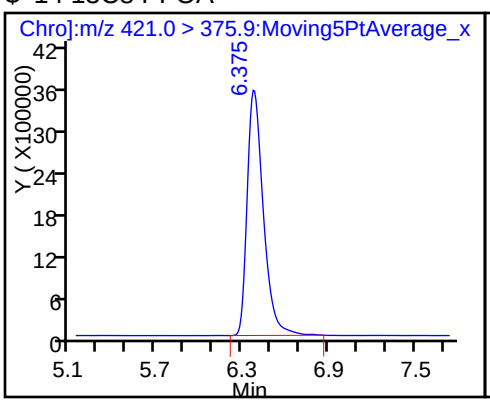
8 Perfluoroheptanoic acid (M)



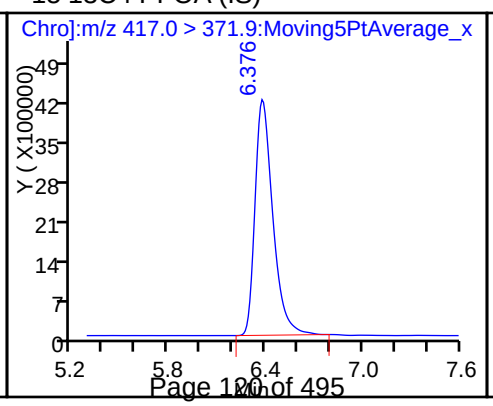
8 Perfluoroheptanoic acid



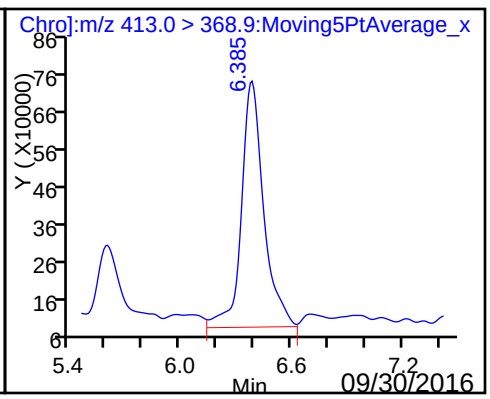
$ 14 13C8 PFOA



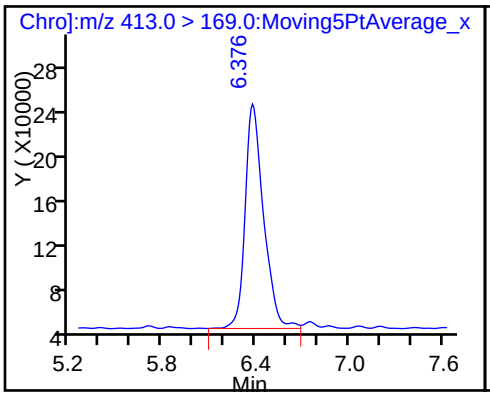
* 15 13C4 PFOA (IS)



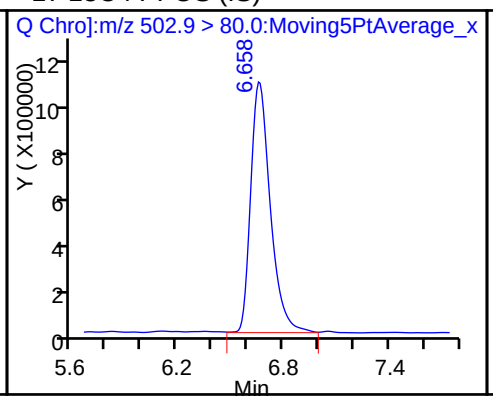
16 Perfluorooctanoic acid



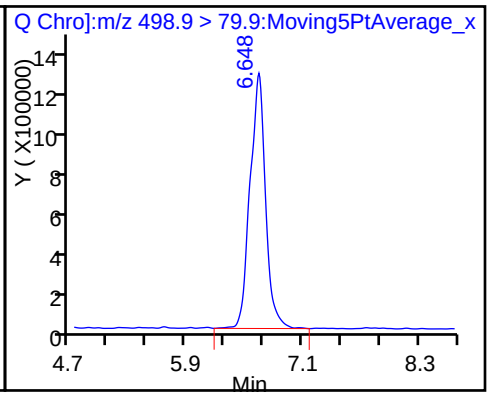
16 Perfluorooctanoic acid



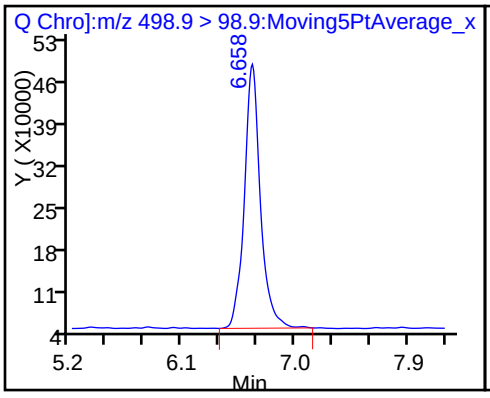
* 17 13C4 PFOS (IS)



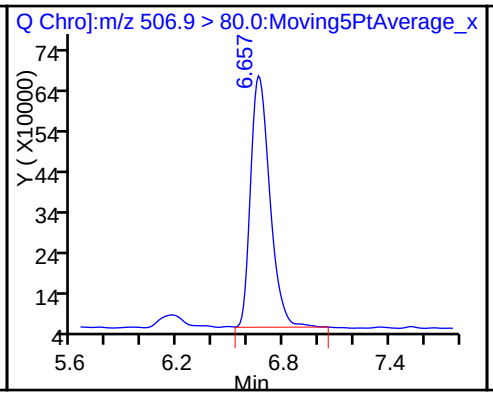
19 Perfluorooctane sulfonic acid



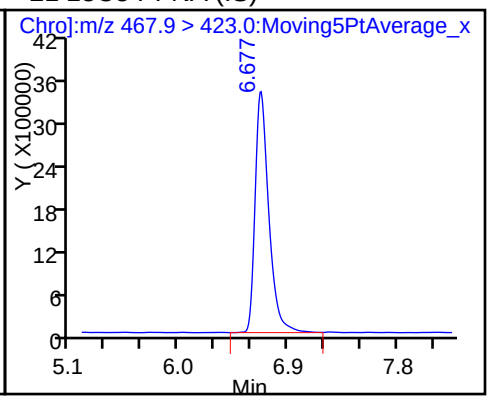
19 Perfluorooctane sulfonic acid



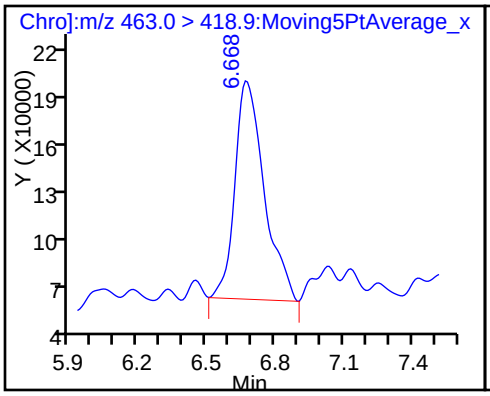
$ 18 13C8 PFOS



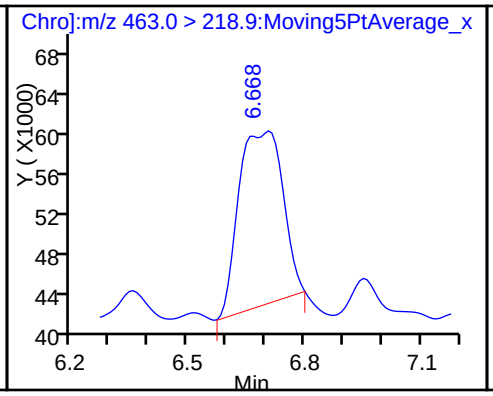
* 21 13C5 PFNA (IS)



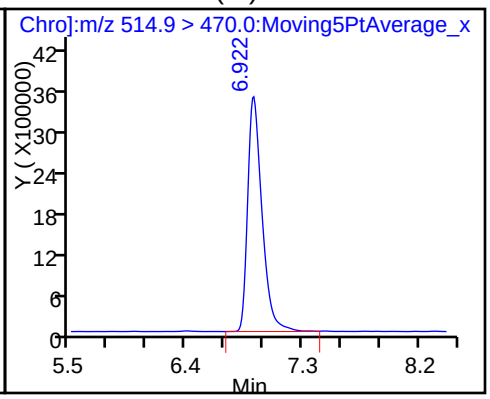
20 Perfluorononanoic acid



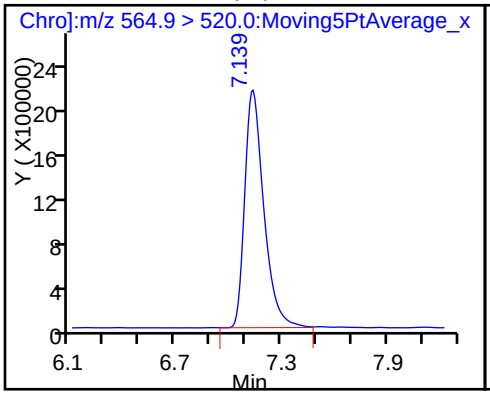
20 Perfluorononanoic acid



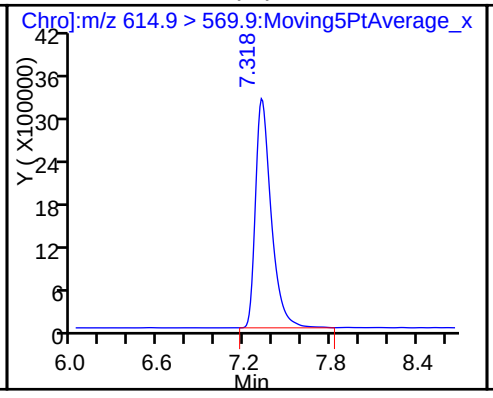
* 22 13C2 PFDA (IS)



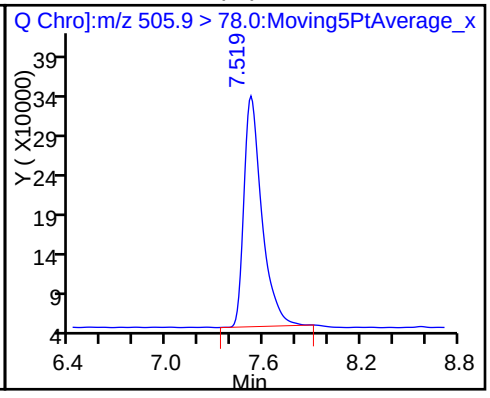
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



Manual Integration/User Assign Peak Report

TestAmerica Denver

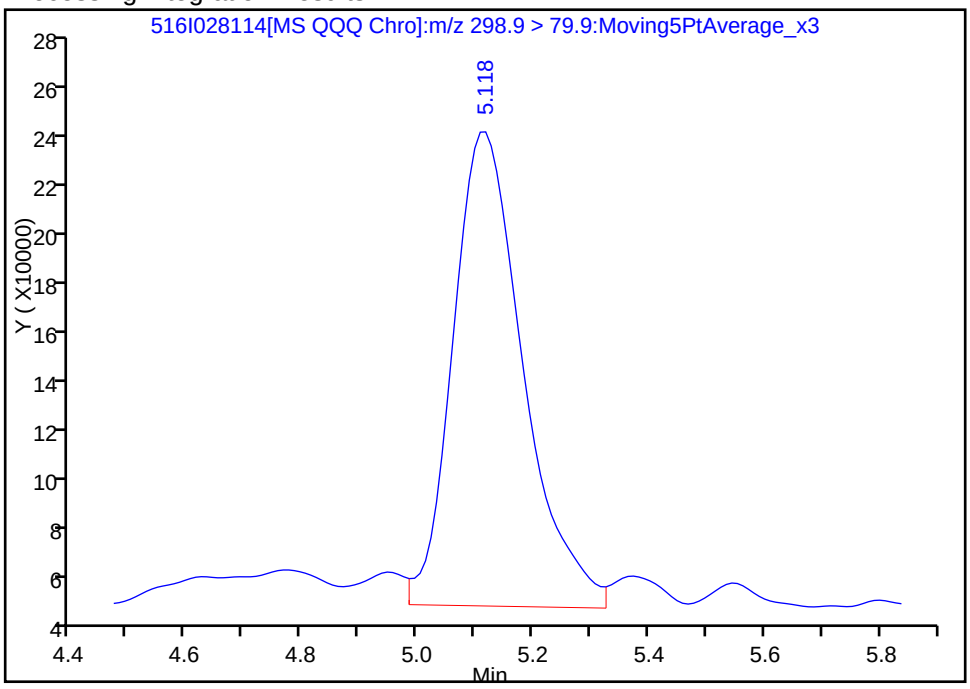
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028114.d				
Injection Date:	29-Sep-2016 02:49:11	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-B-10-A	Lab Sample ID:	280-88381-10		
Client ID:	STM-UP				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	38
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

4 Perfluorobutane Sulfonate, CAS: 29420-43-3

Signal: 1

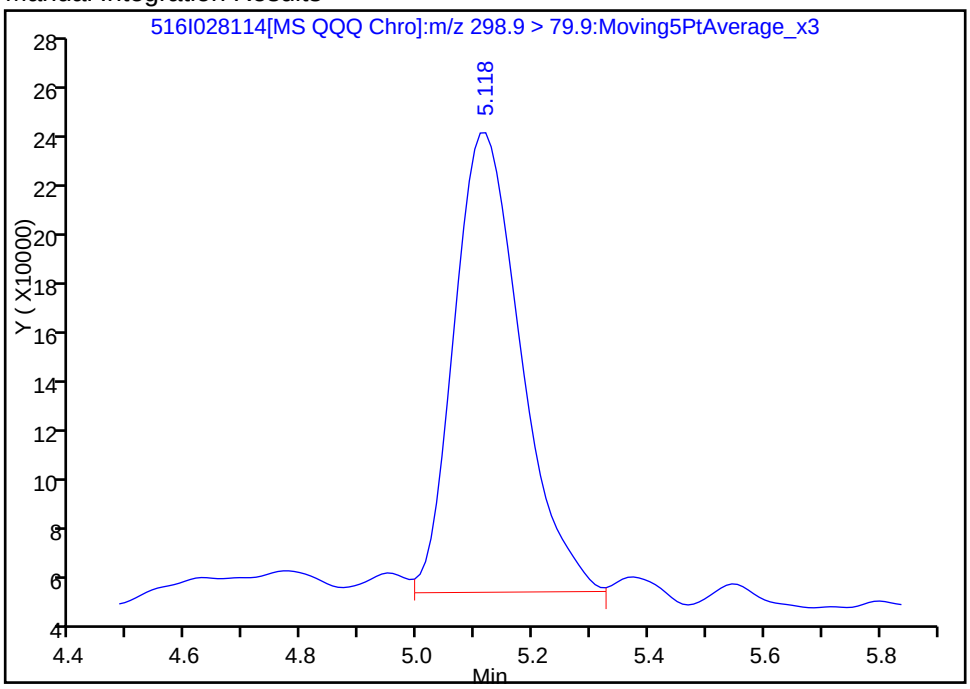
Processing Integration Results

RT: 5.12
Area: 1560351
Amount: 1.338056
Amount Units: ug/L



Manual Integration Results

RT: 5.12
Area: 1436773
Amount: 1.234036
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:33:22

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Denver

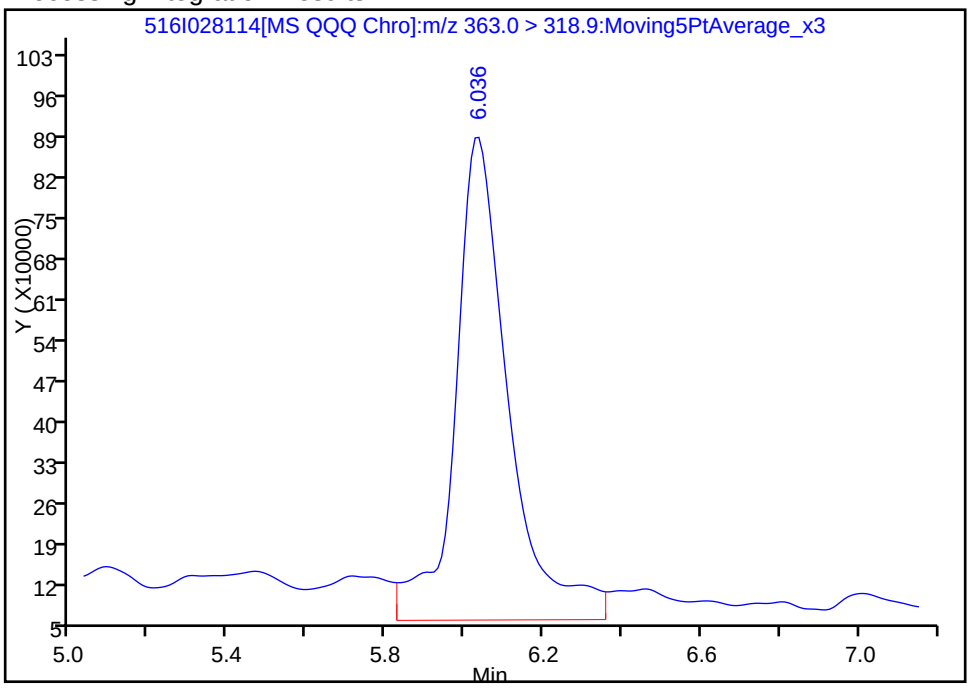
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028114.d				
Injection Date:	29-Sep-2016 02:49:11	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-B-10-A	Lab Sample ID:	280-88381-10		
Client ID:	STM-UP				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	38
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

8 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

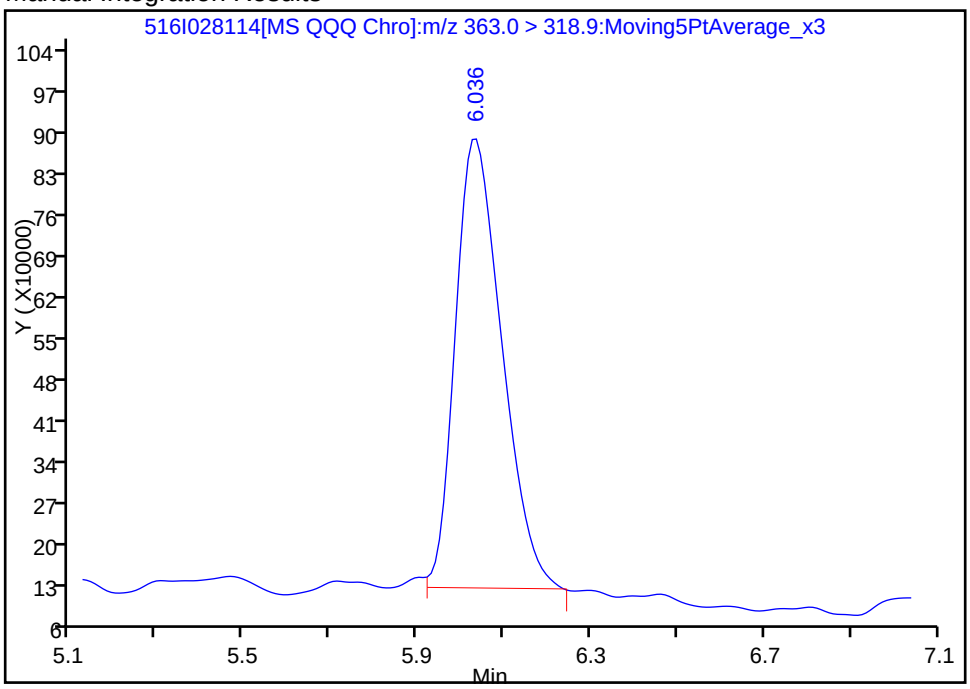
Processing Integration Results

RT: 6.04
Area: 7747162
Amount: 2.480519
Amount Units: ug/L



Manual Integration Results

RT: 6.04
Area: 5716979
Amount: 1.836491
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:33:22

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: CB | Lab Sample ID: 280-88381-11

Matrix: Water | Lab File ID: PC516I028115.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 08:57

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 269(mL) | Date Analyzed: 09/29/2016 03:01

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0084	J	0.019	0.0077
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.029		0.028	0.0065
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.055		0.028	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.013	J	0.019	0.0091

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	114		60-155
STL01054	13C8 PFOS	117		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028115.d
Lims ID: 280-88381-A-11-A
Client ID: CB
Sample Type: Client
Inject. Date: 29-Sep-2016 03:01:28 ALS Bottle#: 0 Worklist Smp#: 39
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-11-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:35:10

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.935	4.029	-0.094		29148341	10.0			
2 Perfluorobutyric acid									M
213.0 > 168.9	3.916	4.030	-0.114	0.995	2478374	0.7803			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.090	5.119	-0.029	0.900	3026401	1.45			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.203	5.232	-0.029	0.853	514121	0.5159			
298.9 > 98.9	5.222	5.232	-0.010	0.856	177945		2.89(2.57-2.57)		
4 Perfluorobutane Sulfonate									M
298.9 > 79.9	5.203	5.232	-0.029	0.853	449019	0.4537			M
298.9 > 98.9	5.222	5.232	-0.010	0.856	177945		2.52(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.657	5.686	-0.029		19161078	10.0			
7 Perfluorohexanoic acid									M
313.0 > 268.9	5.658	5.686	-0.028	1.000	2804116	1.54			
313.0 > 118.6	5.648	5.686	-0.038	0.998	52287		53.63(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.102	6.111	-0.009		1996673	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.092	6.111	-0.019	0.998	1240913	1.56			R
398.9 > 98.9	6.102	6.111	-0.009	1.000	470465		2.64(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.092	6.111	-0.019	0.998	1240913	1.56			
398.9 > 98.9	6.102	6.111	-0.009	1.000	470465		2.64(1.85-1.85)		
8 Perfluoroheptanoic acid									RM
363.0 > 318.9	6.083	6.112	-0.029	0.946	1481510	0.5179			RM
363.0 > 168.9	6.415	6.112	0.303	0.997	12831		115.46(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.441				ND			
449.0 > 98.9		6.441							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.441				ND			
449.0 > 98.9		6.441							
$ 14 13C8 PFOA									
421.0 > 375.9	6.432	6.442	-0.010	1.000	25645638	11.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.432	6.442	-0.010		30241473	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.433	6.442	-0.009	1.000	2497947	0.6970			
413.0 > 169.0	6.433	6.442	-0.009	1.000	811647		3.08(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.695	6.705	-0.010		7531636	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.696	6.705	-0.009	1.000	2912069	2.97			R
498.9 > 98.9	6.686	6.705	-0.019	0.999	856128		3.40(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.695	6.704	-0.009	1.000	4439319	10.8			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.715	6.725	-0.010		25138179	10.0			
20 Perfluorononanoic acid									M
463.0 > 418.9	6.706	6.725	-0.019	0.999	448127	0.2081			M
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.960	6.960	0.0		23774132	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.960	6.960	0.0	1.000	365952	0.1632			R
513.0 > 219.0	6.960	6.960	0.0	1.000	57497		6.36(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.138				ND			
598.9 > 99.0		7.138							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.138				ND			
598.9 > 99.0		7.138							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.167	7.167	0.0		13407176	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.167				ND			
563.0 > 268.9		7.167							
29 Perfluorododecanoic acid									
613.0 > 568.9		7.346				ND			
613.0 > 168.9		7.346							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.346	7.346	0.0		22860961	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.497				ND			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.568				ND			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.557	7.567	-0.010		2141861	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.630				ND			
712.9 > 169.0		7.630							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

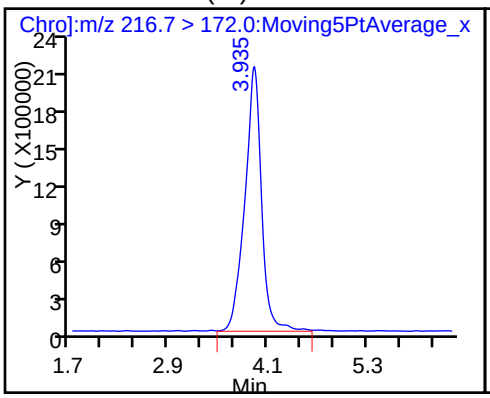
Report Date: 29-Sep-2016 11:42:27 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

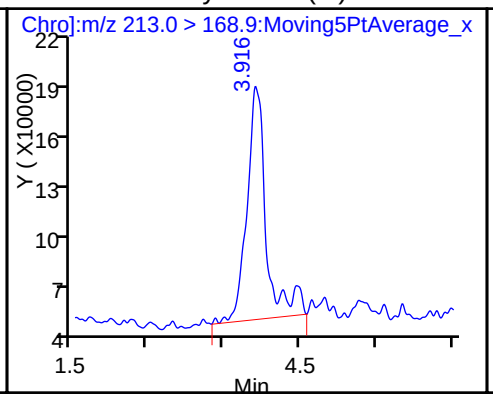
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028115.d

Injection Date:	29-Sep-2016 03:01:28	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-11-A	Lab Sample ID:	280-88381-11		
Client ID:	CB				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	39
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

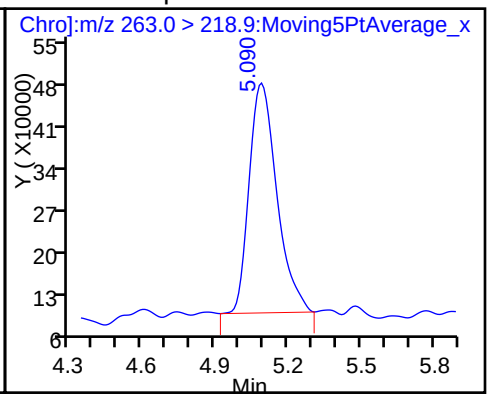
* 1 13C4 PFBA (IS)



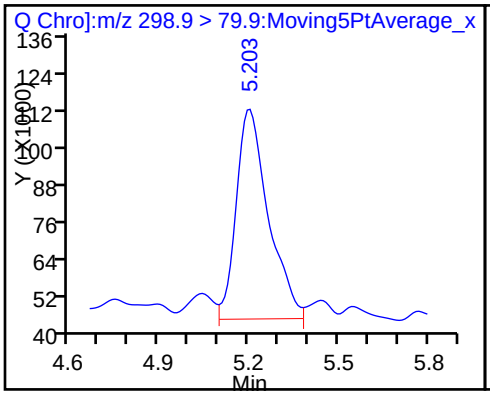
2 Perfluorobutyric acid (M)



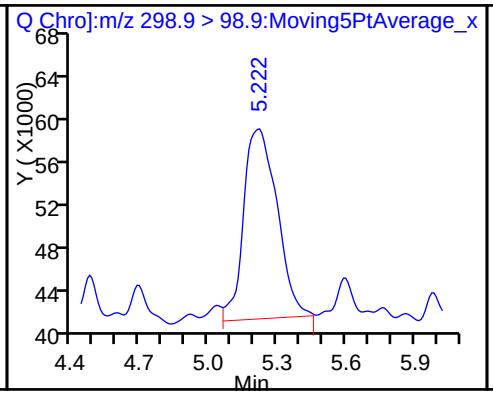
3 Perfluoropentanoic acid



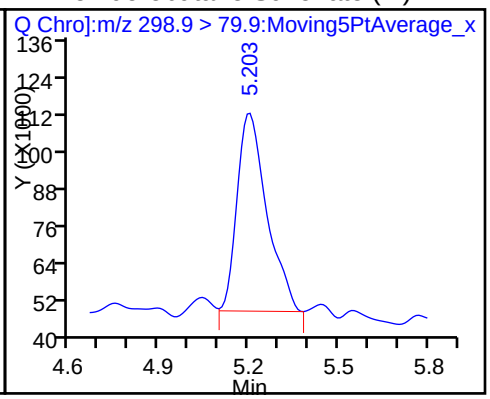
5 Perfluorobutanesulfonic acid



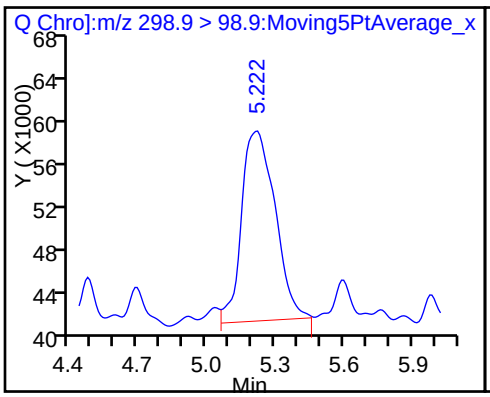
5 Perfluorobutanesulfonic acid



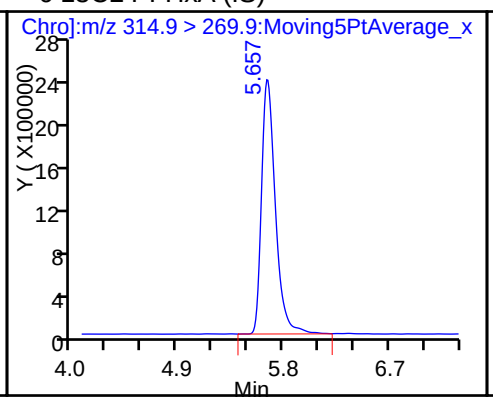
4 Perfluorobutane Sulfonate (M)



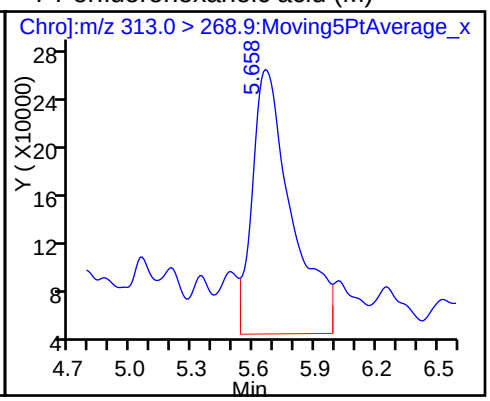
4 Perfluorobutane Sulfonate



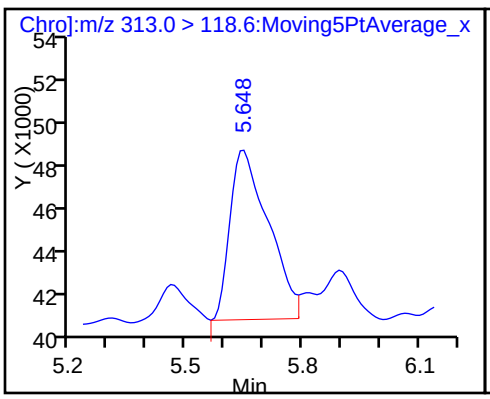
* 6 13C2 PFHxA (IS)



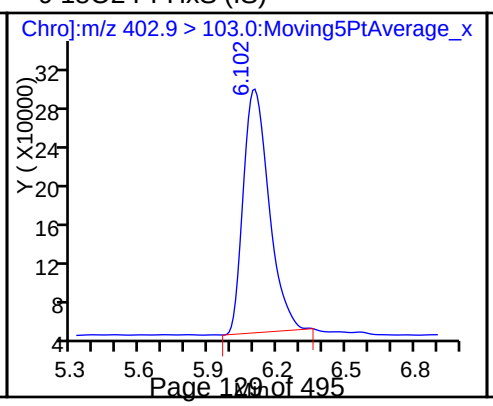
7 Perfluorohexanoic acid (M)



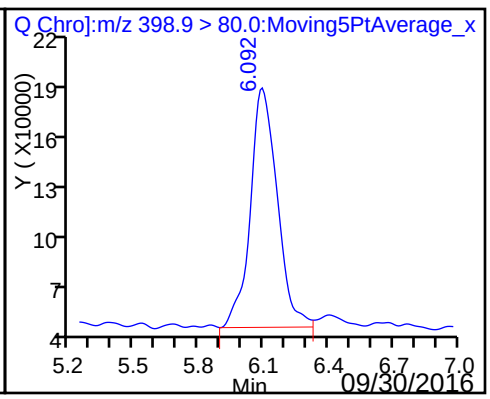
7 Perfluorohexanoic acid



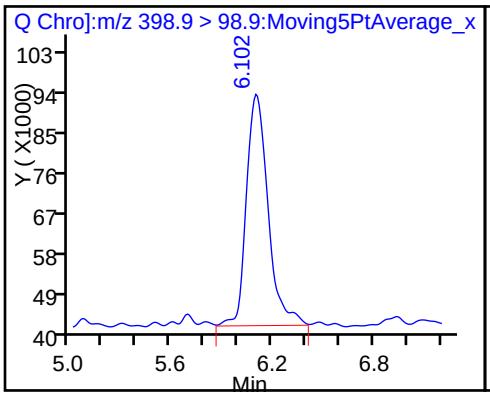
* 9 18O2 PFHxS (IS)



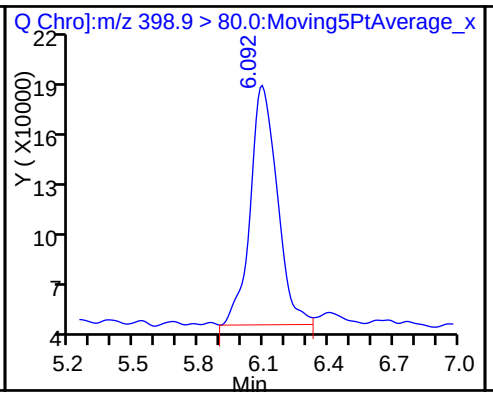
10 Perfluorohexane Sulfonate



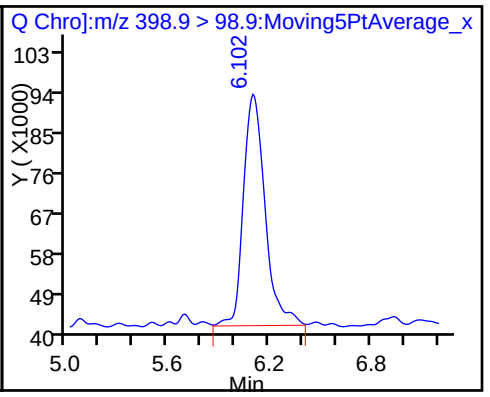
10 Perfluorohexane Sulfonate



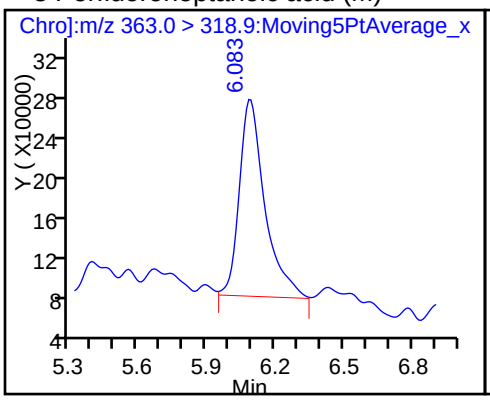
11 Perfluorohexanesulfonic acid



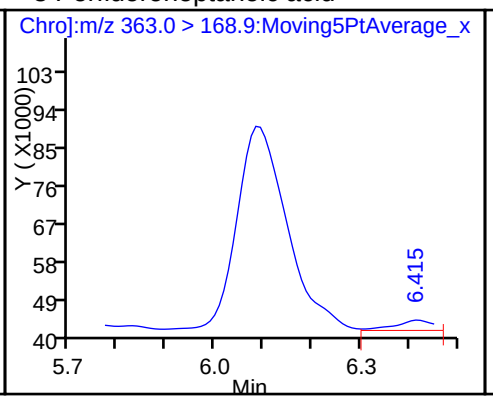
11 Perfluorohexanesulfonic acid



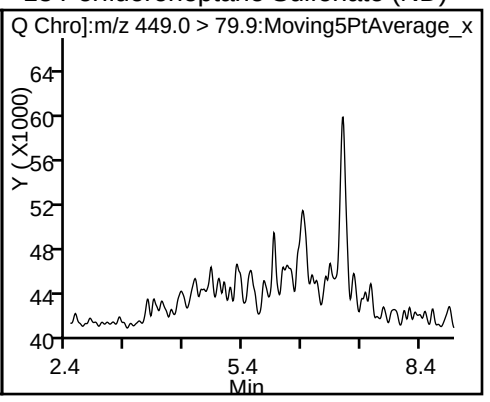
8 Perfluoroheptanoic acid (M)



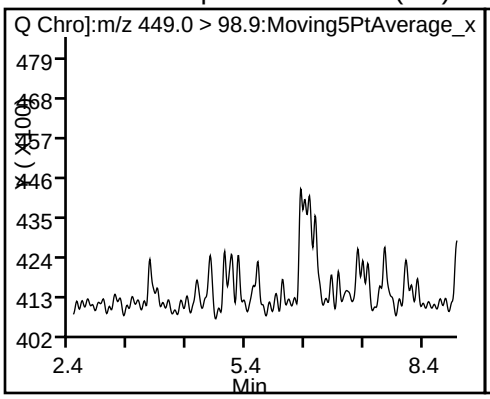
8 Perfluoroheptanoic acid



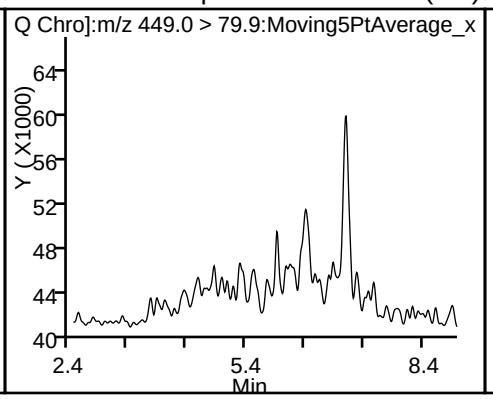
13 Perfluoroheptane Sulfonate (ND)



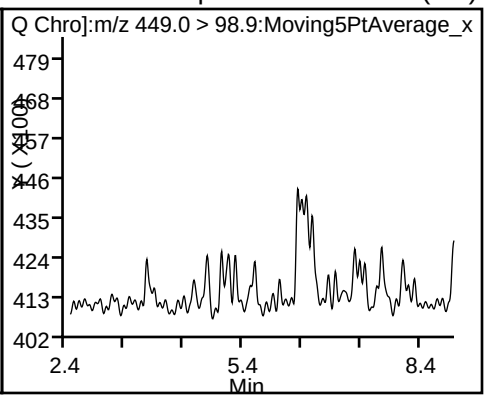
13 Perfluoroheptane Sulfonate (ND)



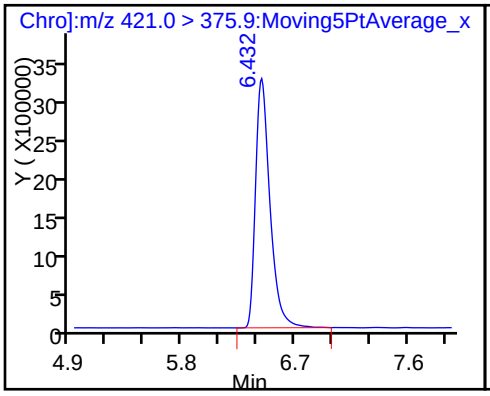
12 Perfluoroheptanesulfonic Acid (ND)



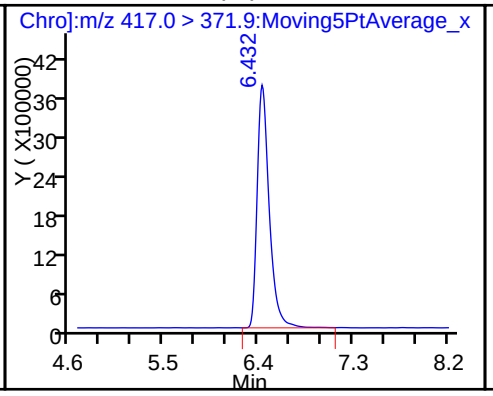
12 Perfluoroheptanesulfonic Acid (ND)



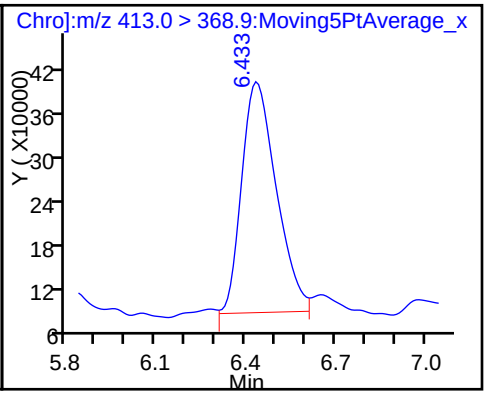
$ 14 13C8 PFOA



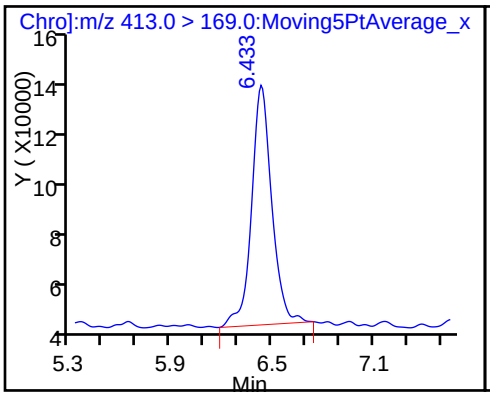
* 15 13C4 PFOA (IS)



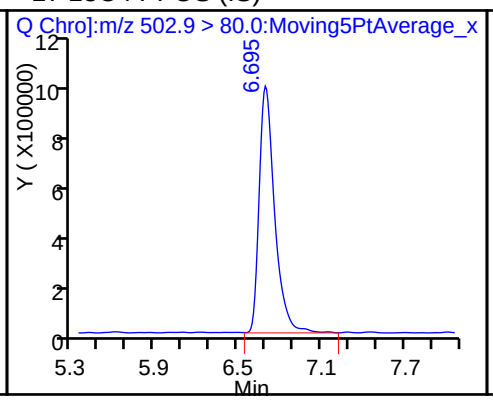
16 Perfluorooctanoic acid



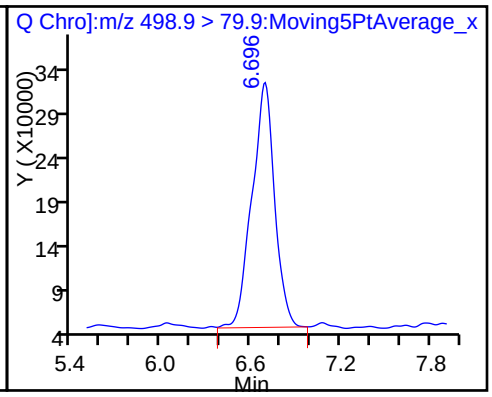
16 Perfluorooctanoic acid



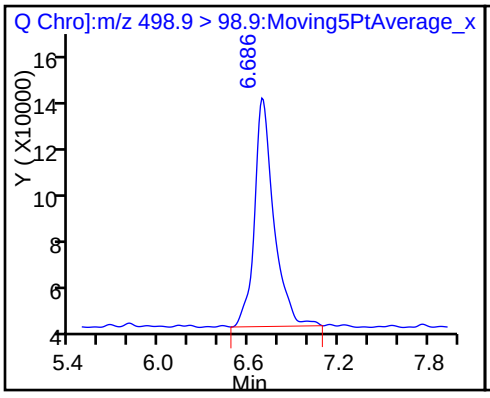
* 17 13C4 PFOS (IS)



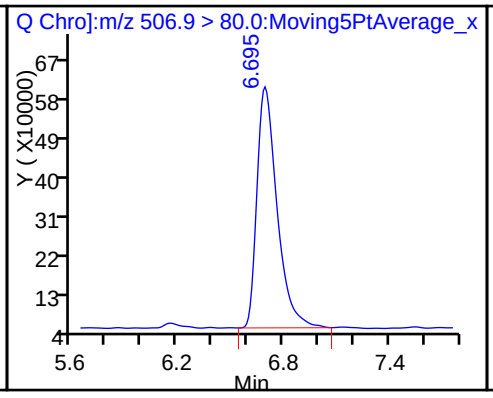
19 Perfluorooctane sulfonic acid



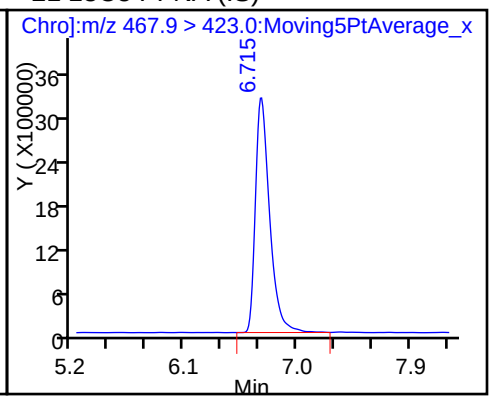
19 Perfluorooctane sulfonic acid



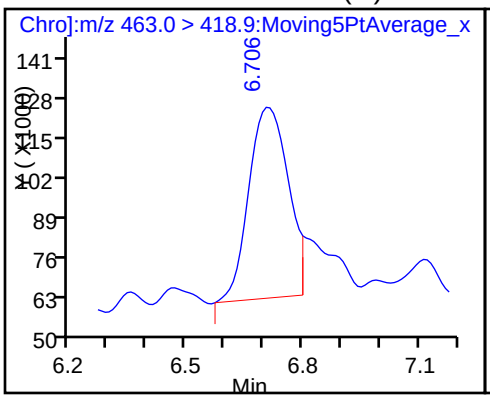
$ 18 13C8 PFOS



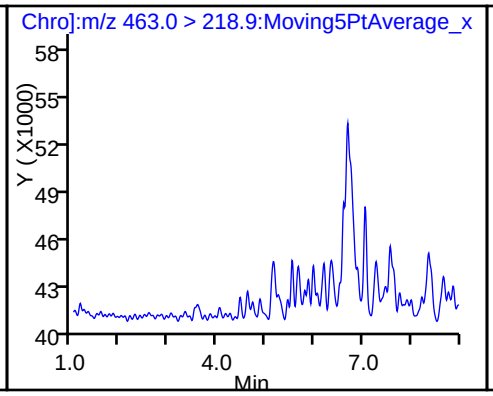
* 21 13C5 PFNA (IS)



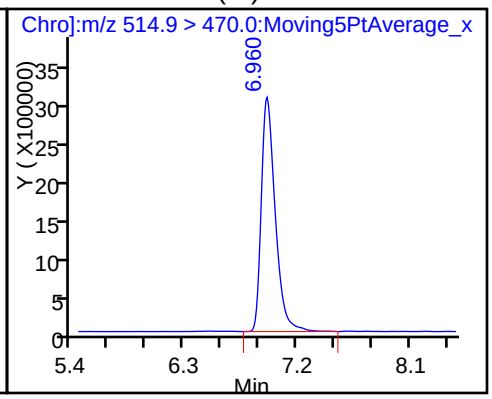
20 Perfluorononanoic acid (M)



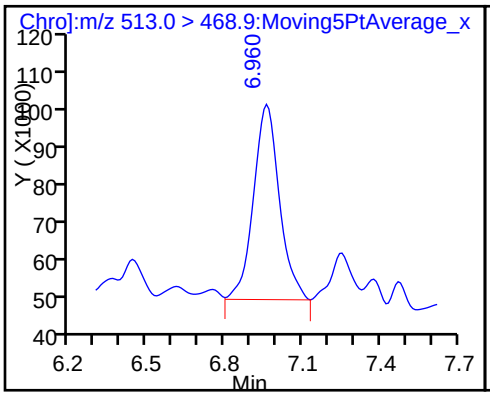
20 Perfluorononanoic acid



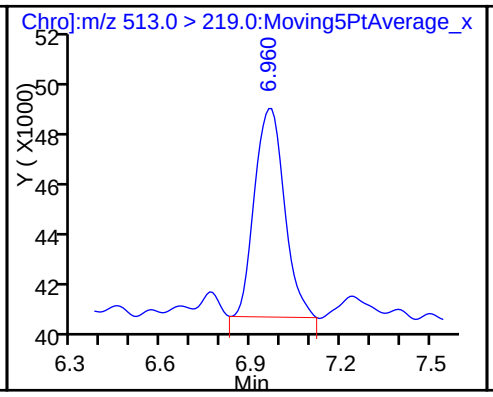
* 22 13C2 PFDA (IS)



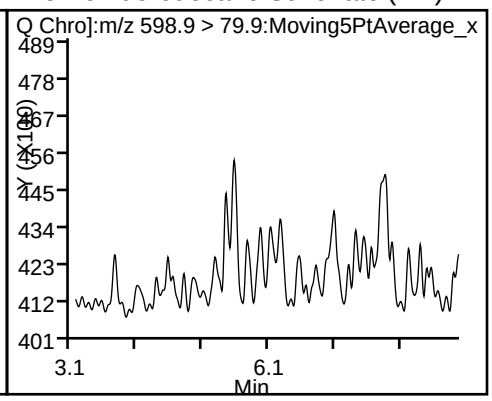
23 Perfluorodecanoic acid



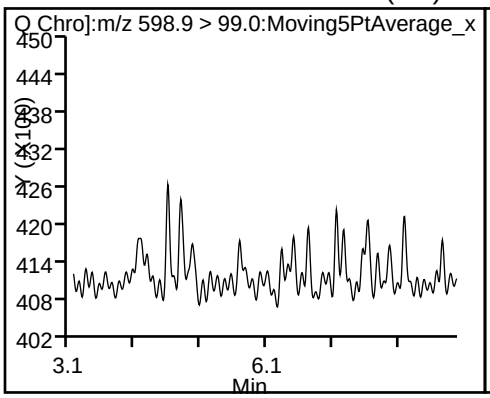
23 Perfluorodecanoic acid



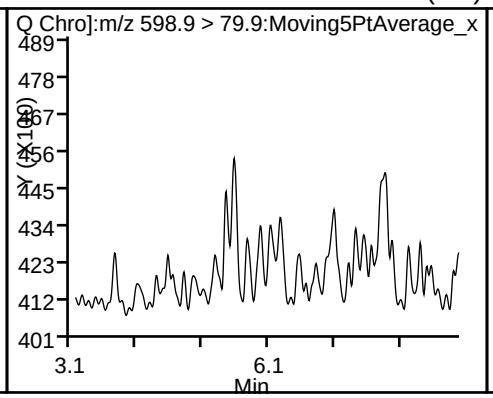
25 Perfluorodecane Sulfonate (ND)



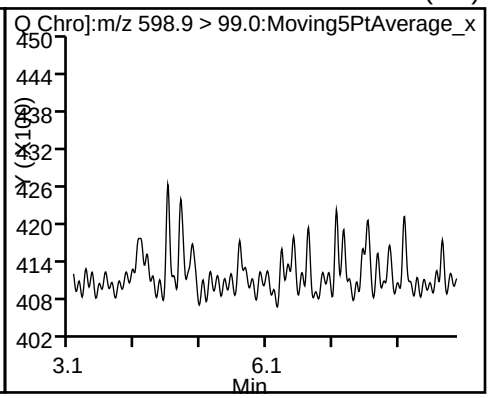
25 Perfluorodecane Sulfonate (ND)



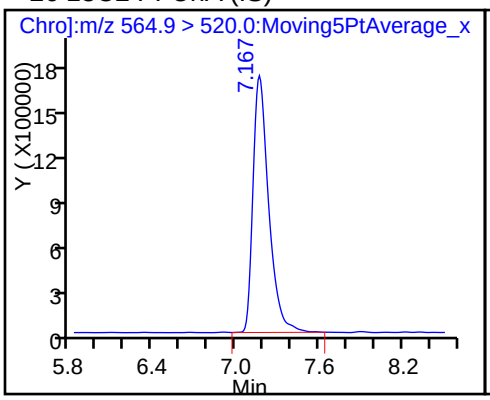
24 Perfluorodecane Sulfonic acid (ND)



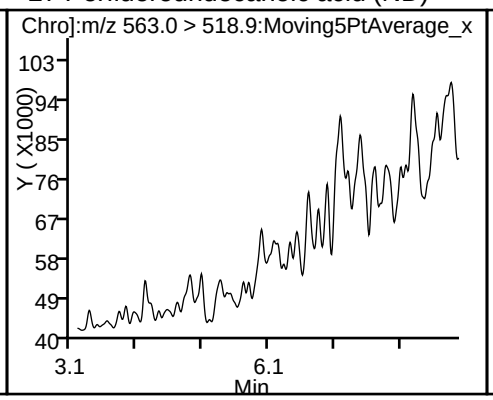
24 Perfluorodecane Sulfonic acid (ND)



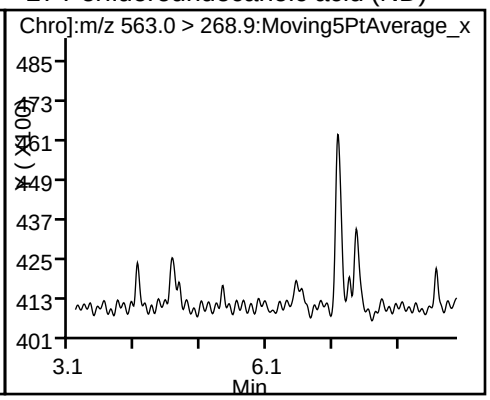
* 26 13C2 PFUnA (IS)



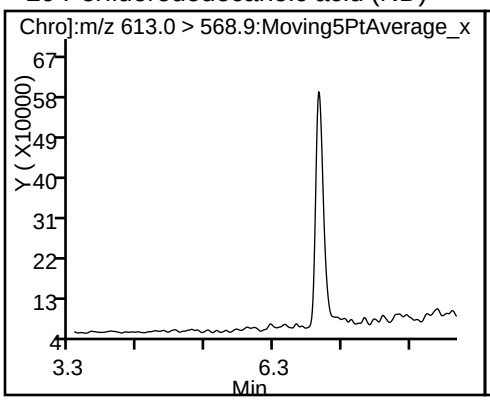
27 Perfluoroundecanoic acid (ND)



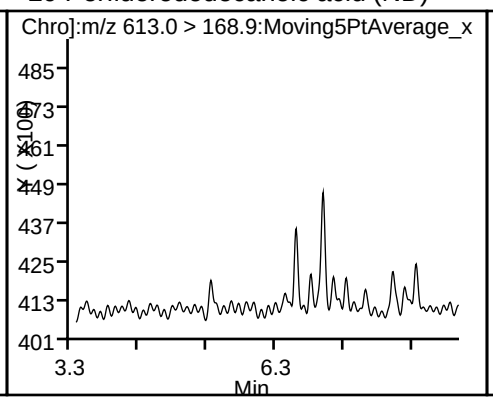
27 Perfluoroundecanoic acid (ND)



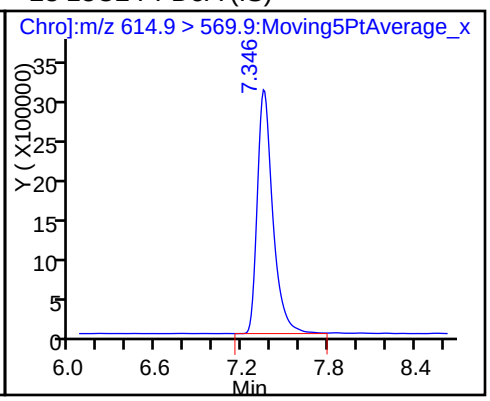
29 Perfluorododecanoic acid (ND)



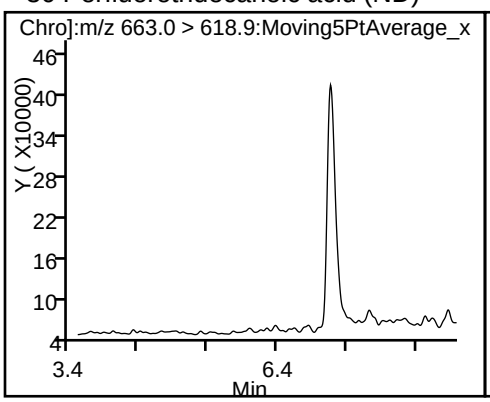
29 Perfluorododecanoic acid (ND)



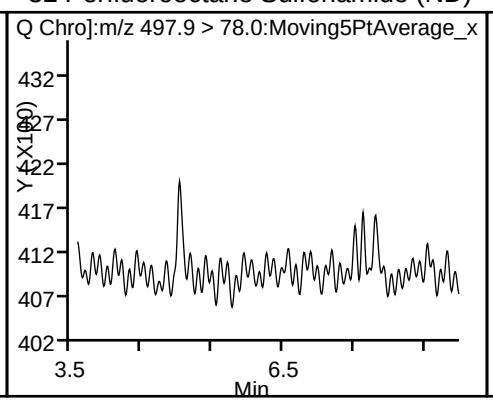
* 28 13C2 PFDoA (IS)



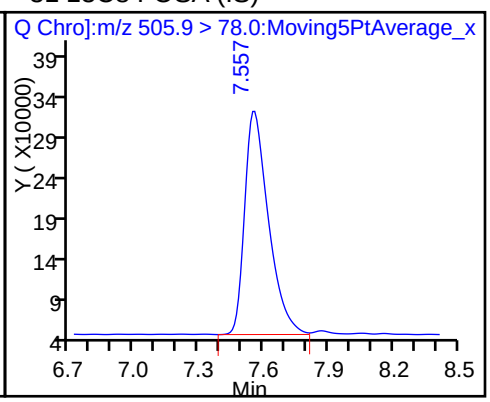
30 Perfluorotridecanoic acid (ND)



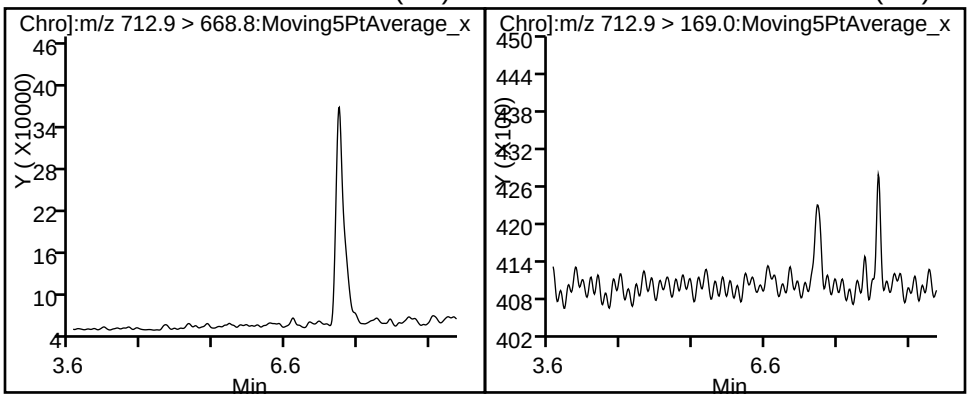
32 Perfluorooctane Sulfonamide (ND)



* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



TestAmerica Denver

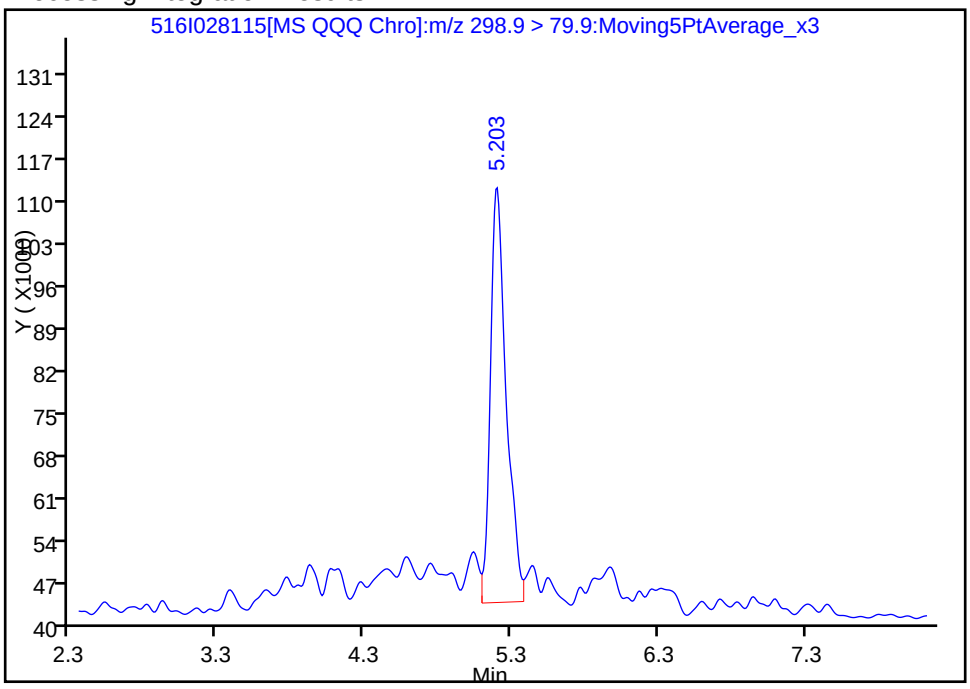
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028115.d				
Injection Date:	29-Sep-2016 03:01:28	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-11-A	Lab Sample ID:	280-88381-11		
Client ID:	CB				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	39
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

4 Perfluorobutane Sulfonate, CAS: 29420-43-3

Signal: 1

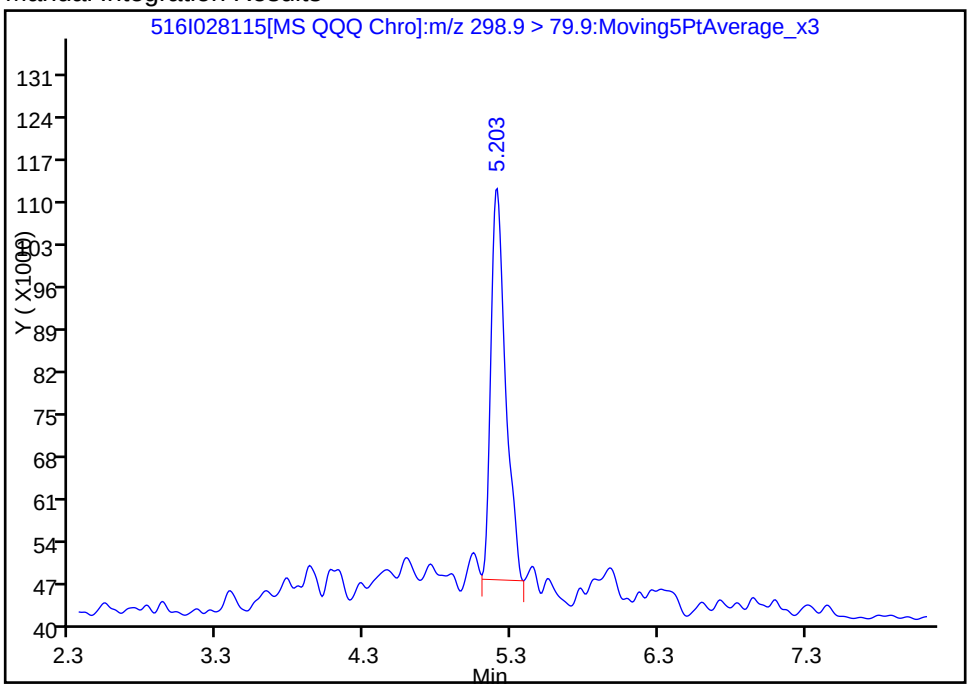
Processing Integration Results

RT: 5.20
Area: 514121
Amount: 0.515920
Amount Units: ug/L



Manual Integration Results

RT: 5.20
Area: 449019
Amount: 0.453713
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:35:10
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Denver

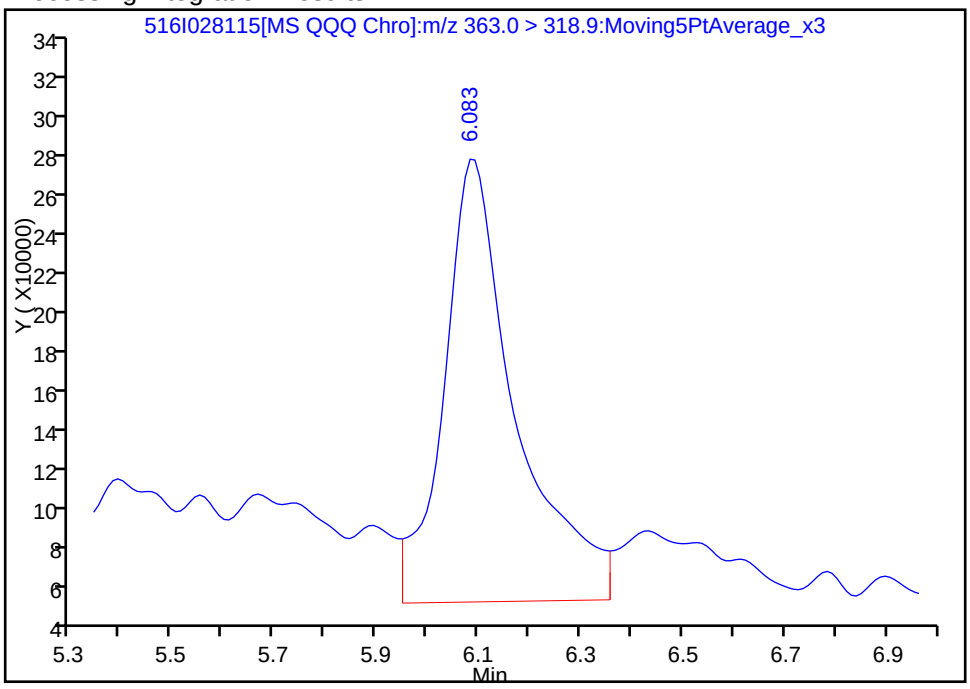
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028115.d				
Injection Date:	29-Sep-2016 03:01:28	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-11-A	Lab Sample ID:	280-88381-11		
Client ID:	CB				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	39
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

8 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

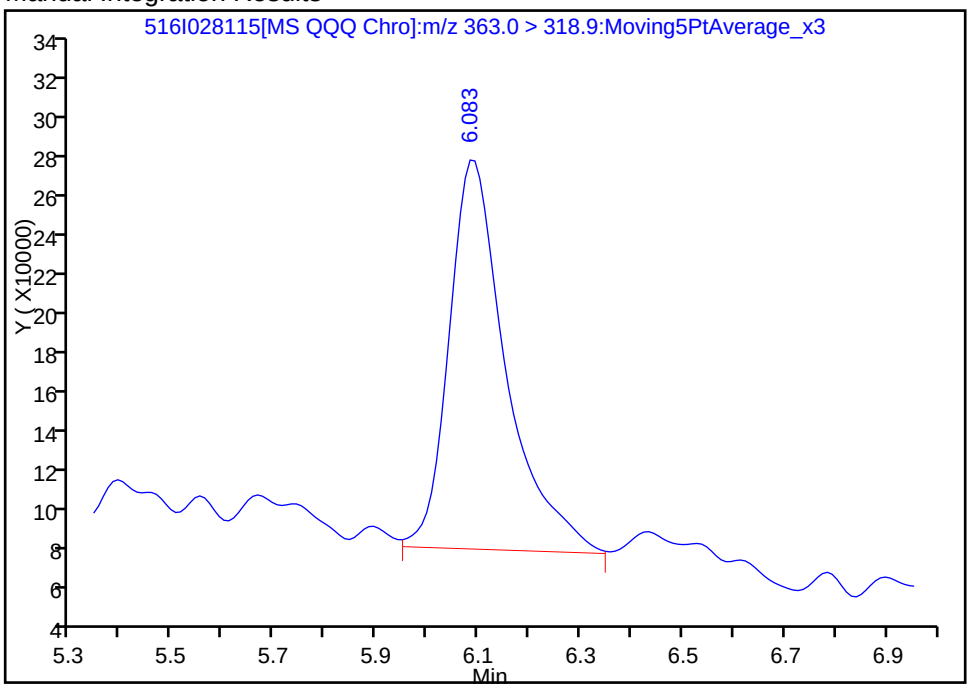
Processing Integration Results

RT: 6.08
Area: 2104608
Amount: 0.726130
Amount Units: ug/L



Manual Integration Results

RT: 6.08
Area: 1481510
Amount: 0.517933
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:35:10

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

TestAmerica Denver

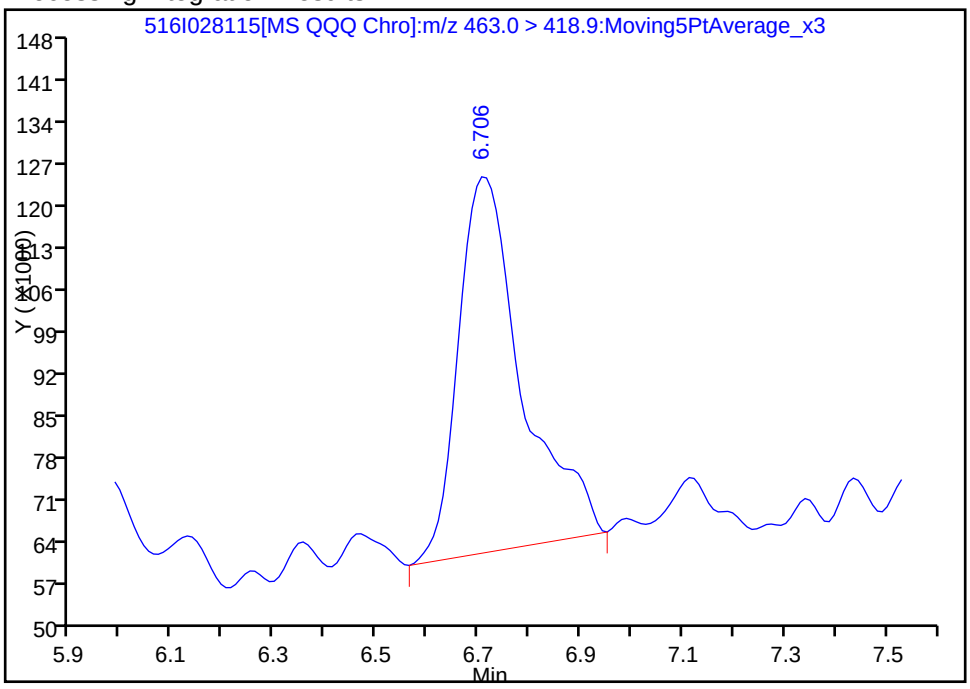
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028115.d				
Injection Date:	29-Sep-2016 03:01:28	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-11-A	Lab Sample ID:	280-88381-11		
Client ID:	CB				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	39
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

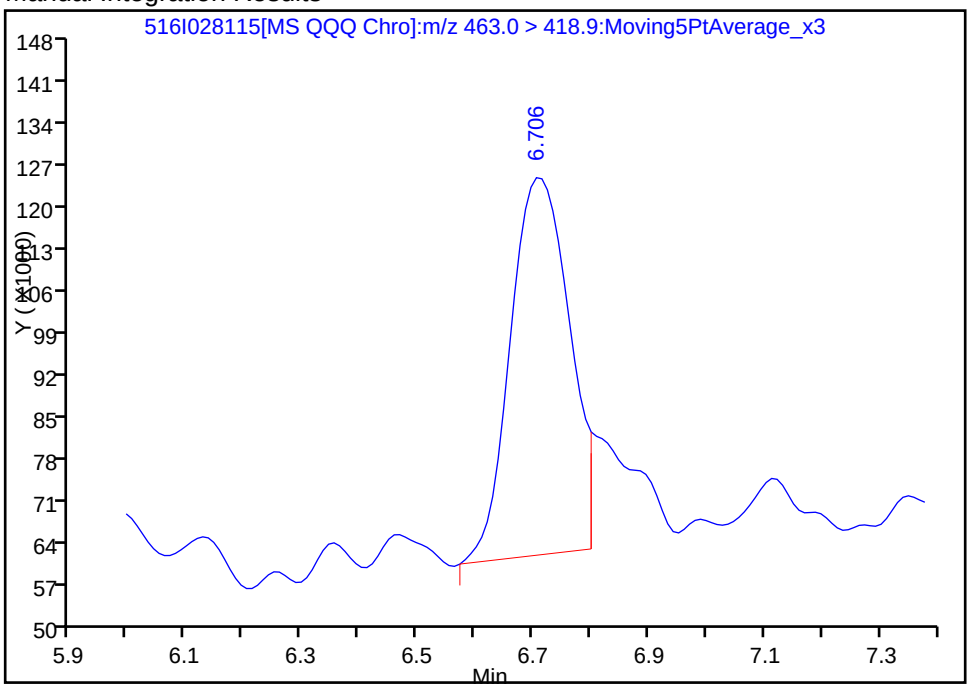
Processing Integration Results

RT: 6.71
Area: 543877
Amount: 0.240596
Amount Units: ug/L



Manual Integration Results

RT: 6.71
Area: 448127
Amount: 0.208070
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:35:10
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: C17 | Lab Sample ID: 280-88381-12

Matrix: Water | Lab File ID: PC516I028118.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 08:30

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 255.2(mL) | Date Analyzed: 09/29/2016 03:38

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.023		0.020	0.0081
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.043		0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.16		0.029	0.0068
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.46		0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.040		0.020	0.0096

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	126		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028118.d
Lims ID: 280-88381-A-12-A
Client ID: C17
Sample Type: Client
Inject. Date: 29-Sep-2016 03:38:24 ALS Bottle#: 0 Worklist Smp#: 42
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-12-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:37:23

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.859	4.029	-0.170		21072633	10.0			
4 Perfluorobutane Sulfonate									M
298.9 > 79.9	5.175	5.232	-0.057	0.853	1118553	1.15			M
298.9 > 98.9	5.184	5.232	-0.048	0.855	358382		3.12(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.629	5.686	-0.057		17358545	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.064	6.111	-0.047		1898442	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.054	6.111	-0.057	0.998	6060574	8.03			R
398.9 > 98.9	6.064	6.111	-0.047	1.000	2111779		2.87(1.30-2.41)		
8 Perfluoroheptanoic acid									RM
363.0 > 318.9	6.055	6.112	-0.057	0.947	5901569	2.22			RM
363.0 > 168.9	6.462	6.112	0.350	1.011	14465		407.99(3.35-6.23)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.394	6.442	-0.048	1.000	22862549	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.395	6.442	-0.047		27141098	10.0			
16 Perfluorooctanoic acid									M
413.0 > 368.9	6.395	6.442	-0.047	1.000	5994739	2.04			M
413.0 > 169.0	6.395	6.442	-0.047	1.000	1932500		3.10(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.667	6.705	-0.038		5873277	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.658	6.705	-0.047	0.999	18226752	23.7			R
498.9 > 98.9	6.667	6.705	-0.038	1.000	5663675		3.22(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.667	6.704	-0.037	1.000	3742312	11.7			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.687	6.725	-0.038		21476888	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.687	6.725	-0.038	1.000	1311752	0.5774			
463.0 > 218.9	6.678	6.725	-0.047	0.999	225023		5.83(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.931	6.960	-0.029		20537638	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.139	7.167	-0.028		10745148	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.318	7.346	-0.028		16528537	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.567	-0.038		1943588	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

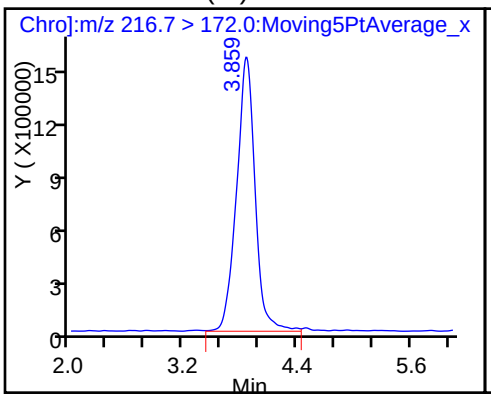
Report Date: 29-Sep-2016 11:42:37 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

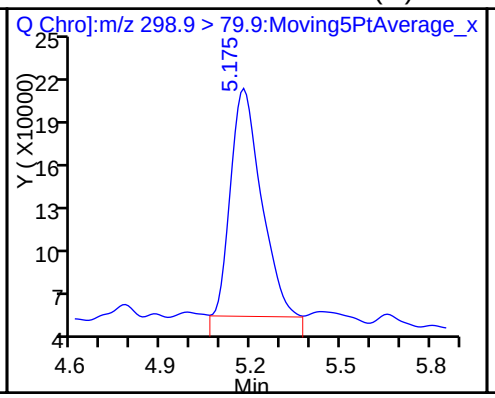
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028118.d

Injection Date:	29-Sep-2016 03:38:24	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-12-A	Lab Sample ID:	280-88381-12		
Client ID:	C17				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	42
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

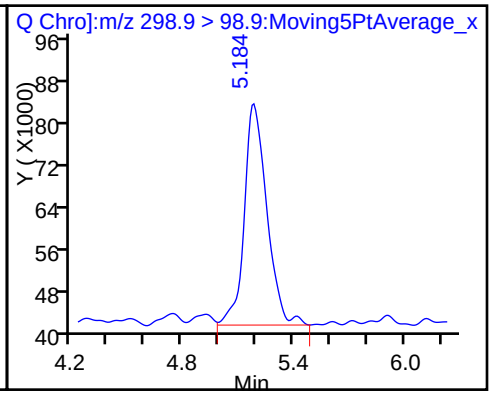
* 1 13C4 PFBA (IS)



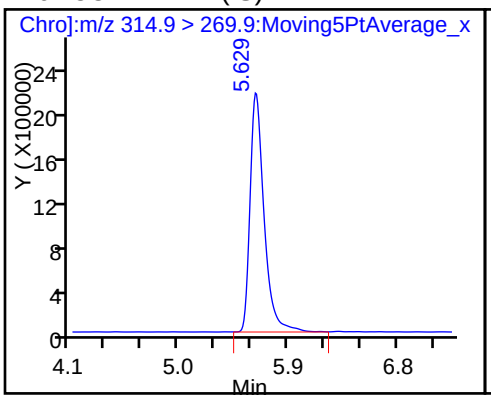
4 Perfluorobutane Sulfonate (M)



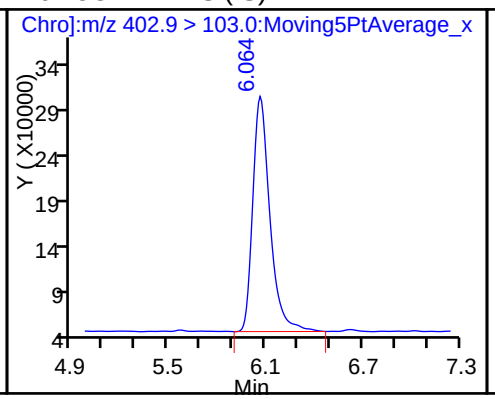
4 Perfluorobutane Sulfonate



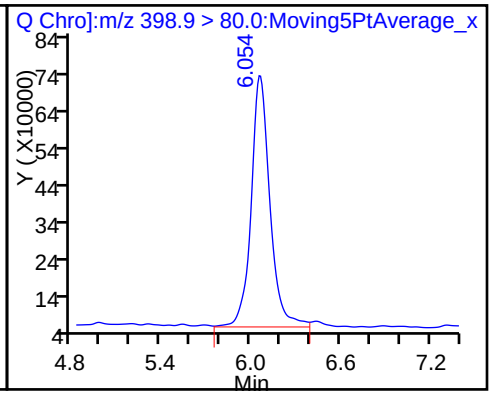
* 6 13C2 PFHxA (IS)



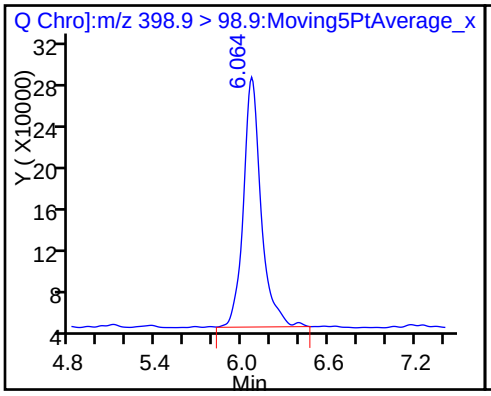
* 9 18O2 PFHxS (IS)



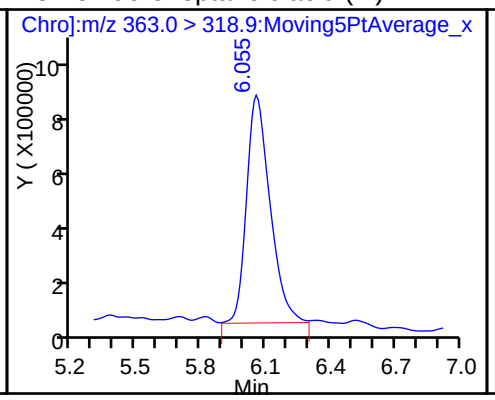
10 Perfluorohexane Sulfonate



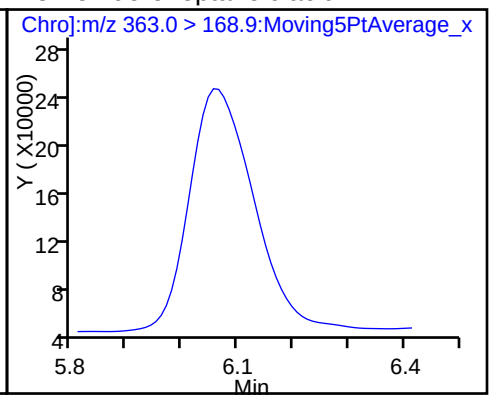
10 Perfluorohexane Sulfonate



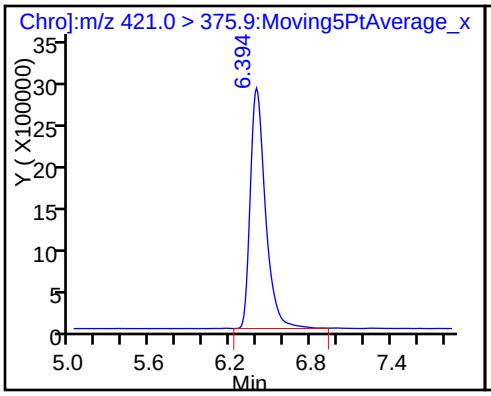
8 Perfluoroheptanoic acid (M)



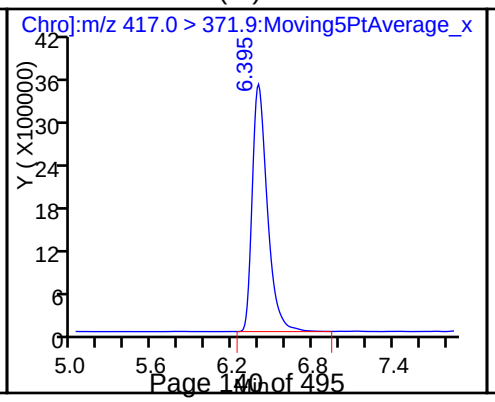
8 Perfluoroheptanoic acid



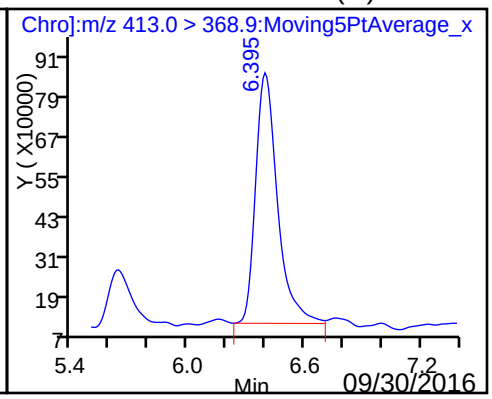
$ 14 13C8 PFOA



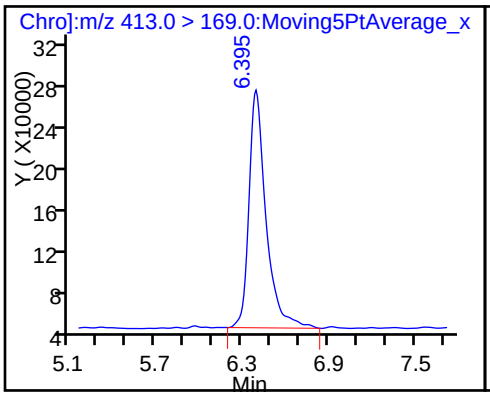
* 15 13C4 PFOA (IS)



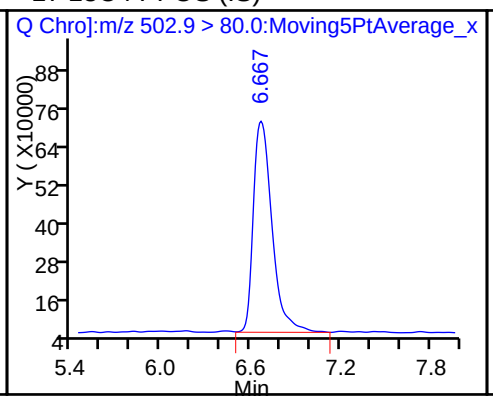
16 Perfluorooctanoic acid (M)



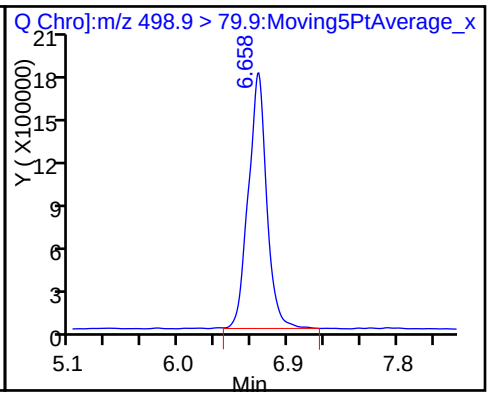
16 Perfluorooctanoic acid



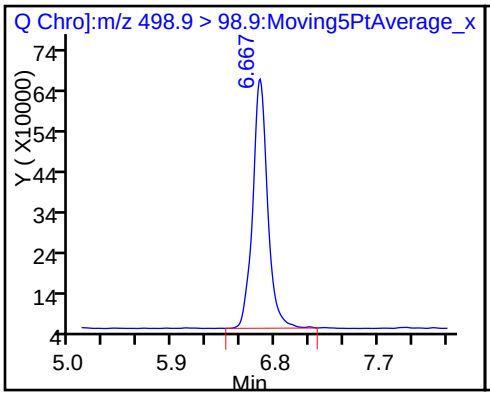
* 17 13C4 PFOS (IS)



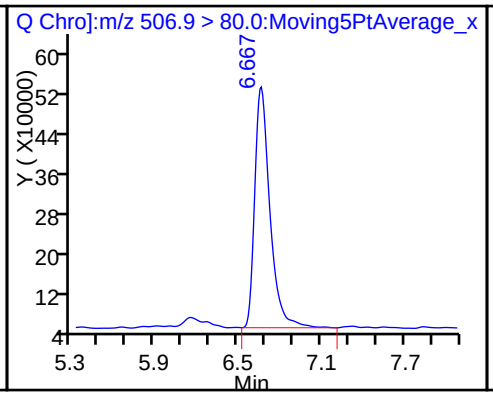
19 Perfluorooctane sulfonic acid



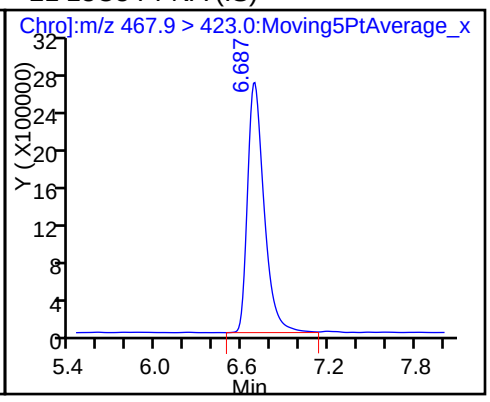
19 Perfluorooctane sulfonic acid



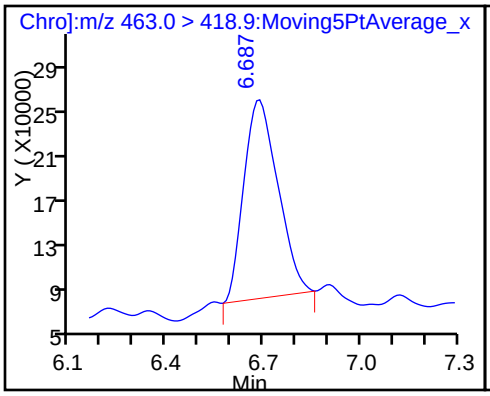
$ 18 13C8 PFOS



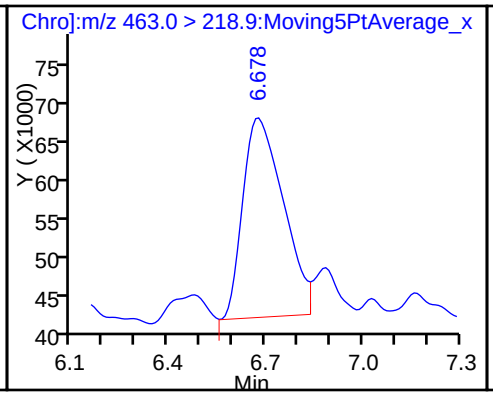
* 21 13C5 PFNA (IS)



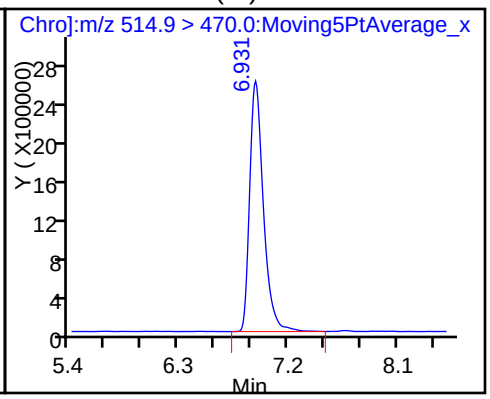
20 Perfluorononanoic acid



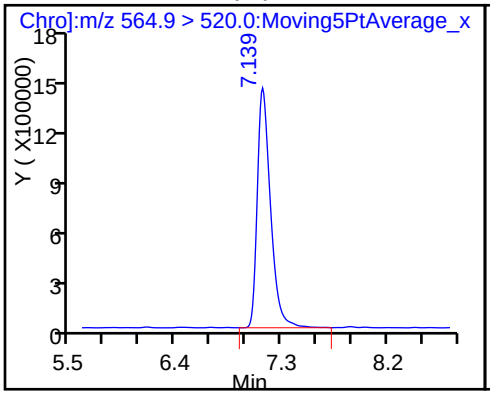
20 Perfluorononanoic acid



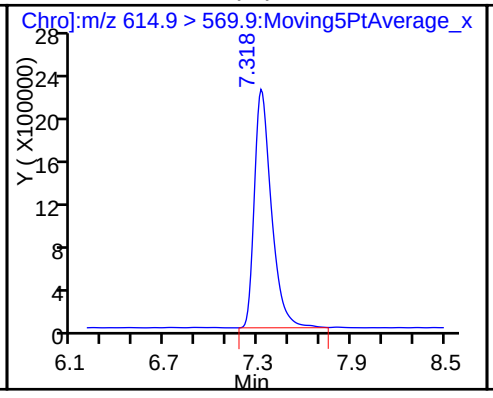
* 22 13C2 PFDA (IS)



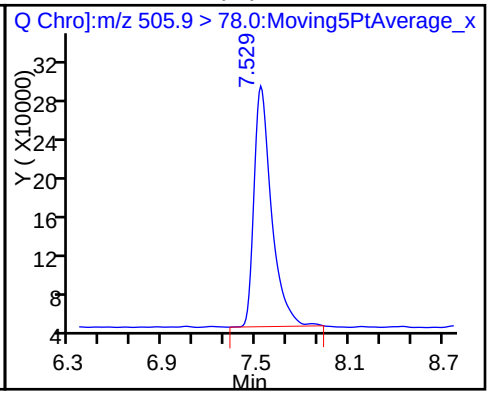
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



TestAmerica Denver

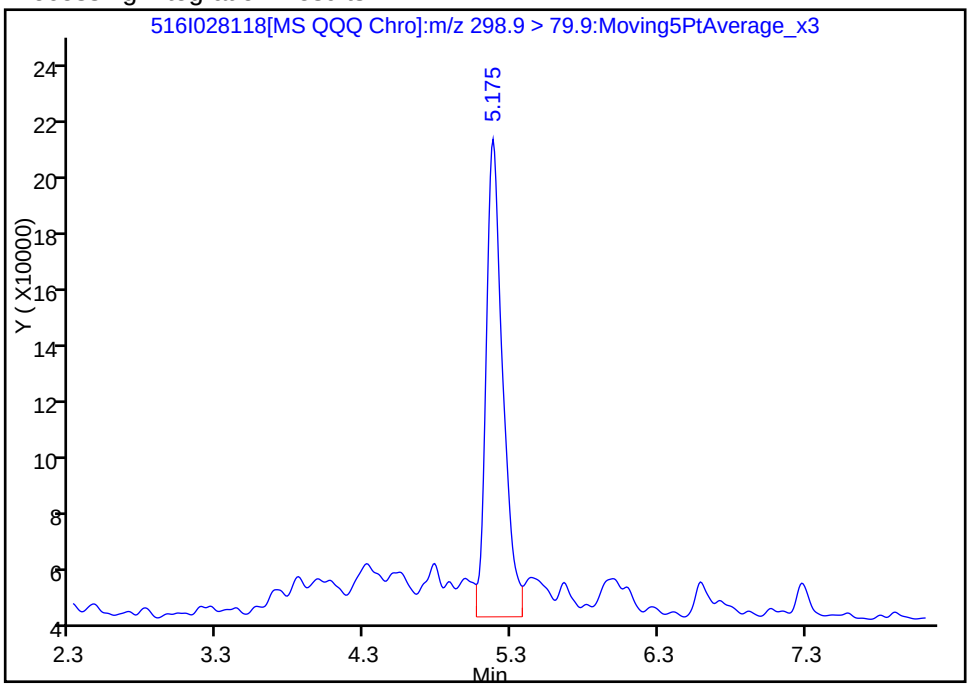
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028118.d				
Injection Date:	29-Sep-2016 03:38:24	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-12-A	Lab Sample ID:	280-88381-12		
Client ID:	C17				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	42
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

4 Perfluorobutane Sulfonate, CAS: 29420-43-3

Signal: 1

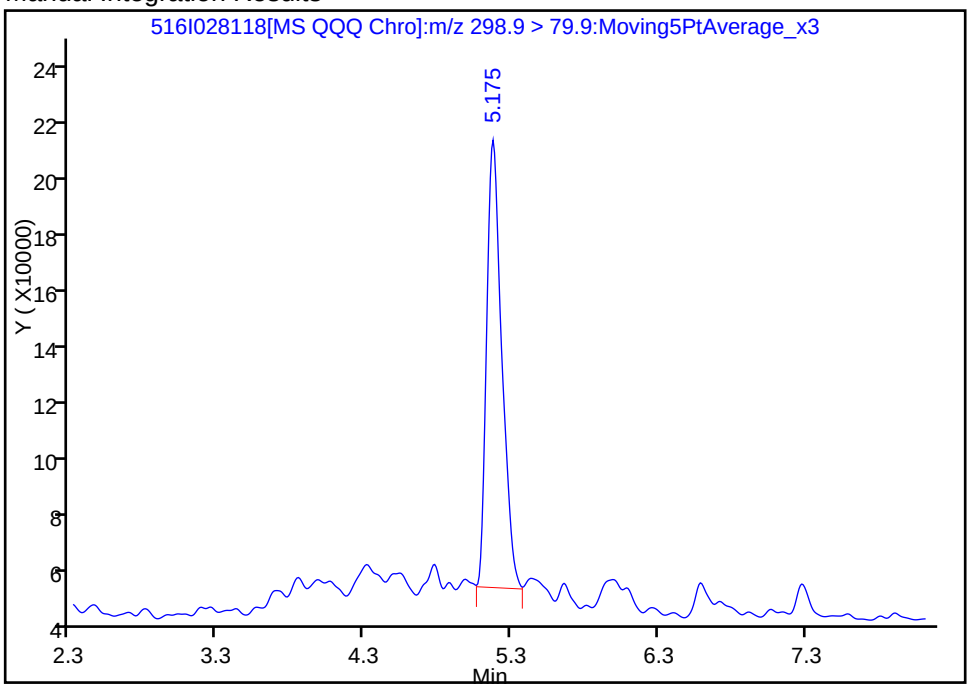
Processing Integration Results

RT: 5.17
Area: 1313930
Amount: 1.345129
Amount Units: ug/L



Manual Integration Results

RT: 5.17
Area: 1118553
Amount: 1.148780
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:37:23
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver

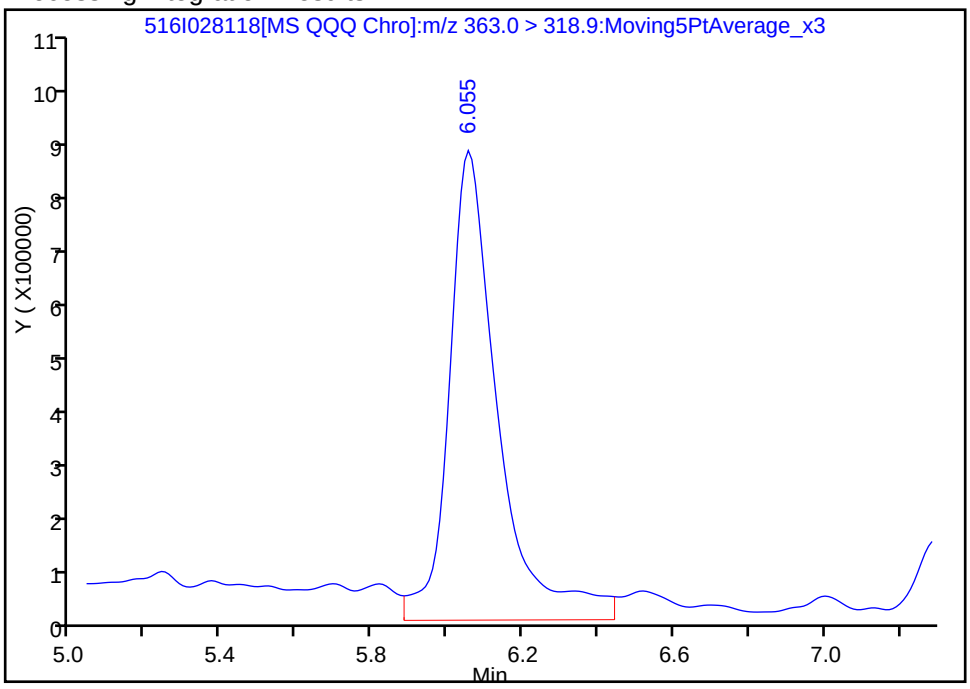
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028118.d				
Injection Date:	29-Sep-2016 03:38:24	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-12-A	Lab Sample ID:	280-88381-12		
Client ID:	C17				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	42
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

8 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

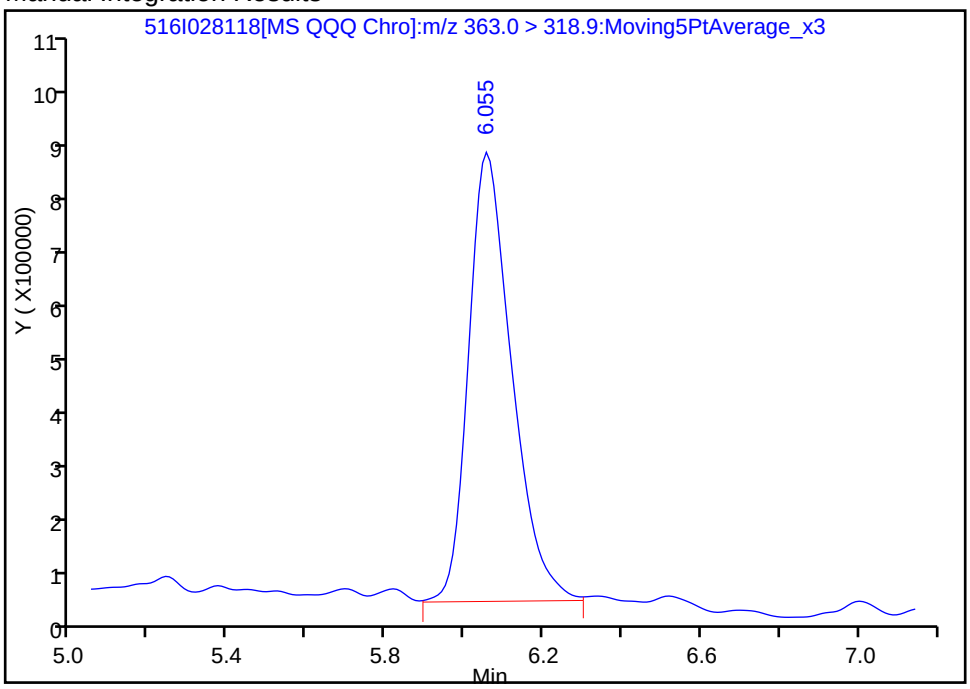
Processing Integration Results

RT: 6.05
Area: 7329944
Amount: 2.751855
Amount Units: ug/L



Manual Integration Results

RT: 6.05
Area: 5901569
Amount: 2.220070
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:37:23
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

TestAmerica Denver

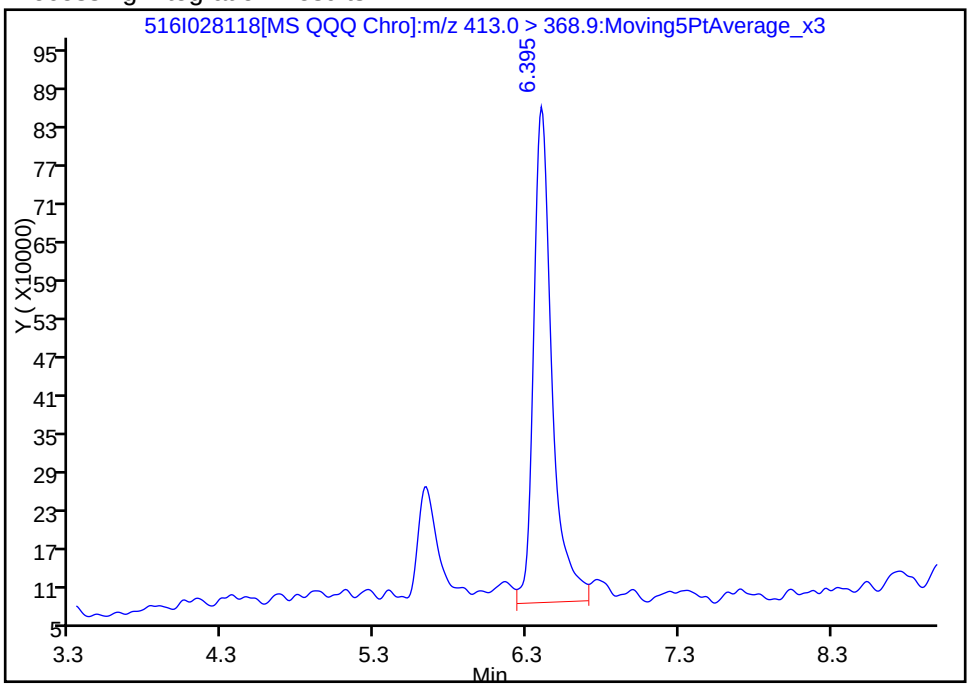
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028118.d				
Injection Date:	29-Sep-2016 03:38:24	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-12-A	Lab Sample ID:	280-88381-12		
Client ID:	C17				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	42
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

16 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

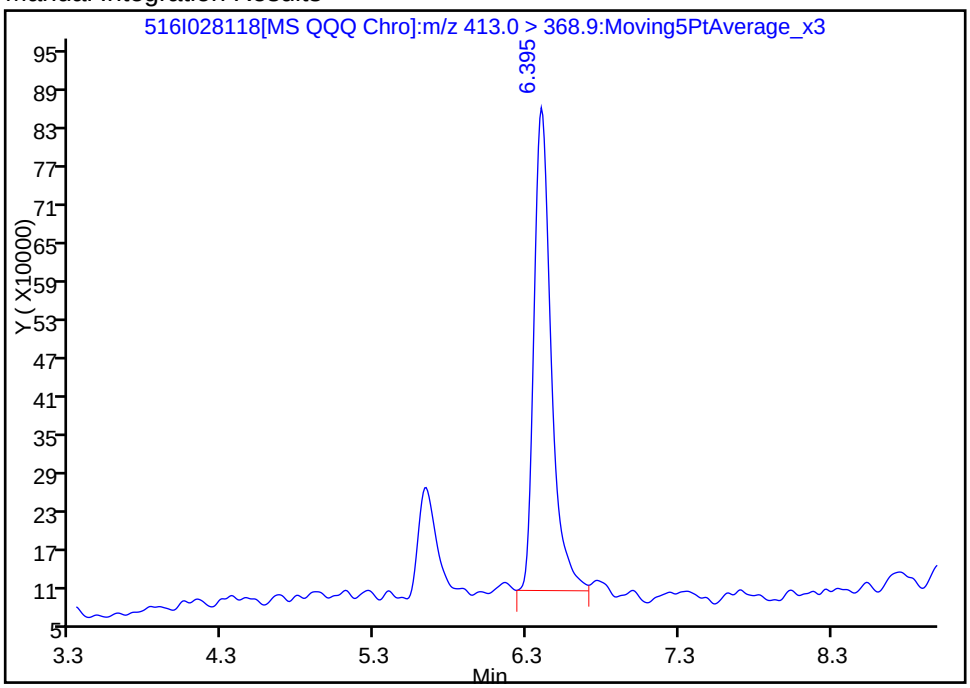
Processing Integration Results

RT: 6.39
Area: 6549437
Amount: 2.241612
Amount Units: ug/L



Manual Integration Results

RT: 6.39
Area: 5994739
Amount: 2.042711
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:37:23
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: D8 | Lab Sample ID: 280-88381-13

Matrix: Water | Lab File ID: PC516I028119.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 09:30

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 286.8(mL) | Date Analyzed: 09/29/2016 03:50

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.045		0.017	0.0072
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.16		0.026	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.33		0.026	0.0061
375-95-1	Perfluorononanoic acid (PFNA)	0.026	J	0.035	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.74		0.026	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.20		0.017	0.0085

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	115		60-155
STL01054	13C8 PFOS	120		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028119.d
Lims ID: 280-88381-A-13-A
Client ID: D8
Sample Type: Client
Inject. Date: 29-Sep-2016 03:50:43 ALS Bottle#: 0 Worklist Smp#: 43
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-13-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:38:20

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.840	4.029	-0.189		23241998	10.0			
4 Perfluorobutane Sulfonate									M
298.9 > 79.9	5.166	5.232	-0.066	0.849	2473570	2.58			M
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.629	5.686	-0.057		16889786	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.083	6.111	-0.028		1844758	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.073	6.111	-0.038	0.998	13994720	19.1			R
398.9 > 98.9	6.073	6.111	-0.038	0.998	4809730		2.91(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.064	6.112	-0.048	0.944	22683140	9.09			
363.0 > 168.9	6.074	6.112	-0.038	0.946	5686551		3.99(3.35-6.23)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.423	6.442	-0.019	1.000	21699297	11.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.423	6.442	-0.019		25286648	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.423	6.442	-0.019	1.000	29859692	11.4			
413.0 > 169.0	6.423	6.442	-0.019	1.000	9436536		3.16(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.705	6.705	0.0		6150199	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.686	6.705	-0.019	0.997	33997344	42.2			R
498.9 > 98.9	6.696	6.705	-0.009	0.999	9835343		3.46(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.704	6.704	0.0	1.000	3741216	11.2			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.715	6.725	-0.010		20594696	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
20 Perfluorononanoic acid									
463.0 > 418.9	6.715	6.725	-0.010	1.000	3436391	1.48			
463.0 > 218.9	6.715	6.725	-0.010	1.000	576676		5.96(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.969	6.960	0.009		19241854	10.0			
* 26 13C2 PFUnA (IS)									s
564.9 > 520.0	7.167	7.167	0.0		10452332	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.356	7.346	0.010		16943602	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.557	7.567	-0.010		1411854	10.0			

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- s - Failed ISTD Recovery Test

Review Flags
- M - Manually Integrated

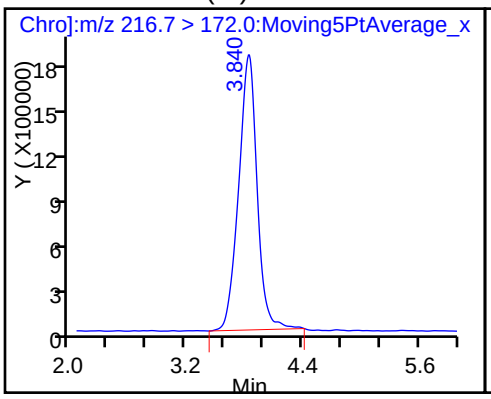
Report Date: 29-Sep-2016 11:42:40 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

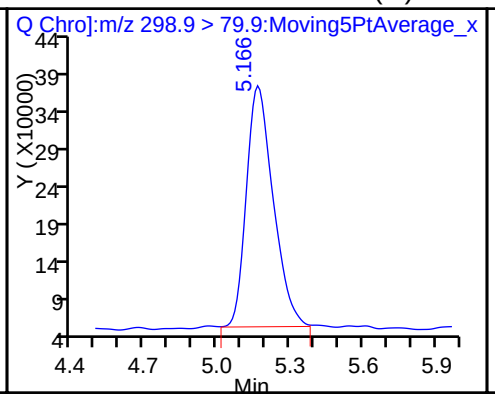
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028119.d

Injection Date:	29-Sep-2016 03:50:43	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-13-A	Lab Sample ID:	280-88381-13		
Client ID:	D8				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	43
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

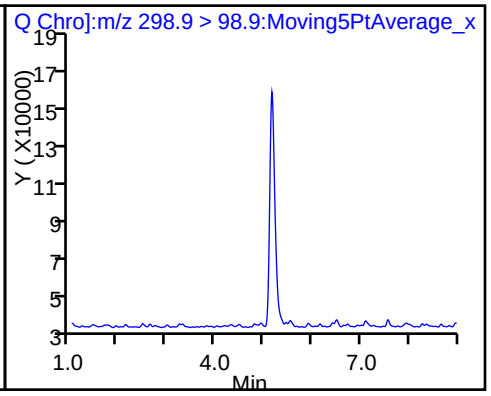
* 1 13C4 PFBA (IS)



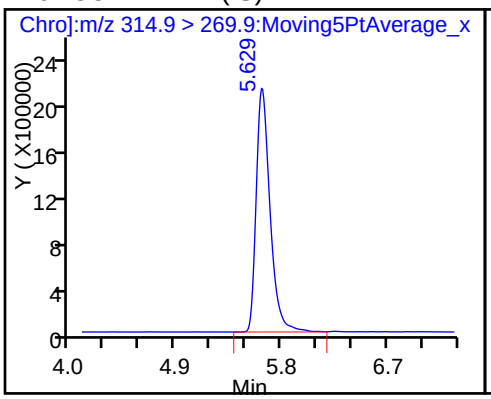
4 Perfluorobutane Sulfonate (M)



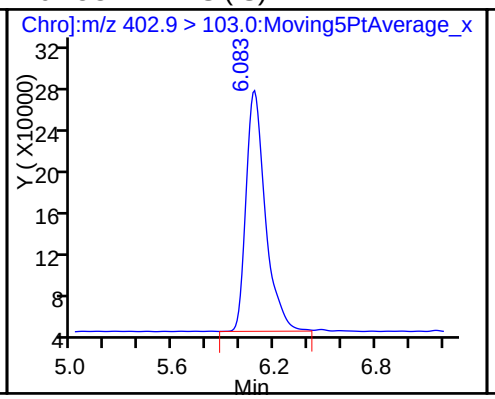
4 Perfluorobutane Sulfonate



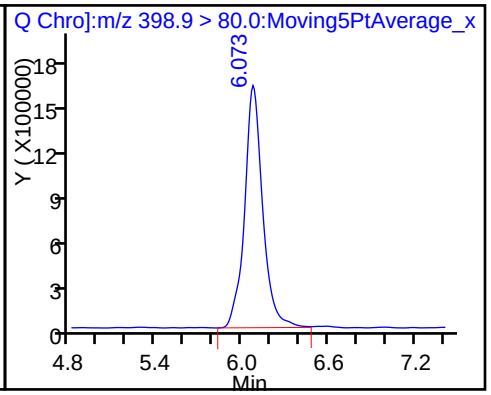
* 6 13C2 PFHxA (IS)



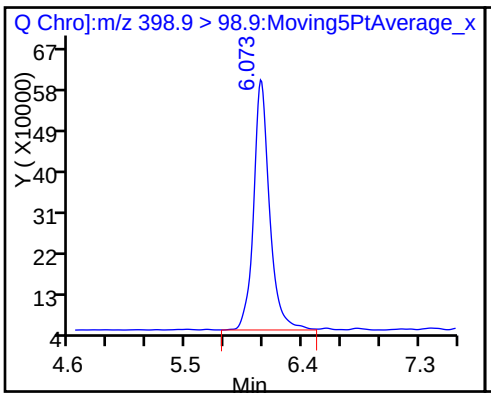
* 9 18O2 PFHxS (IS)



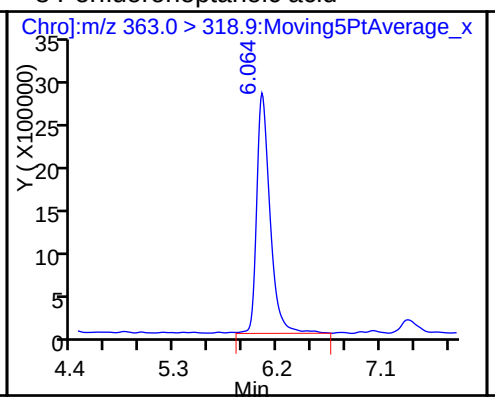
10 Perfluorohexane Sulfonate



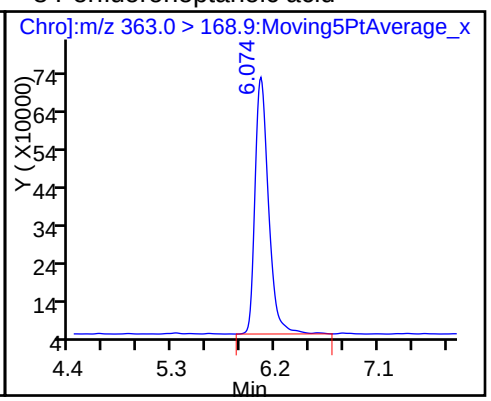
10 Perfluorohexane Sulfonate



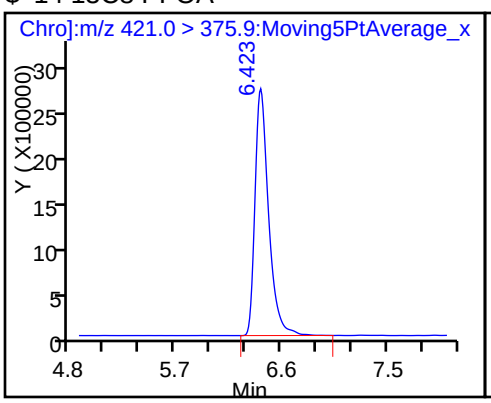
8 Perfluoroheptanoic acid



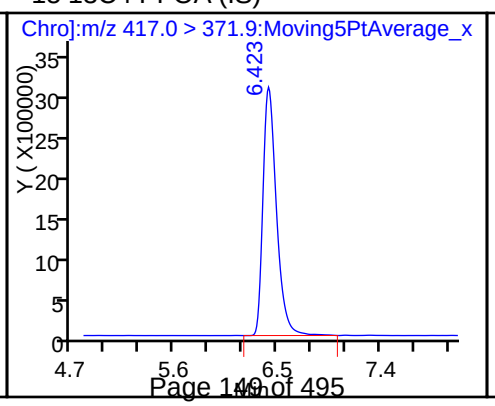
8 Perfluoroheptanoic acid



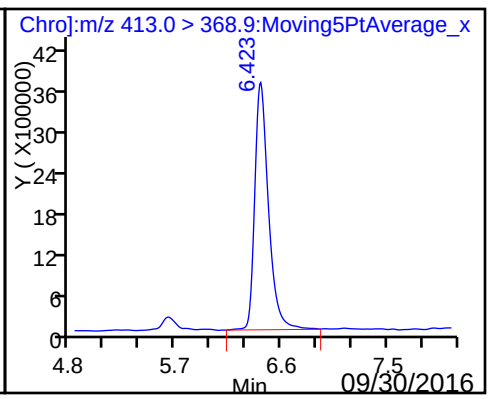
$ 14 13C8 PFOA



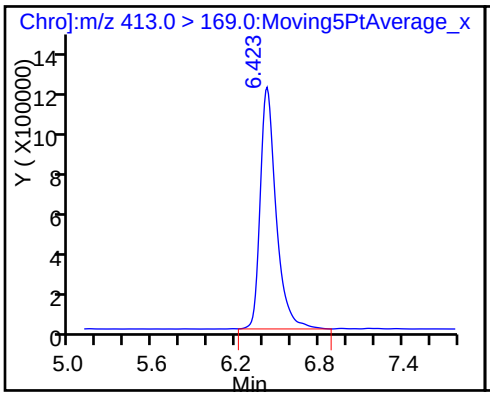
* 15 13C4 PFOA (IS)



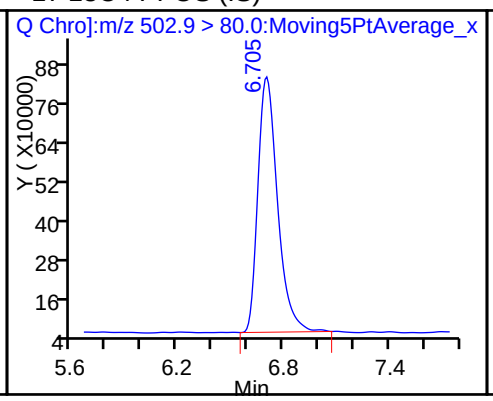
16 Perfluorooctanoic acid



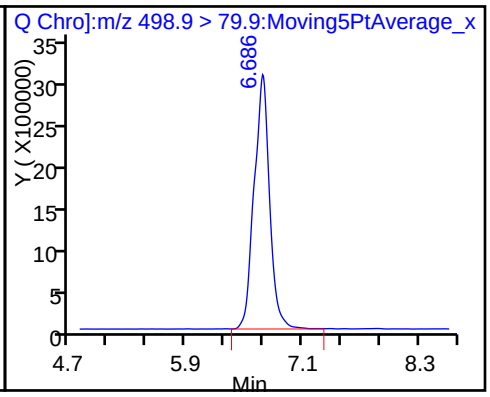
16 Perfluorooctanoic acid



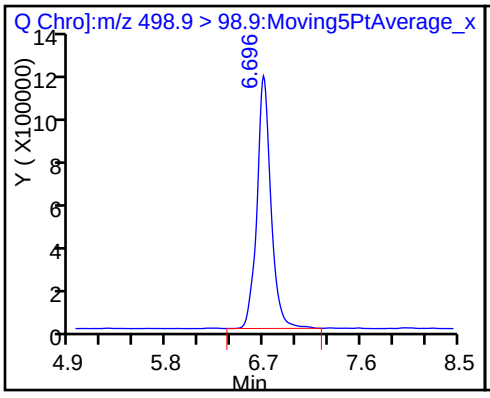
* 17 13C4 PFOS (IS)



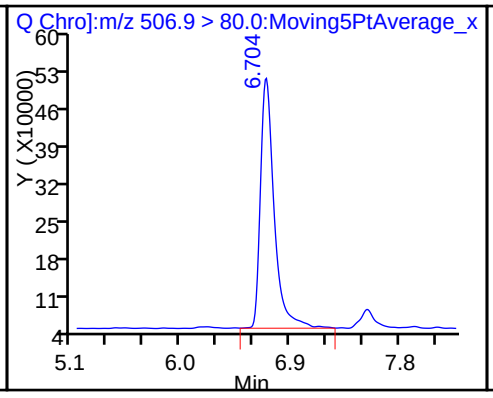
19 Perfluorooctane sulfonic acid



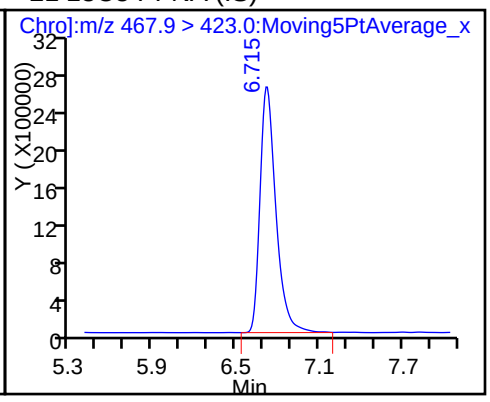
19 Perfluorooctane sulfonic acid



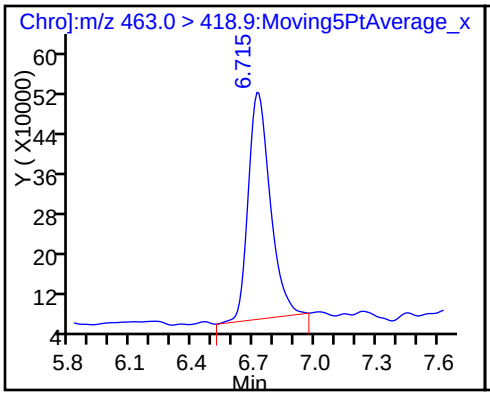
$ 18 13C8 PFOS



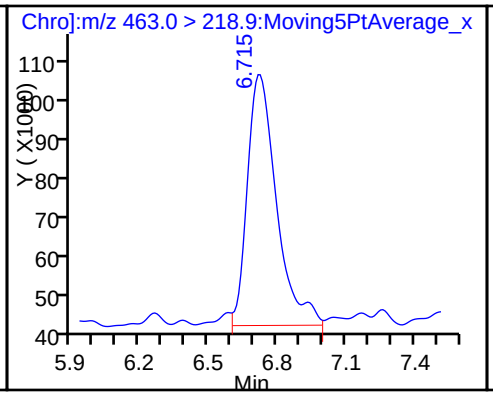
* 21 13C5 PFNA (IS)



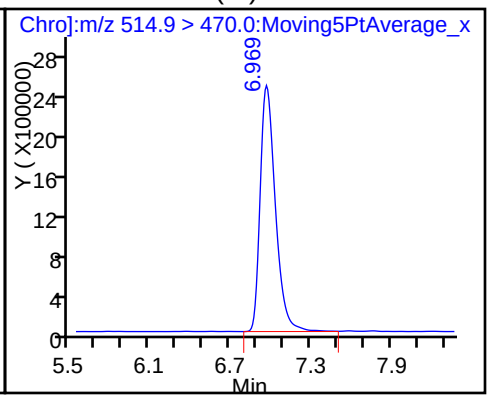
20 Perfluorononanoic acid



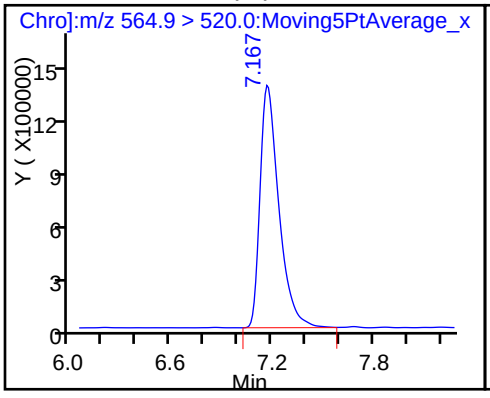
20 Perfluorononanoic acid



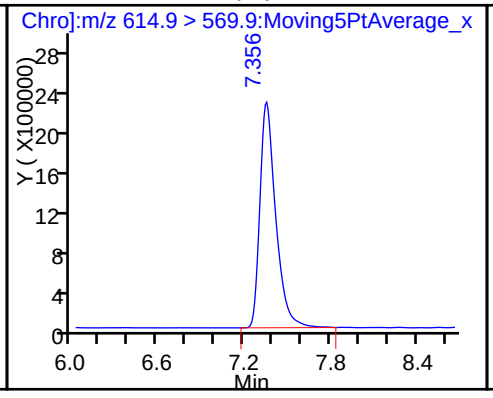
* 22 13C2 PFDA (IS)



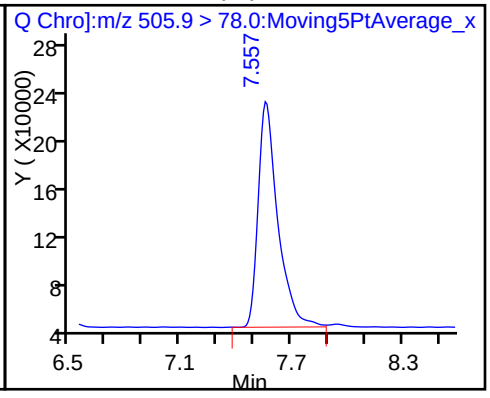
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



TestAmerica Denver

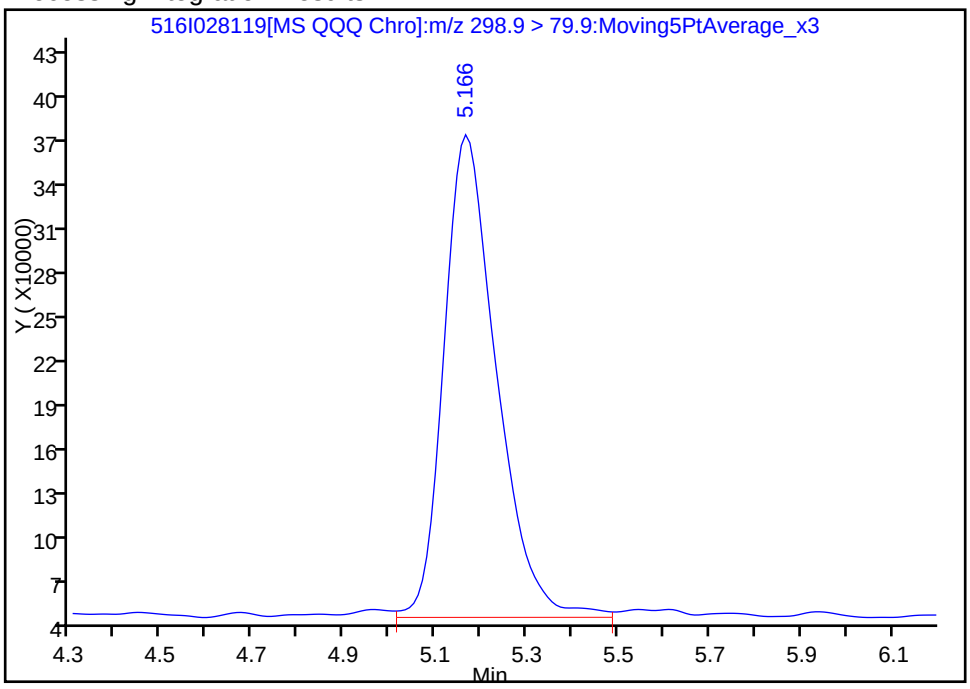
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028119.d				
Injection Date:	29-Sep-2016 03:50:43	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-13-A	Lab Sample ID:	280-88381-13		
Client ID:	D8				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	43
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

4 Perfluorobutane Sulfonate, CAS: 29420-43-3

Signal: 1

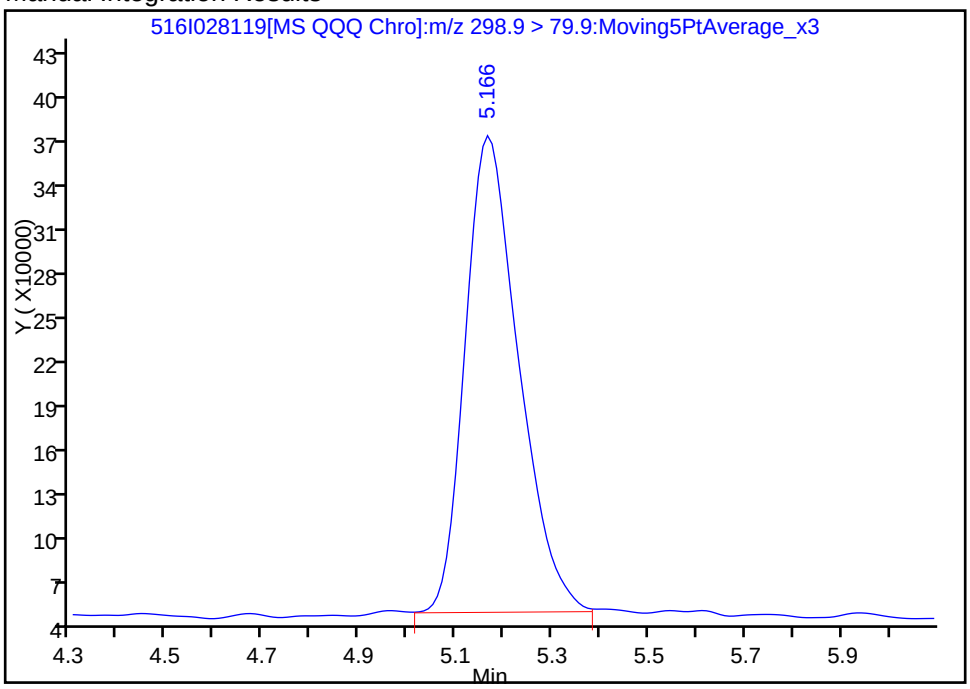
Processing Integration Results

RT: 5.17
Area: 2600493
Amount: 2.714149
Amount Units: ug/L



Manual Integration Results

RT: 5.17
Area: 2473570
Amount: 2.582882
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 11:38:20
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: CB-DUP | Lab Sample ID: 280-88381-14

Matrix: Water | Lab File ID: PC516I028120.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 10:00

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 296.4(mL) | Date Analyzed: 09/29/2016 04:03

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.044		0.017	0.0070
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.16		0.025	0.011
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.30		0.025	0.0059
375-95-1	Perfluorononanoic acid (PFNA)	0.031	J	0.034	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.98		0.025	0.011
335-67-1	Perfluorooctanoic acid (PFOA)	0.20		0.017	0.0083

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	115		60-155
STL01054	13C8 PFOS	123		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028120.d
Lims ID: 280-88381-A-14-A
Client ID: CB-DUP
Sample Type: Client
Inject. Date: 29-Sep-2016 04:03:02 ALS Bottle#: 0 Worklist Smp#: 44
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-14-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:38:46

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.944	4.029	-0.085		27010839	10.0			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.203	5.232	-0.029	0.855	3094394	2.60			R
298.9 > 98.9	5.203	5.232	-0.029	0.855	896371		3.45(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.657	5.686	-0.029		19219168	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.083	6.111	-0.028		2290297	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.083	6.111	-0.028	1.000	16435088	18.0			R
398.9 > 98.9	6.083	6.111	-0.028	1.000	6008930		2.74(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.074	6.112	-0.038	0.947	26442427	9.26			
363.0 > 168.9	6.074	6.112	-0.038	0.947	6440263		4.11(3.35-6.23)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.413	6.442	-0.029	1.000	24842442	11.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.413	6.442	-0.029		28918298	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.414	6.442	-0.028	1.000	34941660	11.7			
413.0 > 169.0	6.414	6.442	-0.028	1.000	11525076		3.03(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.676	6.705	-0.029		7190543	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.667	6.705	-0.038	0.999	54983124	58.3			R
498.9 > 98.9	6.677	6.705	-0.028	1.000	16759393		3.28(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.676	6.704	-0.028	1.000	4473641	11.4			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.696	6.725	-0.029		22371501	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.706	6.725	-0.019	1.001	4599495	1.81			
463.0 > 218.9	6.706	6.725	-0.019	1.001	667179		6.89(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.941	6.960	-0.019		23489280	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.139	7.167	-0.028		14588575	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.327	7.346	-0.019		20806190	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.538	7.567	-0.029		1687833	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

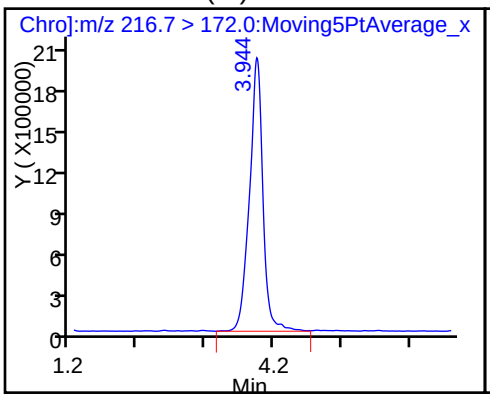
Report Date: 29-Sep-2016 11:42:43 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

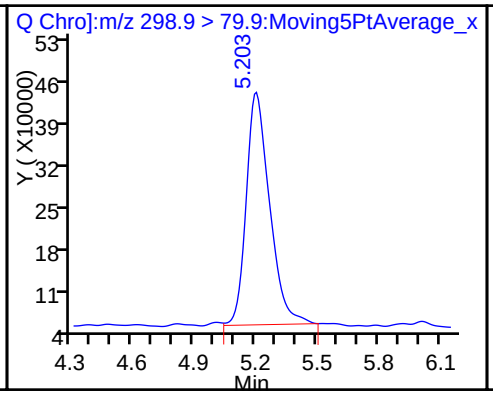
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028120.d

Injection Date:	29-Sep-2016 04:03:02	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-14-A	Lab Sample ID:	280-88381-14		
Client ID:	CB-DUP				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	44
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

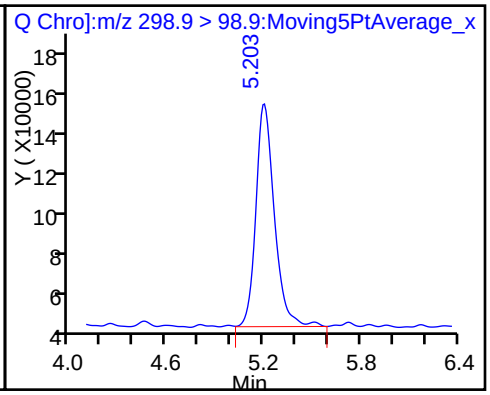
* 1 13C4 PFBA (IS)



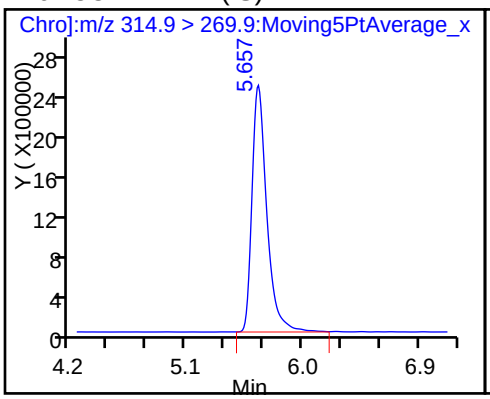
4 Perfluorobutane Sulfonate



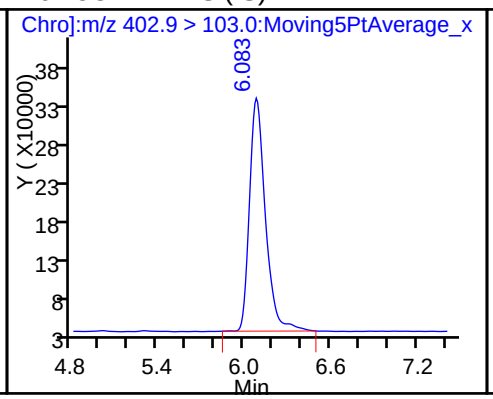
4 Perfluorobutane Sulfonate



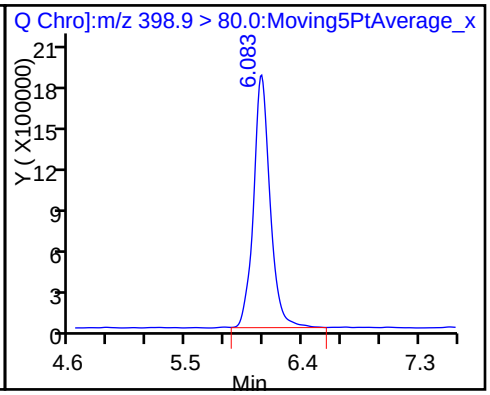
* 6 13C2 PFHxA (IS)



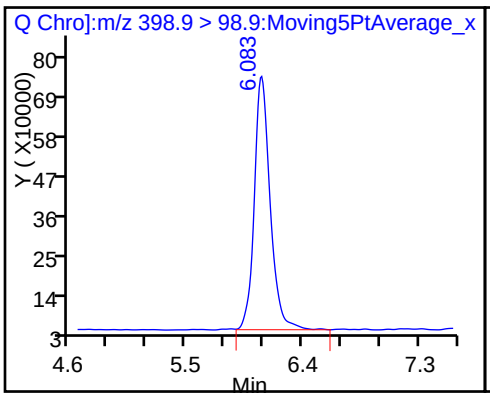
* 9 18O2 PFHxS (IS)



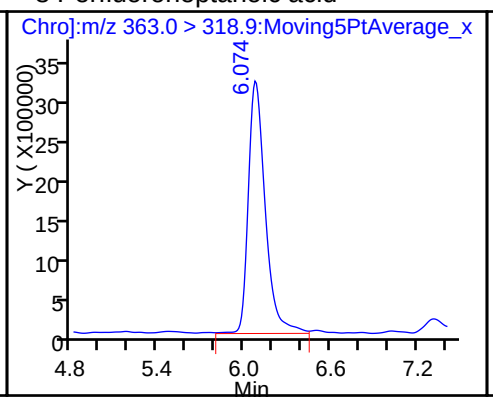
10 Perfluorohexane Sulfonate



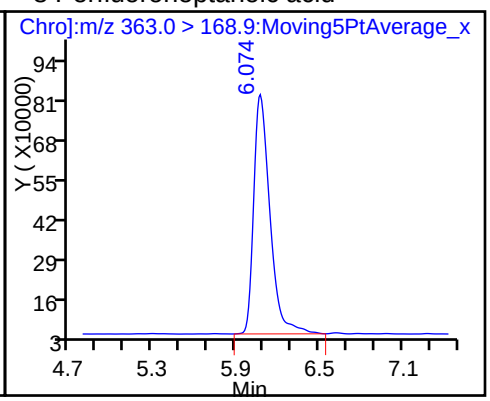
10 Perfluorohexane Sulfonate



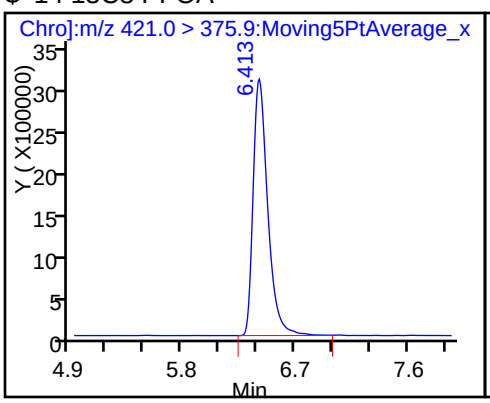
8 Perfluoroheptanoic acid



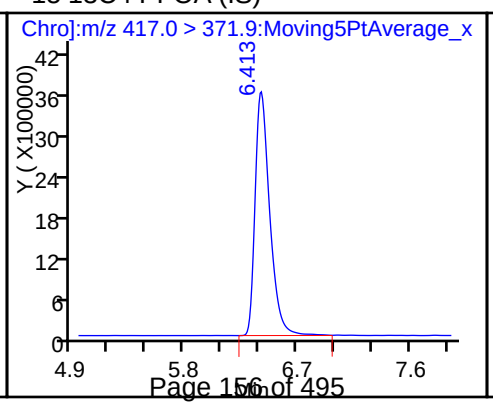
8 Perfluoroheptanoic acid



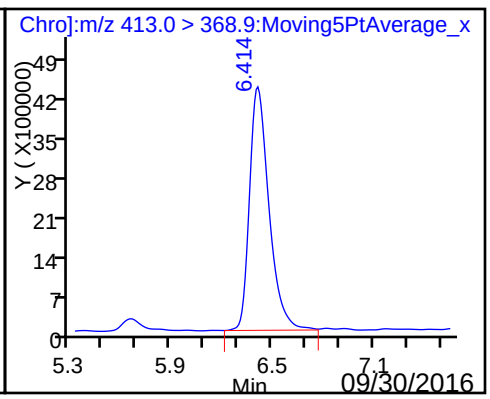
$ 14 13C8 PFOA



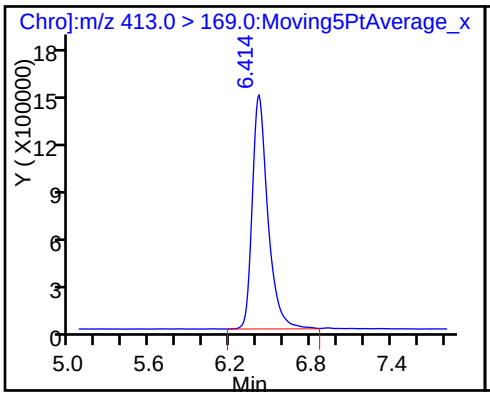
* 15 13C4 PFOA (IS)



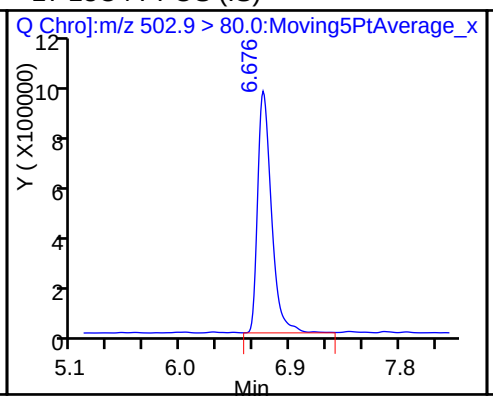
16 Perfluorooctanoic acid



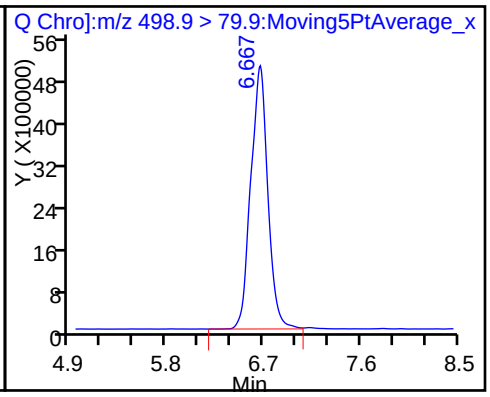
16 Perfluorooctanoic acid



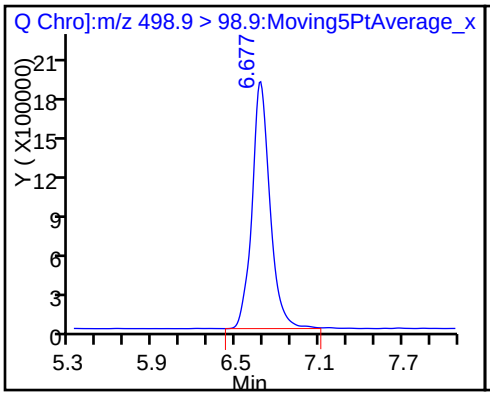
* 17 13C4 PFOS (IS)



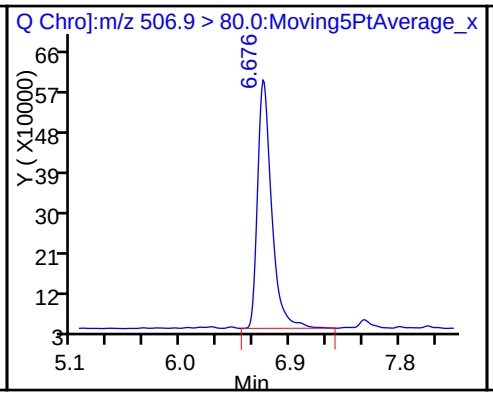
19 Perfluorooctane sulfonic acid



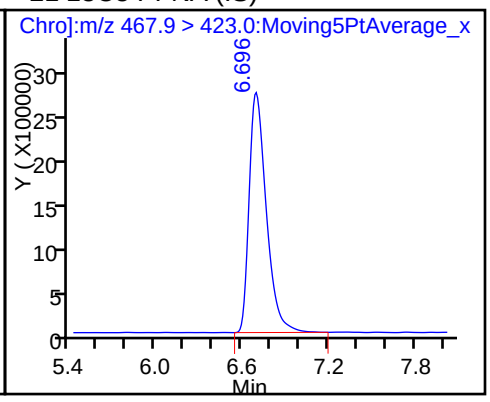
19 Perfluorooctane sulfonic acid



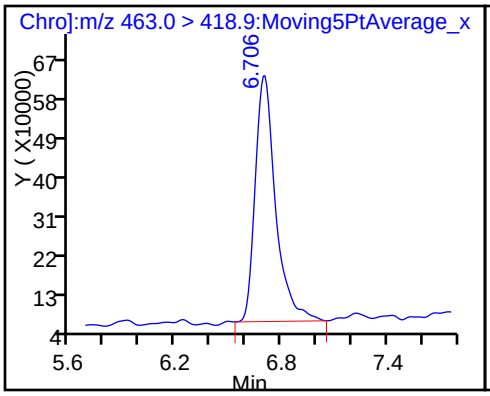
$ 18 13C8 PFOS



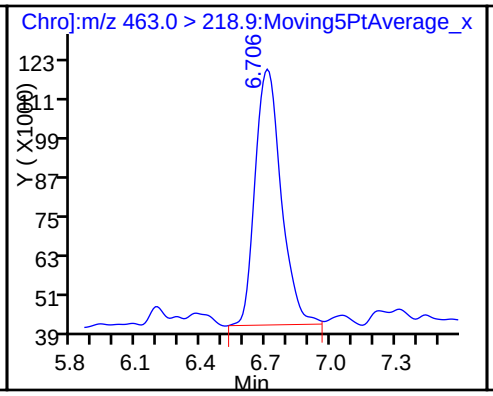
* 21 13C5 PFNA (IS)



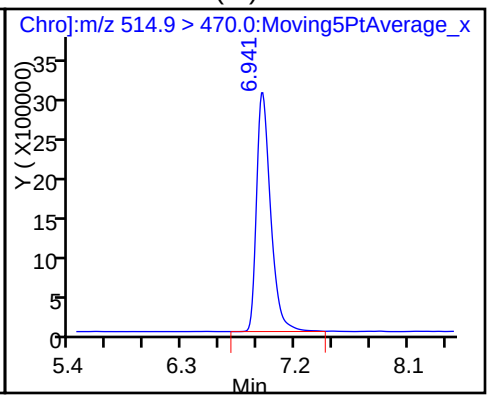
20 Perfluorononanoic acid



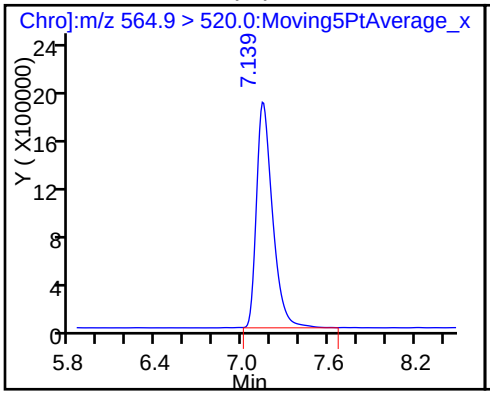
20 Perfluorononanoic acid



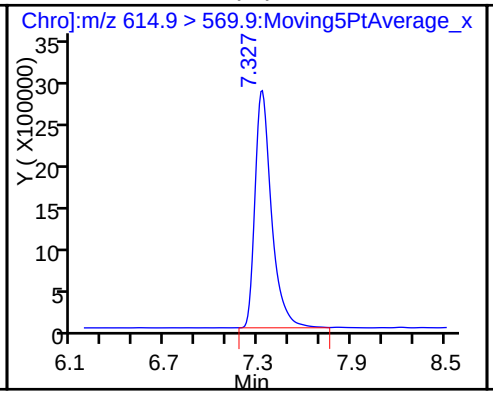
* 22 13C2 PFDA (IS)



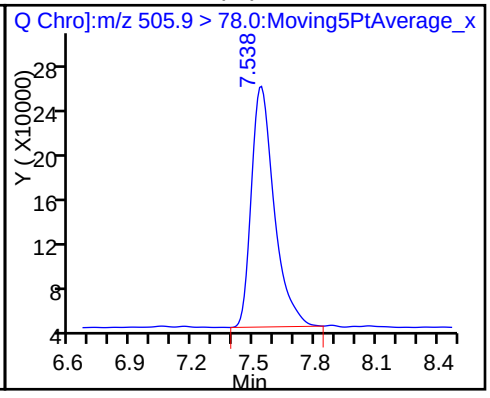
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: PFC-MW-2 | Lab Sample ID: 280-88381-15

Matrix: Water | Lab File ID: PC516I028121.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 12:05

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 293.4(mL) | Date Analyzed: 09/29/2016 04:15

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0070	U	0.017	0.0070
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.011	U	0.026	0.011
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0059	U	0.026	0.0059
375-95-1	Perfluorononanoic acid (PFNA)	0.015	U	0.034	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.011	U	0.026	0.011
335-67-1	Perfluorooctanoic acid (PFOA)	0.0083	U	0.017	0.0083

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	111		60-155
STL01054	13C8 PFOS	123		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028121.d
Lims ID: 280-88381-A-15-A
Client ID: PFC-MW-2
Sample Type: Client
Inject. Date: 29-Sep-2016 04:15:20 ALS Bottle#: 0 Worklist Smp#: 45
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-15-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:39:03

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.887	4.029	-0.142		27408987	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.232				ND			
298.9 > 98.9		5.232							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.610	5.686	-0.076		19470908	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.045	6.111	-0.066		2211934	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.111				ND			
398.9 > 98.9		6.111							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.112				ND			
363.0 > 168.9		6.112							
$ 14 13C8 PFOA									
421.0 > 375.9	6.375	6.442	-0.067	1.000	25121252	10.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.376	6.442	-0.066		30292003	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.442				ND			
413.0 > 169.0		6.442							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.648	6.705	-0.057		7542502	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.705				ND			
498.9 > 98.9		6.705							
$ 18 13C8 PFOS									
506.9 > 80.0	6.648	6.704	-0.056	1.000	4671042	11.4			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.668	6.725	-0.057		24385679	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.725				ND			
463.0 > 218.9		6.725							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.912	6.960	-0.048		24621400	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.120	7.167	-0.047		12857771	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.308	7.346	-0.038		21257545	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.519	7.567	-0.048		1178122	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

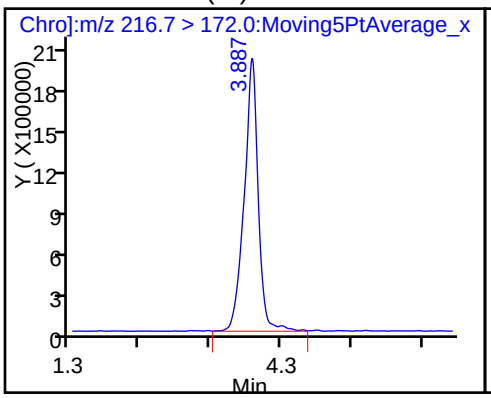
Report Date: 29-Sep-2016 11:42:45 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

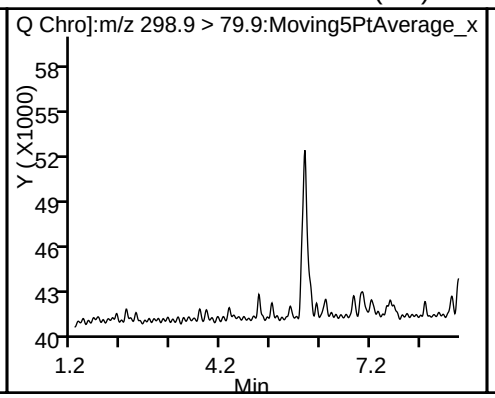
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028121.d

Injection Date:	29-Sep-2016 04:15:20	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-15-A	Lab Sample ID:	280-88381-15		
Client ID:	PFC-MW-2				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	45
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

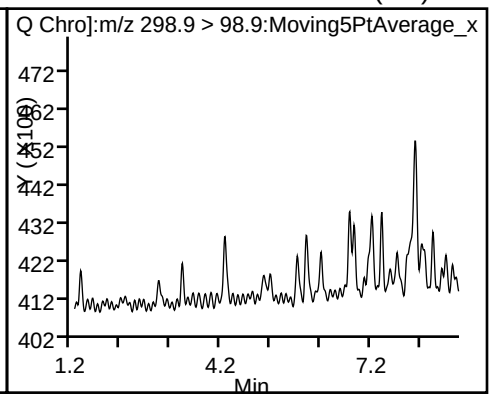
* 1 13C4 PFBA (IS)



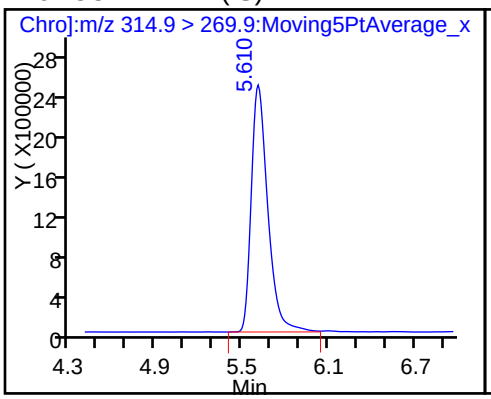
4 Perfluorobutane Sulfonate (ND)



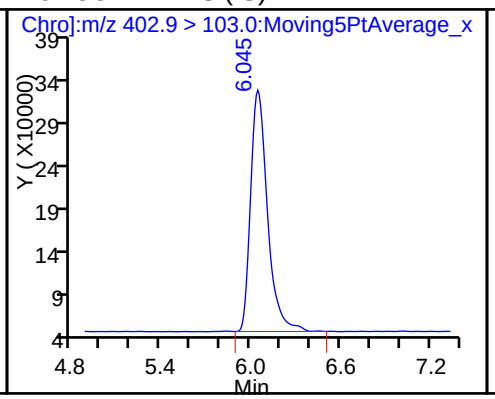
4 Perfluorobutane Sulfonate (ND)



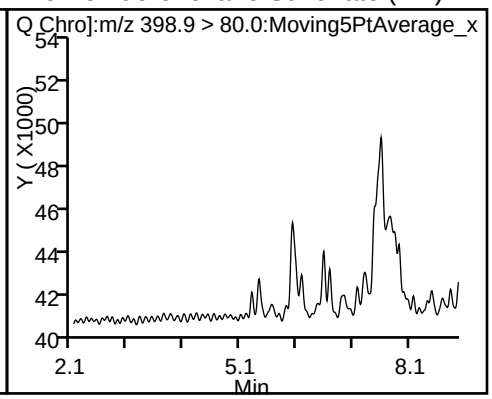
* 6 13C2 PFHxA (IS)



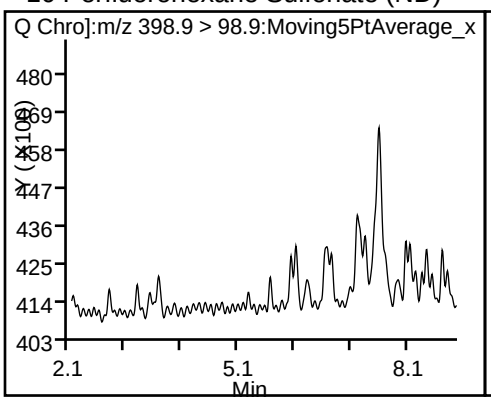
* 9 18O2 PFHxS (IS)



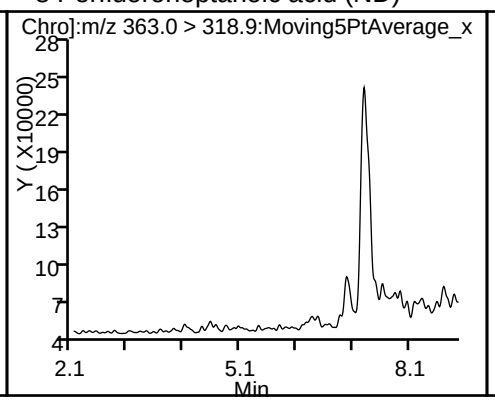
10 Perfluorohexane Sulfonate (ND)



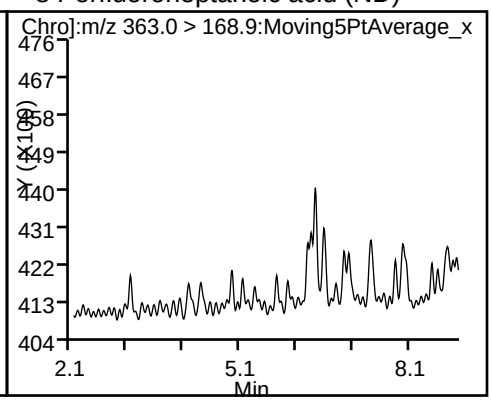
10 Perfluorohexane Sulfonate (ND)



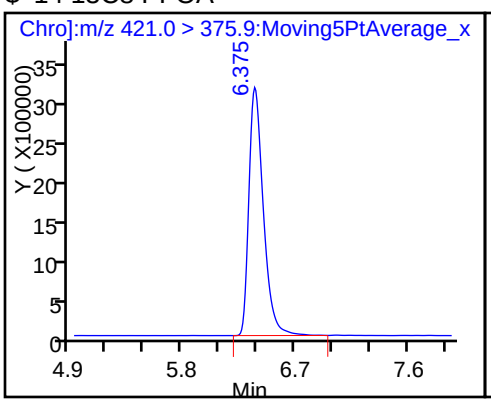
8 Perfluoroheptanoic acid (ND)



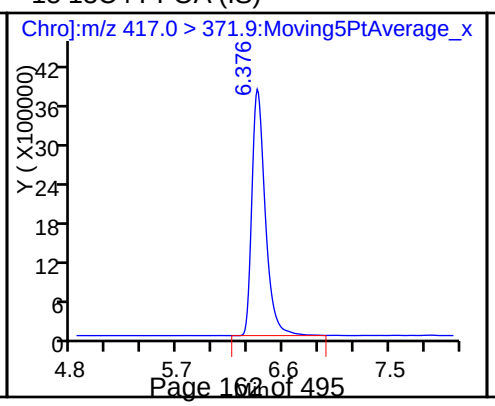
8 Perfluoroheptanoic acid (ND)



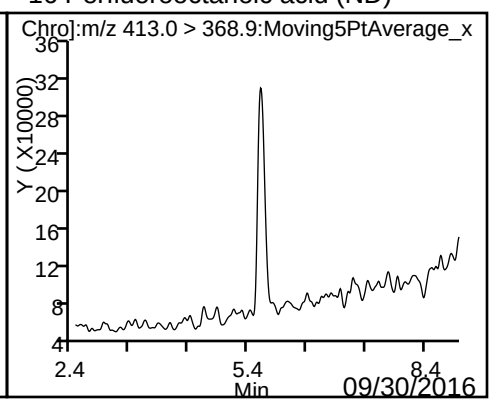
$ 14 13C8 PFOA



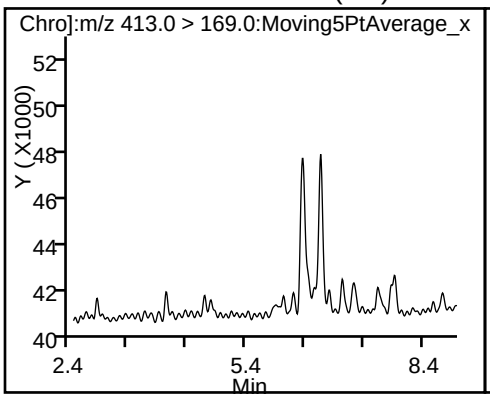
* 15 13C4 PFOA (IS)



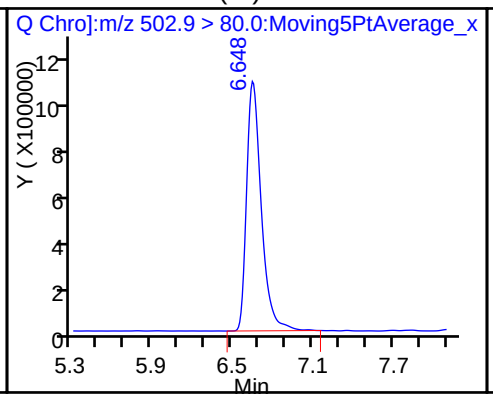
16 Perfluorooctanoic acid (ND)



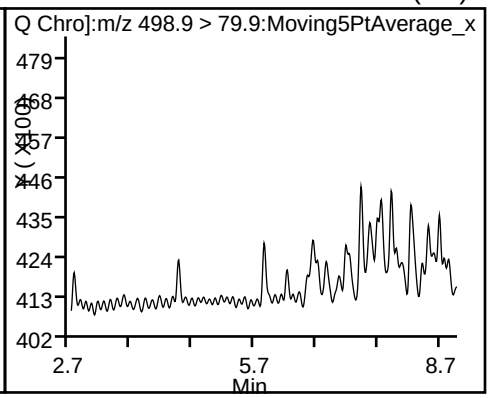
16 Perfluorooctanoic acid (ND)



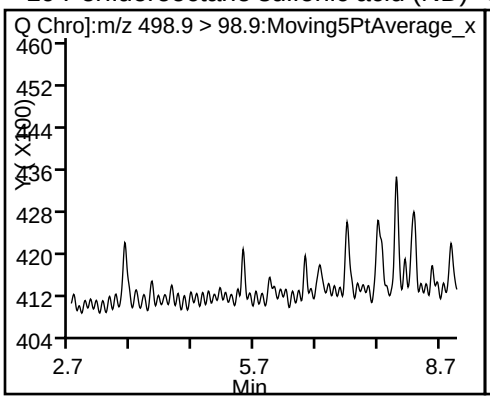
* 17 13C4 PFOS (IS)



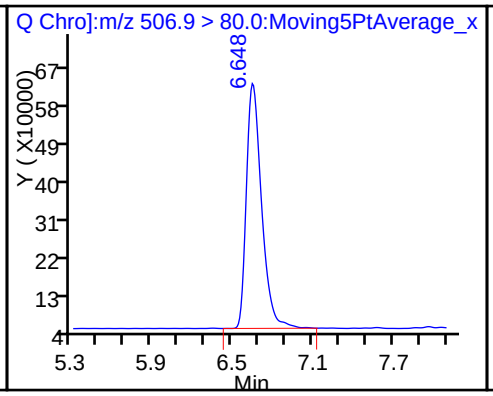
19 Perfluorooctane sulfonic acid (ND)



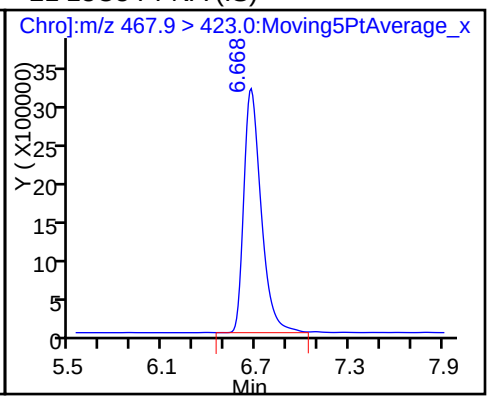
19 Perfluorooctane sulfonic acid (ND)



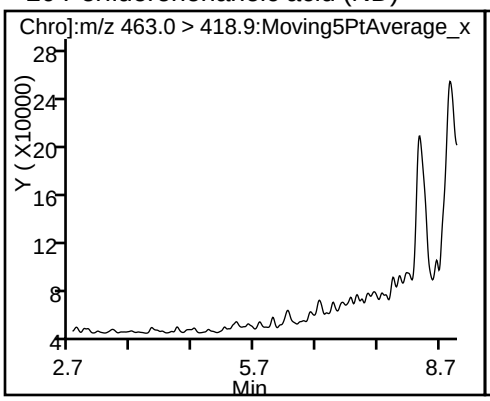
$ 18 13C8 PFOS



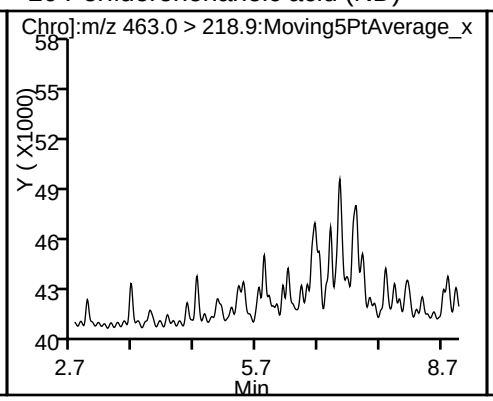
* 21 13C5 PFNA (IS)



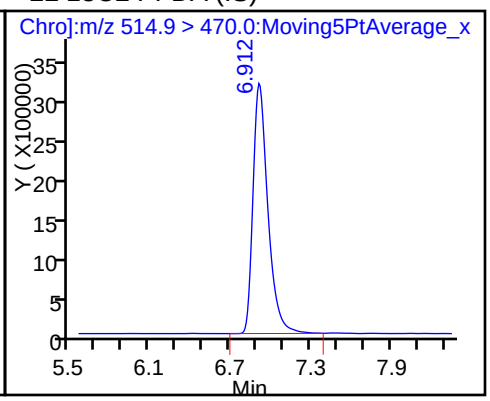
20 Perfluorononanoic acid (ND)



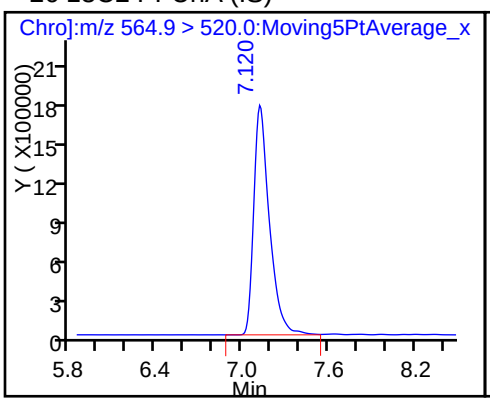
20 Perfluorononanoic acid (ND)



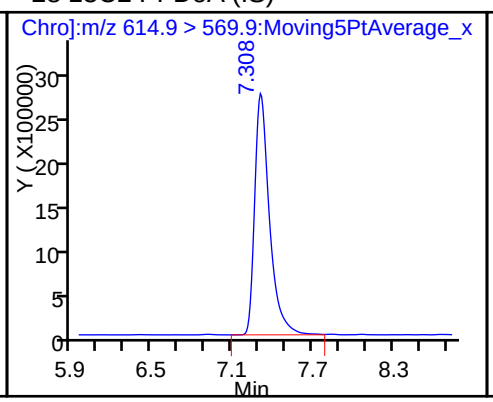
* 22 13C2 PFDA (IS)



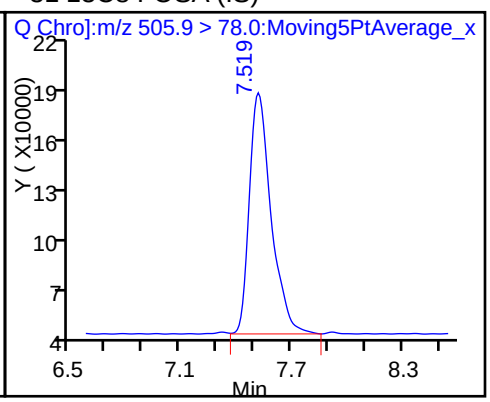
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: MW-DUP | Lab Sample ID: 280-88381-16

Matrix: Water | Lab File ID: PC516I028084.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 12:30

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 288.2(mL) | Date Analyzed: 09/28/2016 20:39

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0071	U	0.017	0.0071
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.011	U	0.026	0.011
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0060	U	0.026	0.0060
375-95-1	Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0085	U	0.017	0.0085

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	104		60-155
STL01054	13C8 PFOS	120		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028084.d
Lims ID: 280-88381-A-16-A
Client ID: MW-DUP
Sample Type: Client
Inject. Date: 28-Sep-2016 20:39:33 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-16-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:38:34

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.726	3.963	-0.237		24995276	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.175				ND			
298.9 > 98.9		5.175							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.525	5.638	-0.113		19859895	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.969	6.073	-0.104		1998645	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.064				ND			
398.9 > 98.9		6.064							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.064				ND			
363.0 > 168.9		6.064							
$ 14 13C8 PFOA									
421.0 > 375.9	6.309	6.413	-0.104	1.000	23974563	10.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.309	6.404	-0.095		30843625	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.414				ND			
413.0 > 169.0		6.414							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.582	6.676	-0.094		6963822	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.677				ND			
498.9 > 98.9		6.677							
$ 18 13C8 PFOS									
506.9 > 80.0	6.591	6.685	-0.094	1.001	4231910	11.2			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.602	6.696	-0.094		22970074	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.697				ND			
463.0 > 218.9		6.697							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.855	6.941	-0.086		22661746	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.063	7.148	-0.085		12130340	10.0			
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.251	7.327	-0.076		19107409	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.453	7.538	-0.085		1054459	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

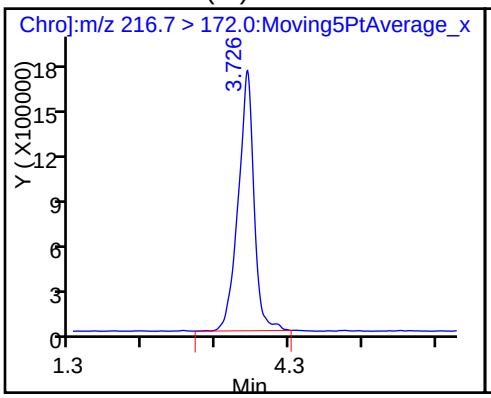
Report Date: 29-Sep-2016 11:09:20 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

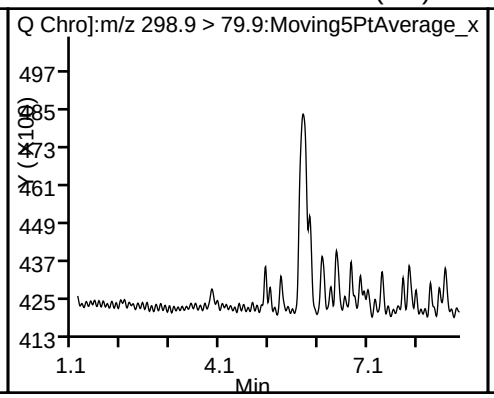
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028084.d

Injection Date:	28-Sep-2016 20:39:33	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-16-A	Lab Sample ID:	280-88381-16		
Client ID:	MW-DUP				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	8
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

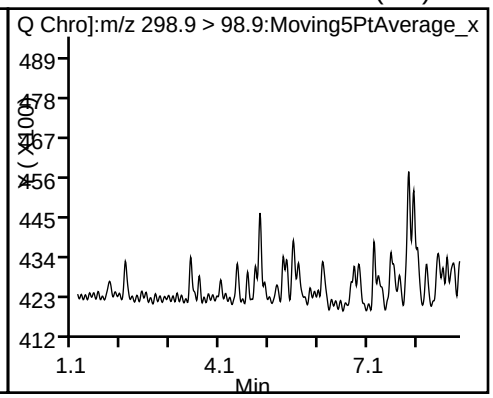
* 1 13C4 PFBA (IS)



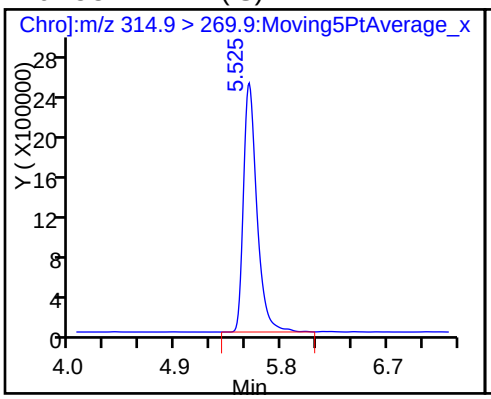
4 Perfluorobutane Sulfonate (ND)



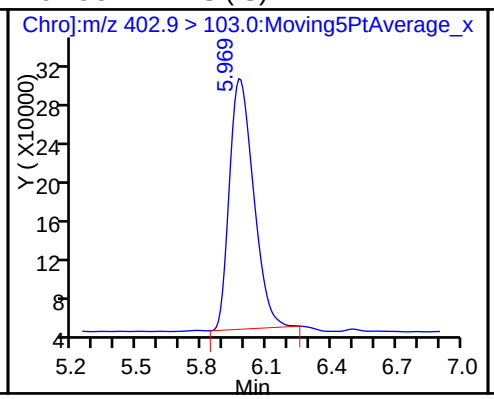
4 Perfluorobutane Sulfonate (ND)



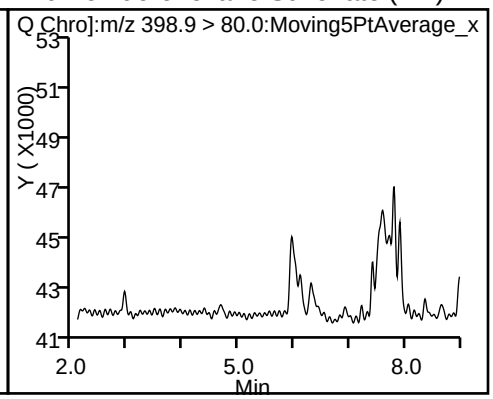
* 6 13C2 PFHxA (IS)



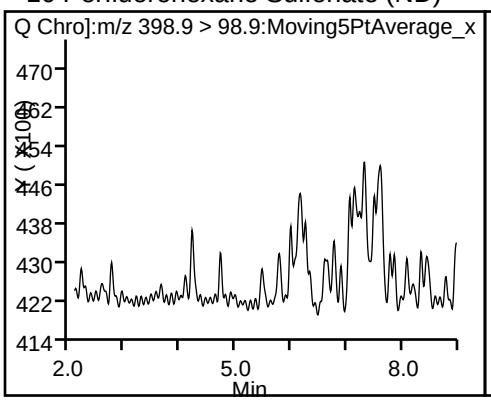
* 9 18O2 PFHxS (IS)



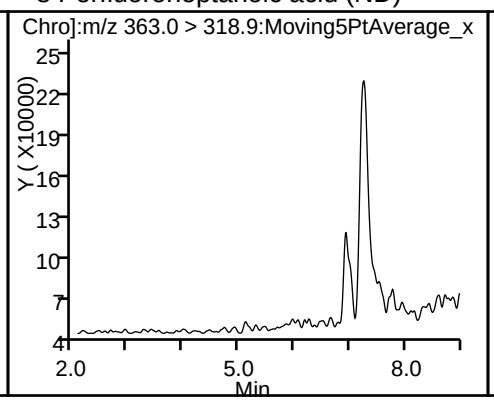
10 Perfluorohexane Sulfonate (ND)



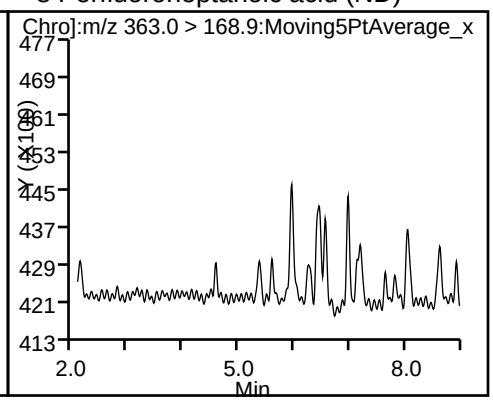
10 Perfluorohexane Sulfonate (ND)



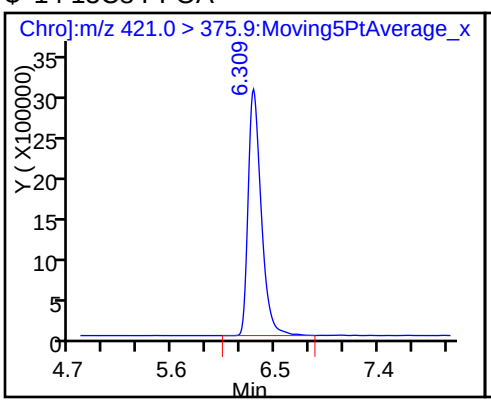
8 Perfluoroheptanoic acid (ND)



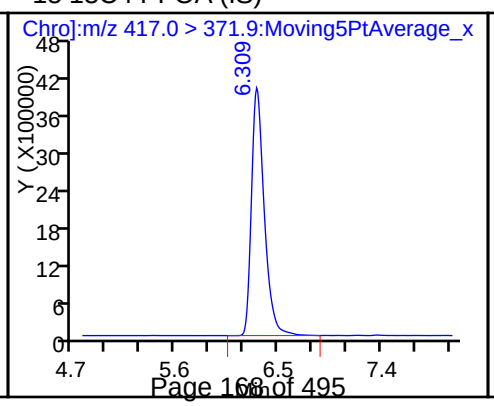
8 Perfluoroheptanoic acid (ND)



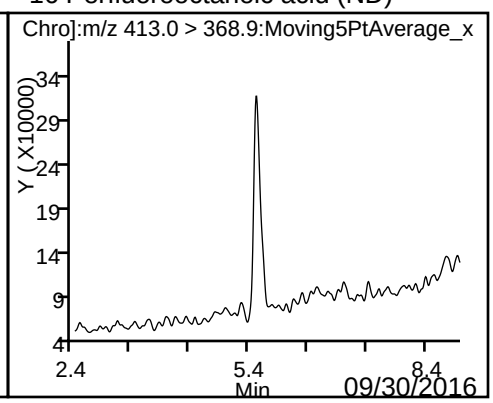
$ 14 13C8 PFOA



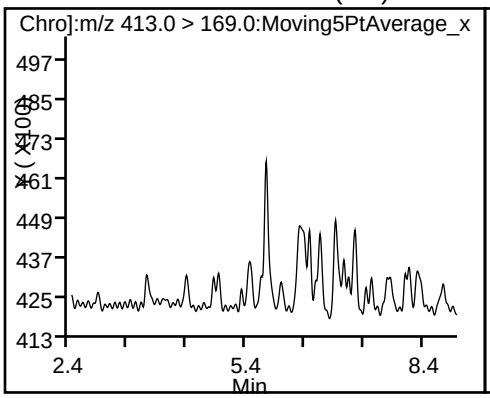
* 15 13C4 PFOA (IS)



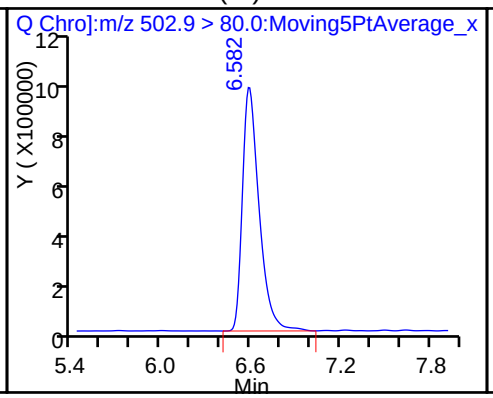
16 Perfluorooctanoic acid (ND)



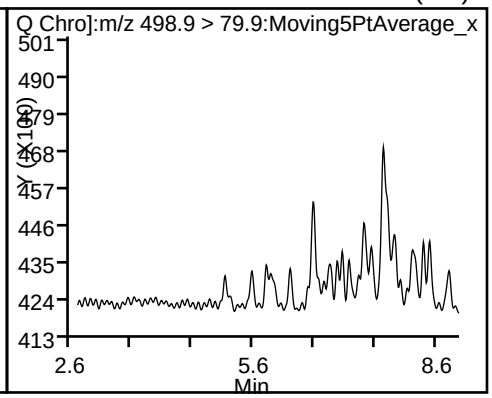
16 Perfluorooctanoic acid (ND)



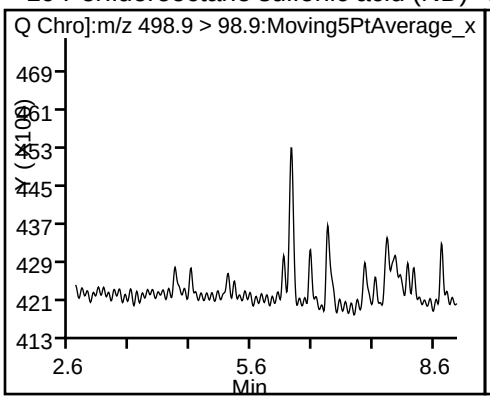
* 17 13C4 PFOS (IS)



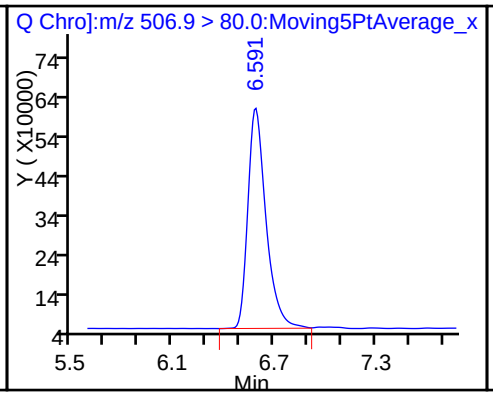
19 Perfluorooctane sulfonic acid (ND)



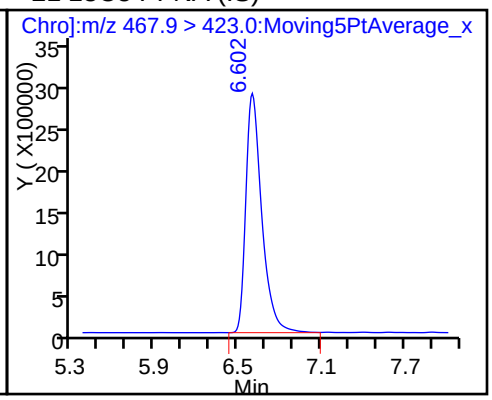
19 Perfluorooctane sulfonic acid (ND)



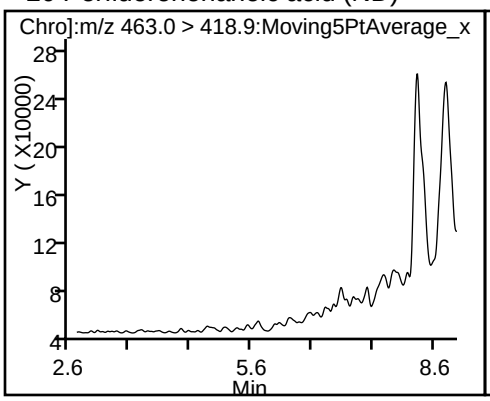
$ 18 13C8 PFOS



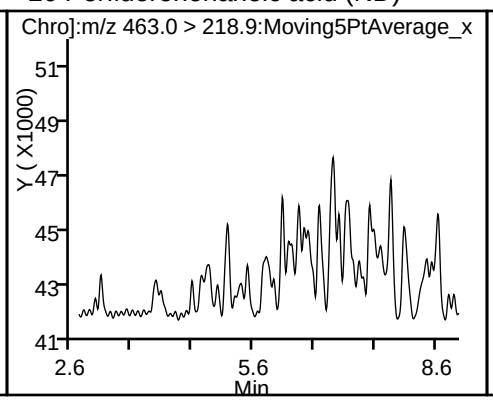
* 21 13C5 PFNA (IS)



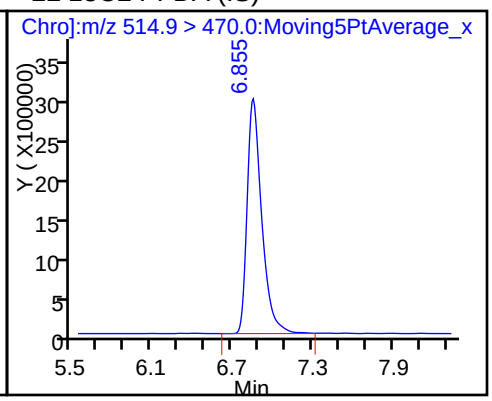
20 Perfluorononanoic acid (ND)



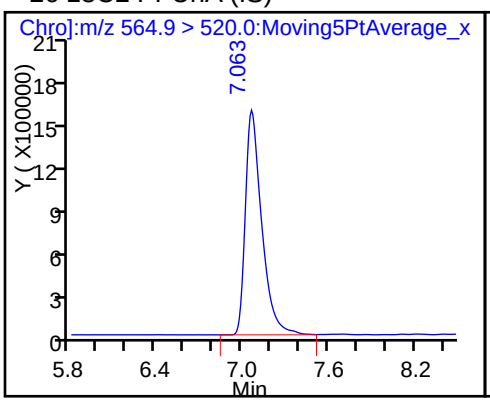
20 Perfluorononanoic acid (ND)



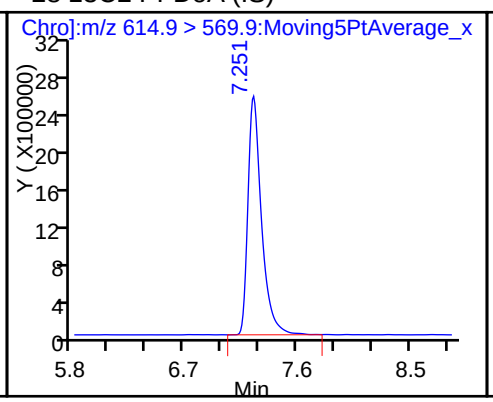
* 22 13C2 PFDA (IS)



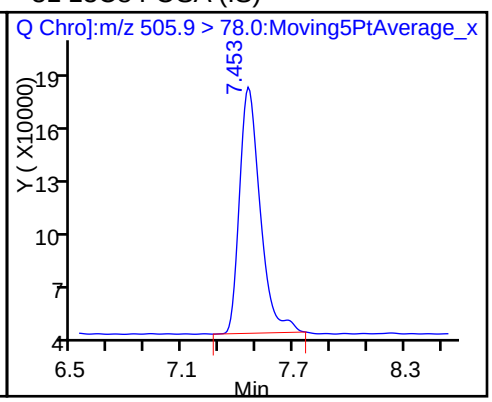
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: PFC-MW-3 | Lab Sample ID: 280-88381-17

Matrix: Water | Lab File ID: PC516I028085.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 16:25

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 257.8(mL) | Date Analyzed: 09/28/2016 20:51

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.10		0.019	0.0080
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.060		0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.15		0.029	0.0068
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.021	J	0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.037		0.019	0.0095

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	112		60-155
STL01054	13C8 PFOS	118		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028085.d
Lims ID: 280-88381-B-17-A
Client ID: PFC-MW-3
Sample Type: Client
Inject. Date: 28-Sep-2016 20:51:52 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-B-17-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:41:01

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.802	3.963	-0.161		26530929	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.802	3.963	-0.161	1.000	37809292	12.6			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.014	5.062	-0.048	0.894	63467283	31.6			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.137	5.175	-0.038	0.849	6329392	5.39			
298.9 > 98.9	5.147	5.175	-0.028	0.850	2158537		2.93(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.137	5.175	-0.038	0.849	6329392	5.39			
298.9 > 98.9	5.147	5.175	-0.028	0.850	2158537		2.93(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.610	5.638	-0.028		18413495	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.601	5.629	-0.028	0.998	44997227	26.1			
313.0 > 118.6	5.601	5.629	-0.028	0.998	1391654		32.33(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.054	6.073	-0.019		2248898	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.026	6.064	-0.038	0.995	6855391	7.66			R
398.9 > 98.9	6.035	6.064	-0.029	0.997	2768021		2.48(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.026	6.064	-0.038	0.995	6855391	7.66			
398.9 > 98.9	6.035	6.064	-0.029	0.997	2768021		2.48(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.036	6.064	-0.028	0.945	8899530	3.10			
363.0 > 168.9	6.045	6.064	-0.019	0.947	2563633		3.47(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.403				ND			
449.0 > 98.9		6.403							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.403				ND			
449.0 > 98.9		6.403							
$ 14 13C8 PFOA									
421.0 > 375.9	6.385	6.413	-0.028	1.000	24395535	11.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.385	6.404	-0.019		29204095	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.385	6.414	-0.029	1.000	5982772	1.89			
413.0 > 169.0	6.385	6.414	-0.029	1.000	1770420		3.38(2.86-5.31)		
* 17 13C4 PFOS (IS)									M
502.9 > 80.0	6.667	6.676	-0.009		6941610	9.56			M
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.535	6.677	-0.142	0.980	949726	1.07			R
498.9 > 98.9	6.572	6.677	-0.105	0.986	128061		7.42(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.667	6.685	-0.018	1.000	4148102	11.0			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.677	6.696	-0.019		23816805	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.697				ND			
463.0 > 218.9		6.697							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.922	6.941	-0.019		21927320	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		6.941				ND			
513.0 > 219.0		6.941							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.129				ND			
598.9 > 99.0		7.129							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.129				ND			
598.9 > 99.0		7.129							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.139	7.148	-0.009		11325532	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.149				ND			
563.0 > 268.9		7.149							
29 Perfluorododecanoic acid									
613.0 > 568.9		7.327				ND			
613.0 > 168.9		7.327							
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.318	7.327	-0.009		14125879	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.488				ND			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.539				ND			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.538	-0.009		470183	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.611				ND			
712.9 > 169.0		7.611							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

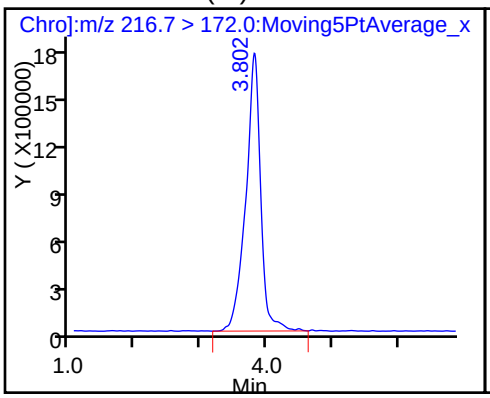
Report Date: 29-Sep-2016 11:09:22 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

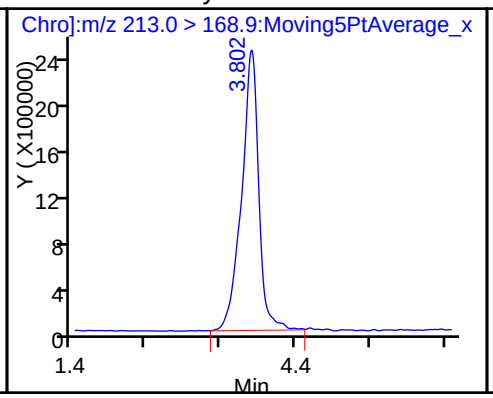
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028085.d

Injection Date:	28-Sep-2016 20:51:52	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-B-17-A	Lab Sample ID:	280-88381-17		
Client ID:	PFC-MW-3				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

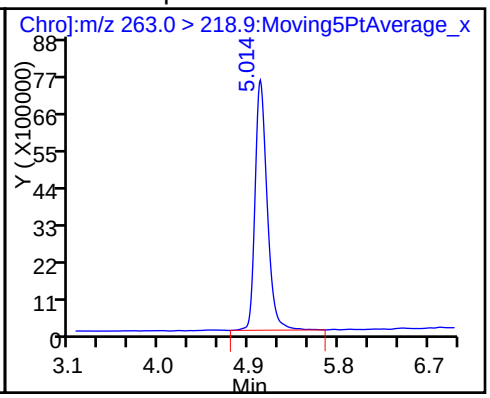
* 1 13C4 PFBA (IS)



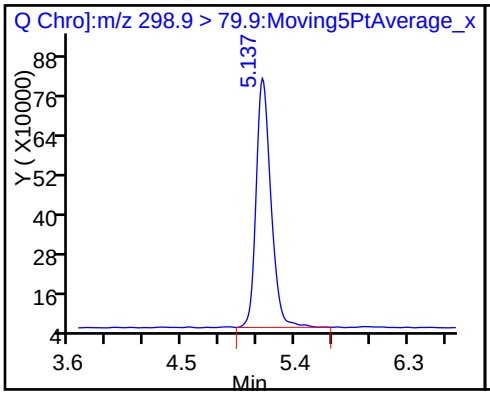
2 Perfluorobutyric acid



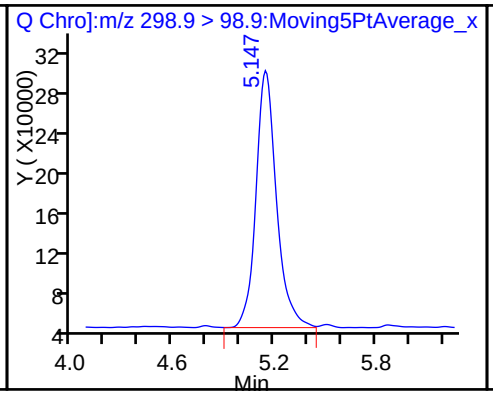
3 Perfluoropentanoic acid



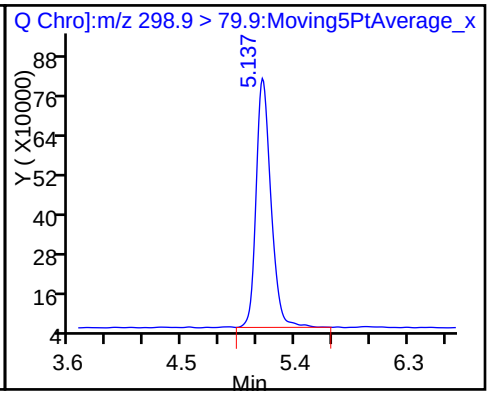
5 Perfluorobutanesulfonic acid



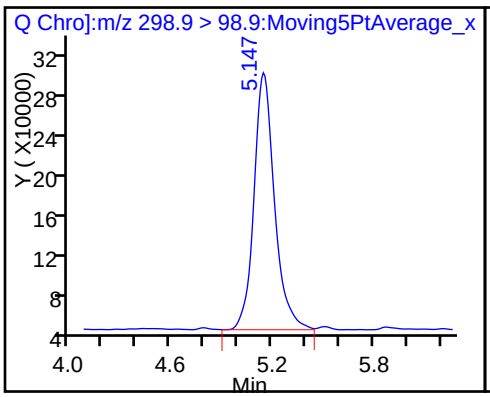
5 Perfluorobutanesulfonic acid



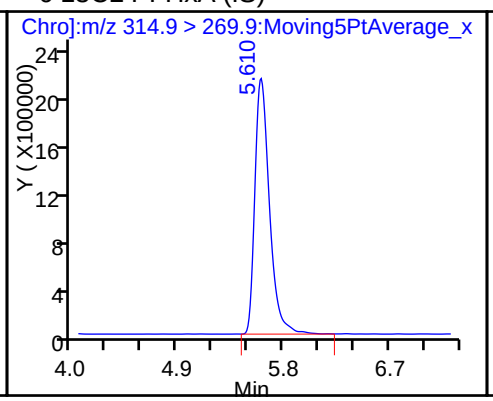
4 Perfluorobutane Sulfonate



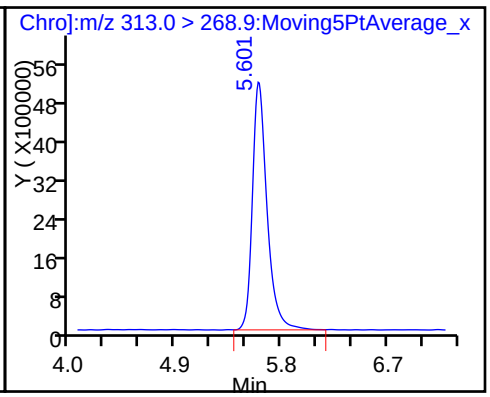
4 Perfluorobutane Sulfonate



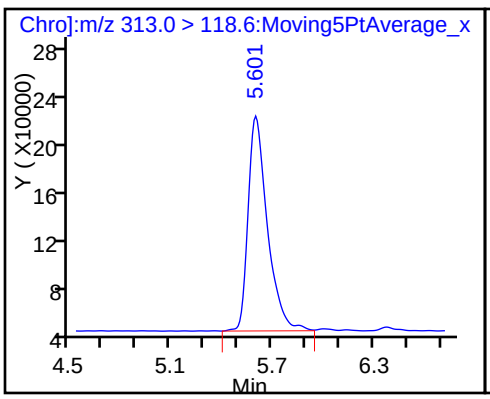
* 6 13C2 PFHxA (IS)



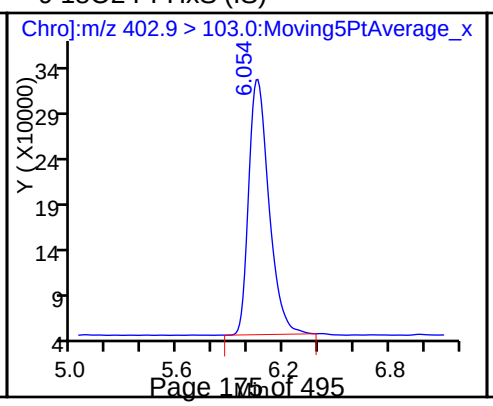
7 Perfluorohexanoic acid



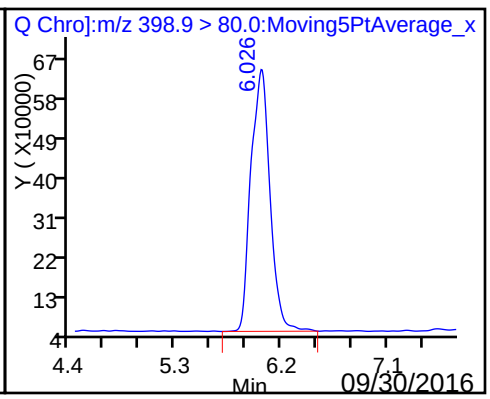
7 Perfluorohexanoic acid



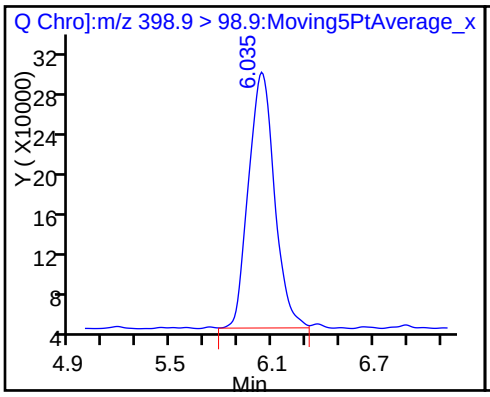
* 9 18O2 PFHxS (IS)



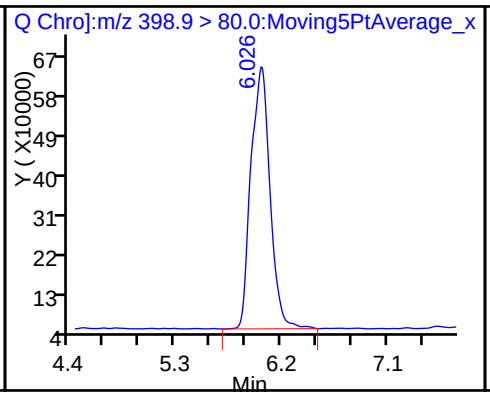
10 Perfluorohexane Sulfonate



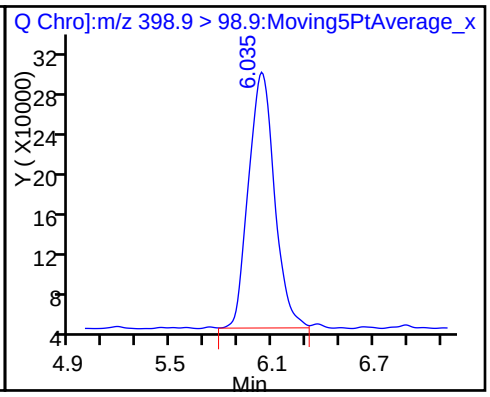
10 Perfluorohexane Sulfonate



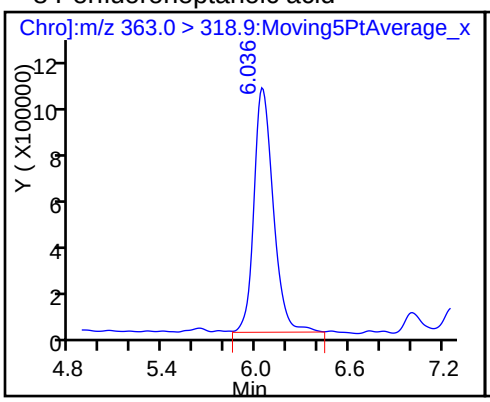
11 Perfluorohexanesulfonic acid



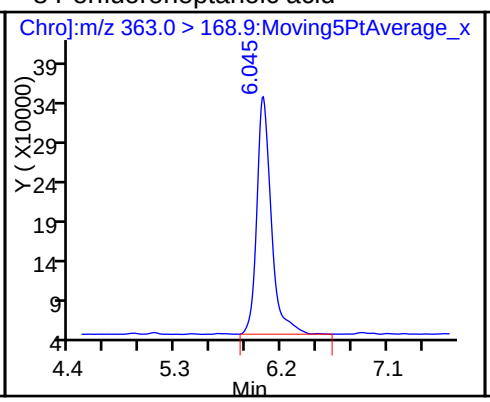
11 Perfluorohexanesulfonic acid



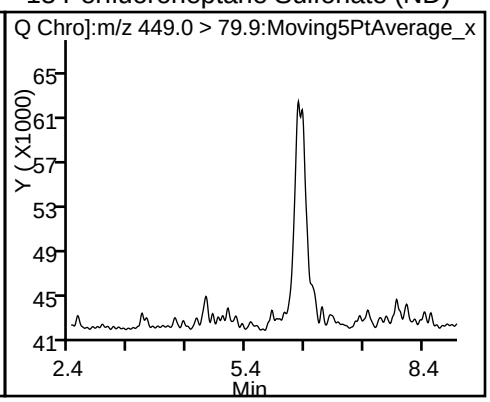
8 Perfluoroheptanoic acid



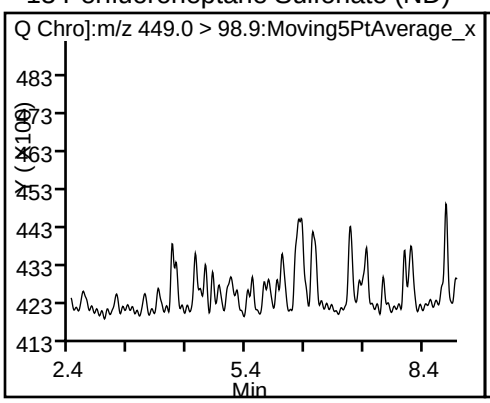
8 Perfluoroheptanoic acid



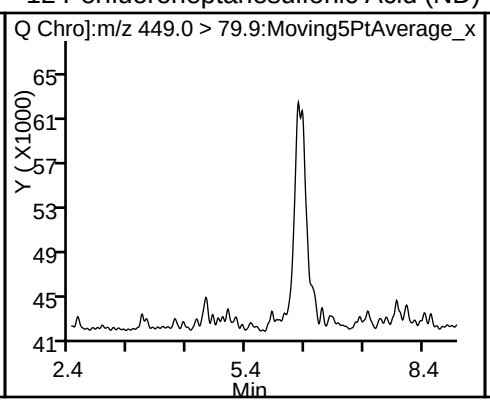
13 Perfluoroheptane Sulfonate (ND)



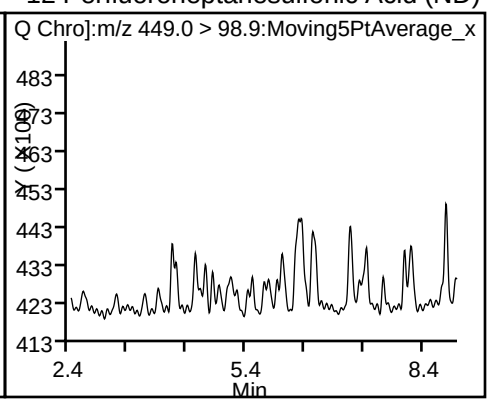
13 Perfluoroheptane Sulfonate (ND)



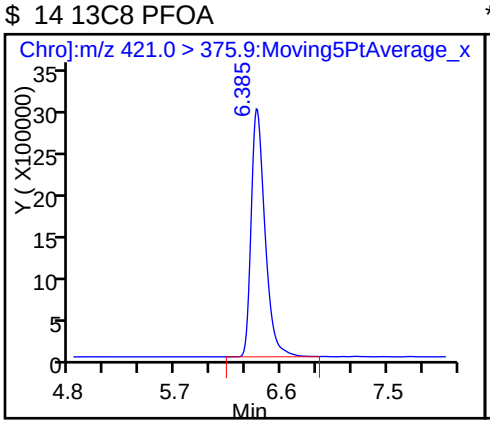
12 Perfluoroheptanesulfonic Acid (ND)



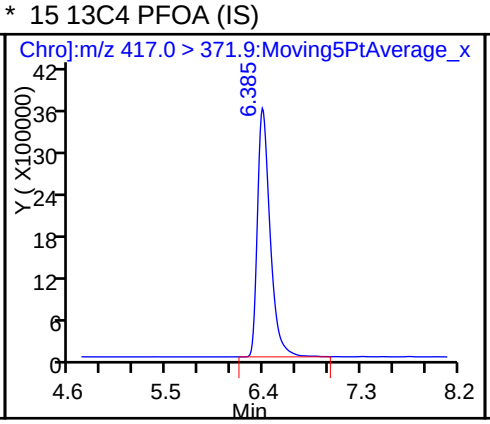
12 Perfluoroheptanesulfonic Acid (ND)



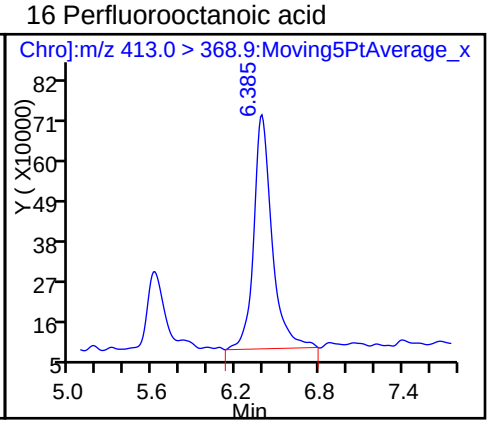
$ 14 13C8 PFOA



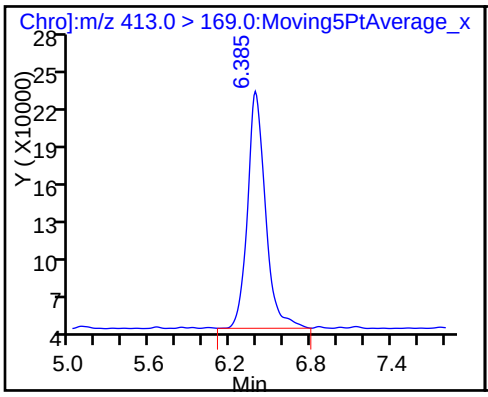
* 15 13C4 PFOA (IS)



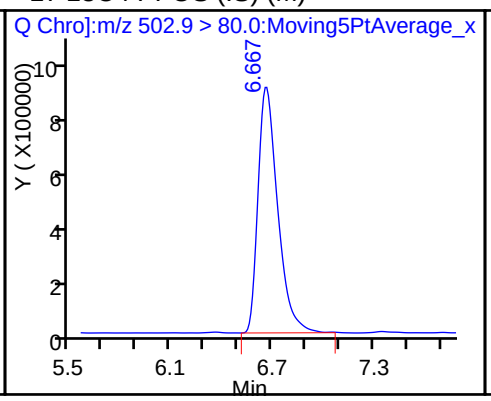
16 Perfluorooctanoic acid



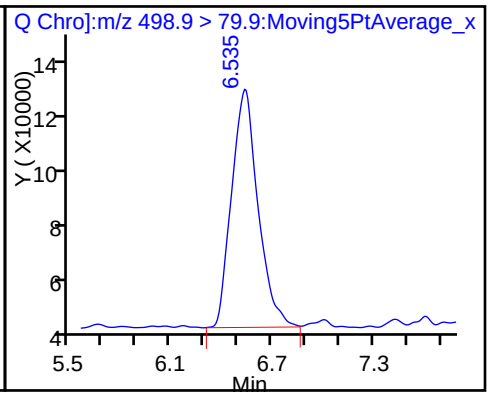
16 Perfluorooctanoic acid



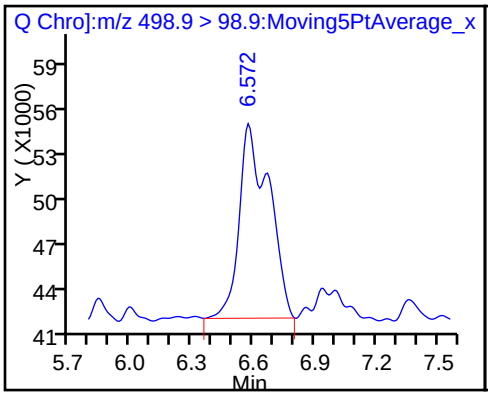
* 17 13C4 PFOS (IS) (M)



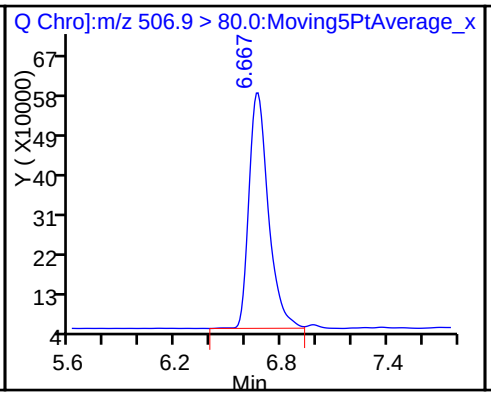
19 Perfluorooctane sulfonic acid



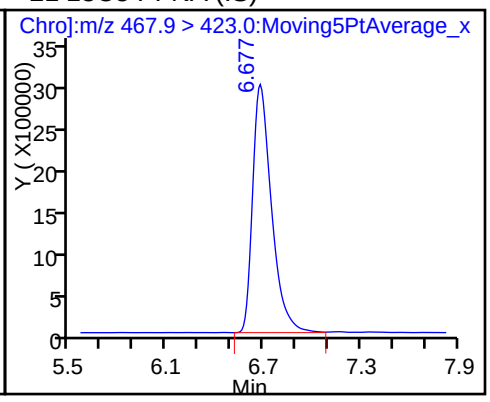
19 Perfluorooctane sulfonic acid



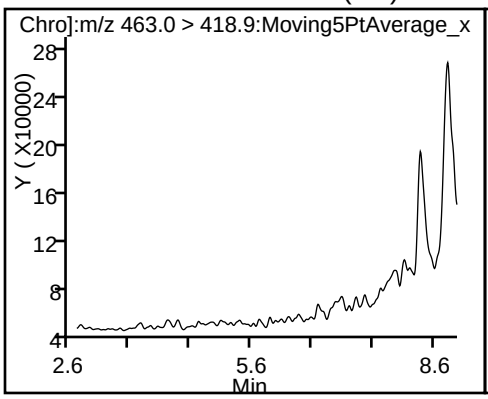
$ 18 13C8 PFOS



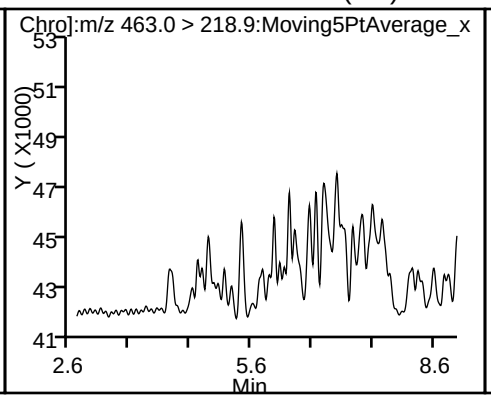
* 21 13C5 PFNA (IS)



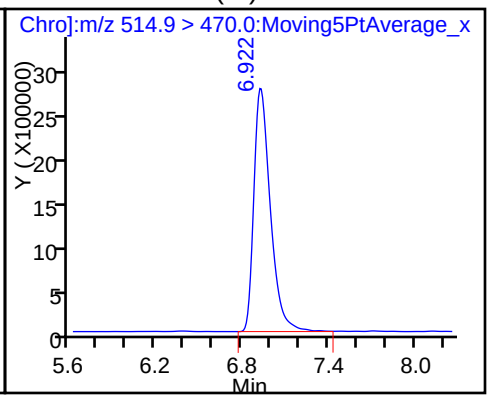
20 Perfluorononanoic acid (ND)



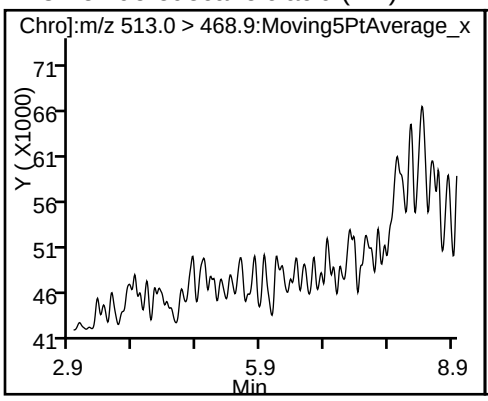
20 Perfluorononanoic acid (ND)



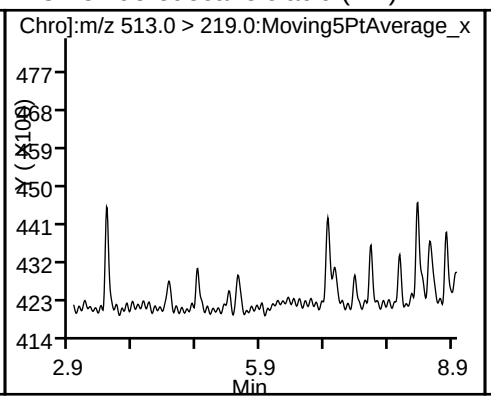
* 22 13C2 PFDA (IS)



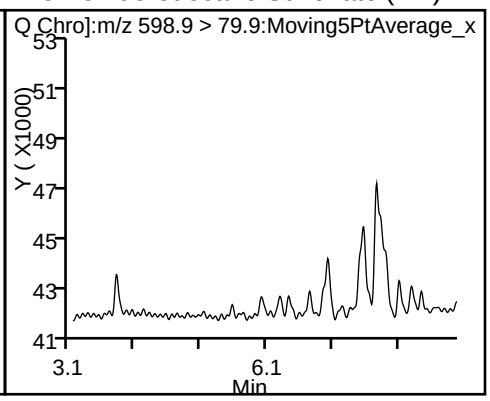
23 Perfluorodecanoic acid (ND)



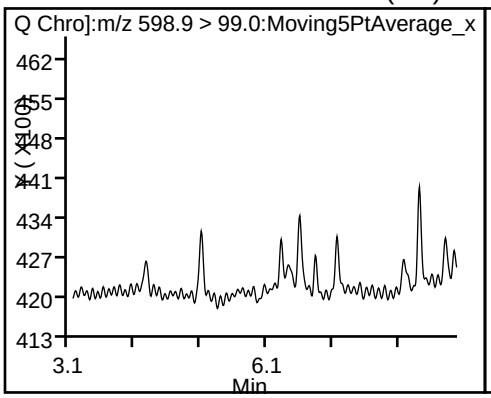
23 Perfluorodecanoic acid (ND)



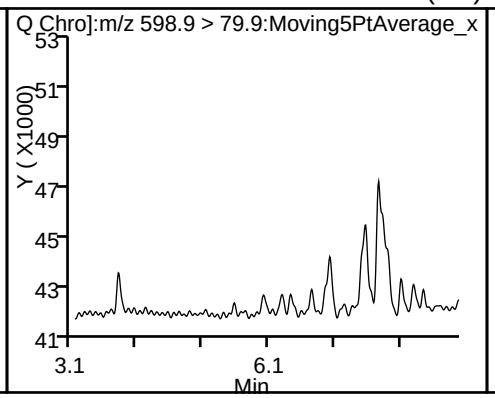
25 Perfluorodecane Sulfonate (ND)



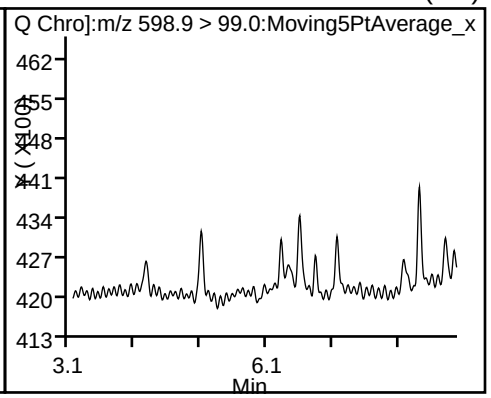
25 Perfluorodecane Sulfonate (ND)



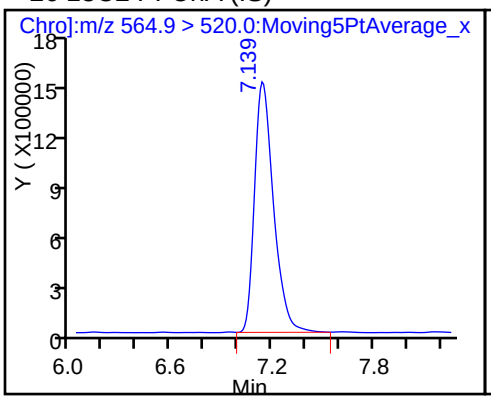
24 Perfluorodecane Sulfonic acid (ND)



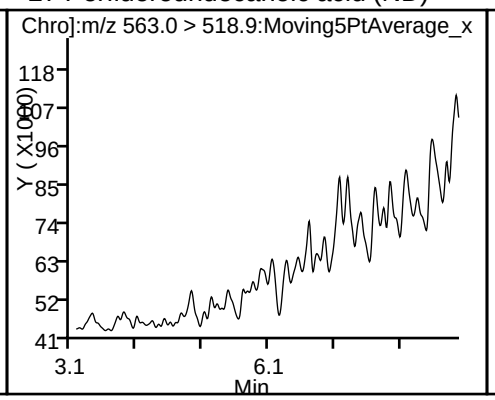
24 Perfluorodecane Sulfonic acid (ND)



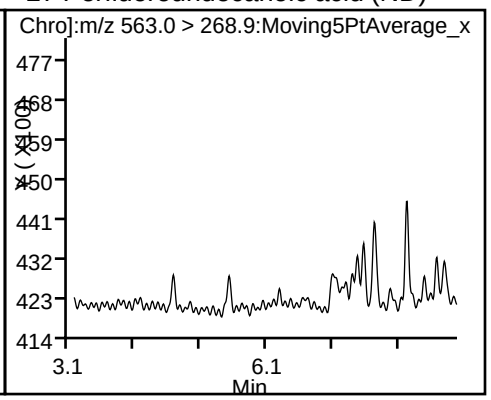
* 26 13C2 PFUnA (IS)



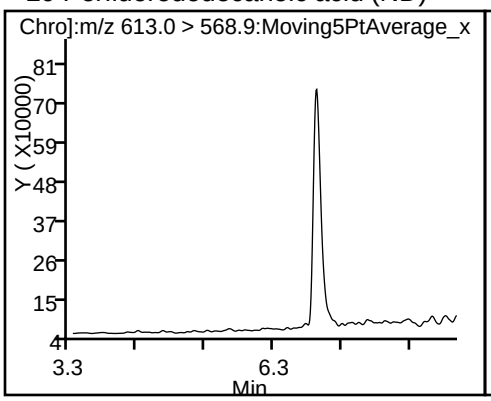
27 Perfluoroundecanoic acid (ND)



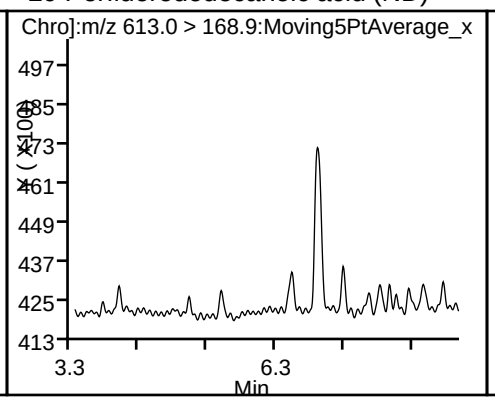
27 Perfluoroundecanoic acid (ND)



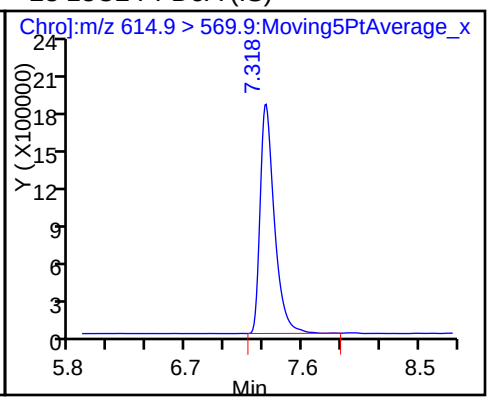
29 Perfluorododecanoic acid (ND)



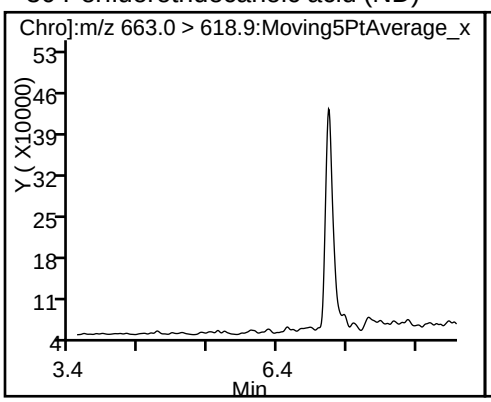
29 Perfluorododecanoic acid (ND)



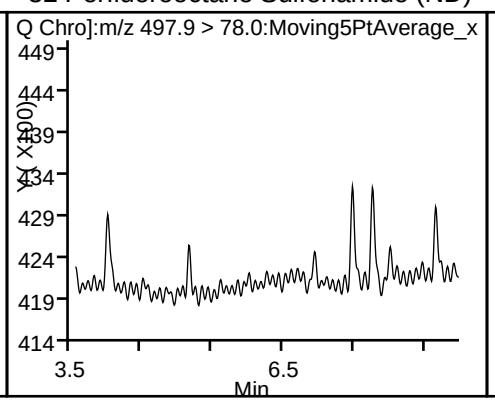
* 28 13C2 PFDoA (IS)



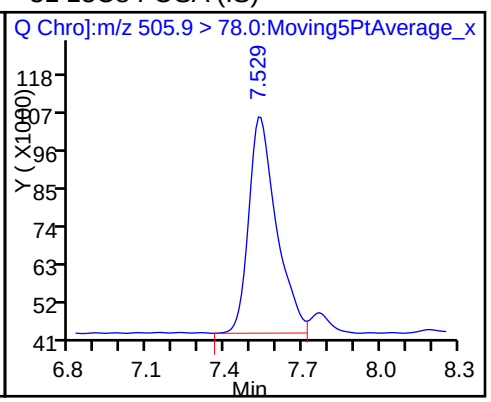
30 Perfluorotridecanoic acid (ND)



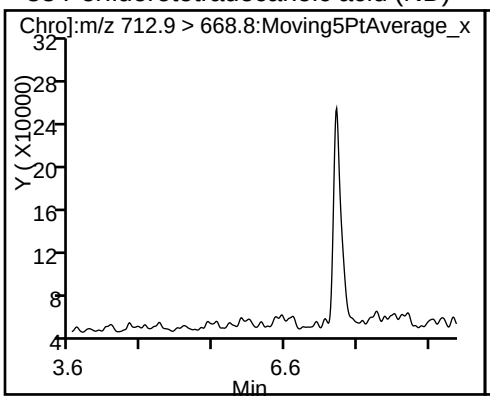
32 Perfluorooctane Sulfonamide (ND)



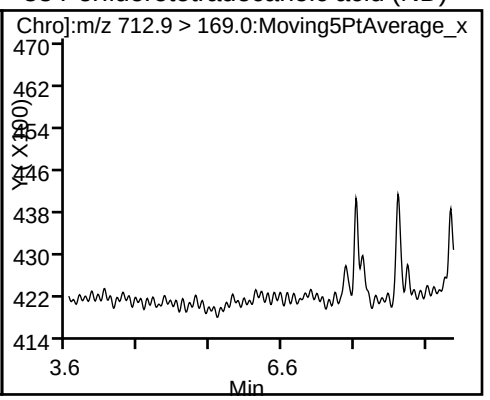
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Denver

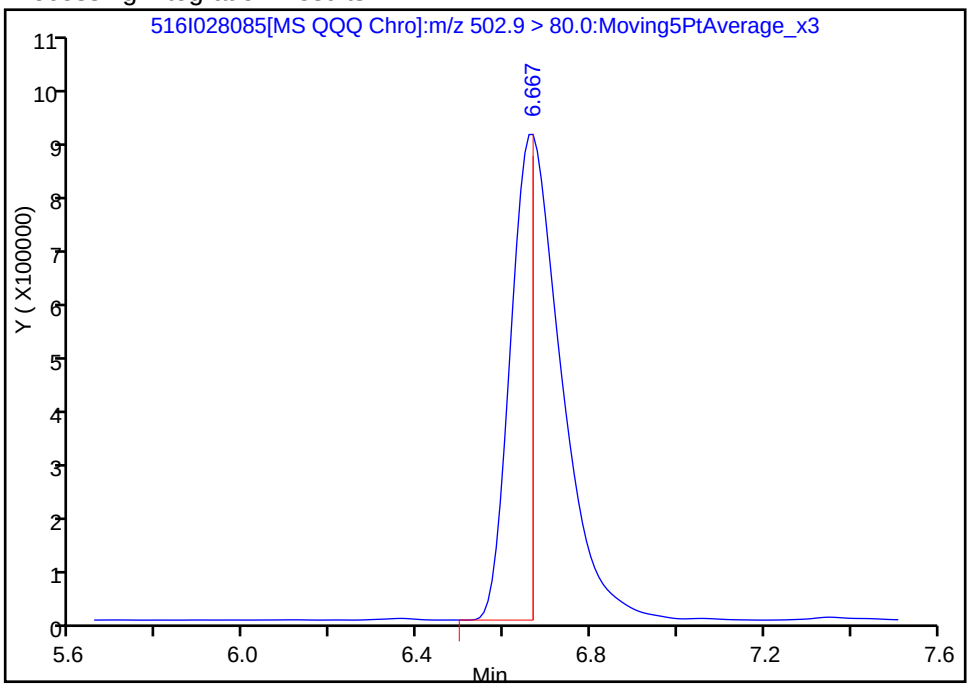
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028085.d				
Injection Date:	28-Sep-2016 20:51:52	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-B-17-A	Lab Sample ID:	280-88381-17		
Client ID:	PFC-MW-3				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	9
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

* 17 13C4 PFOS (IS), CAS: STL01002

Signal: 1

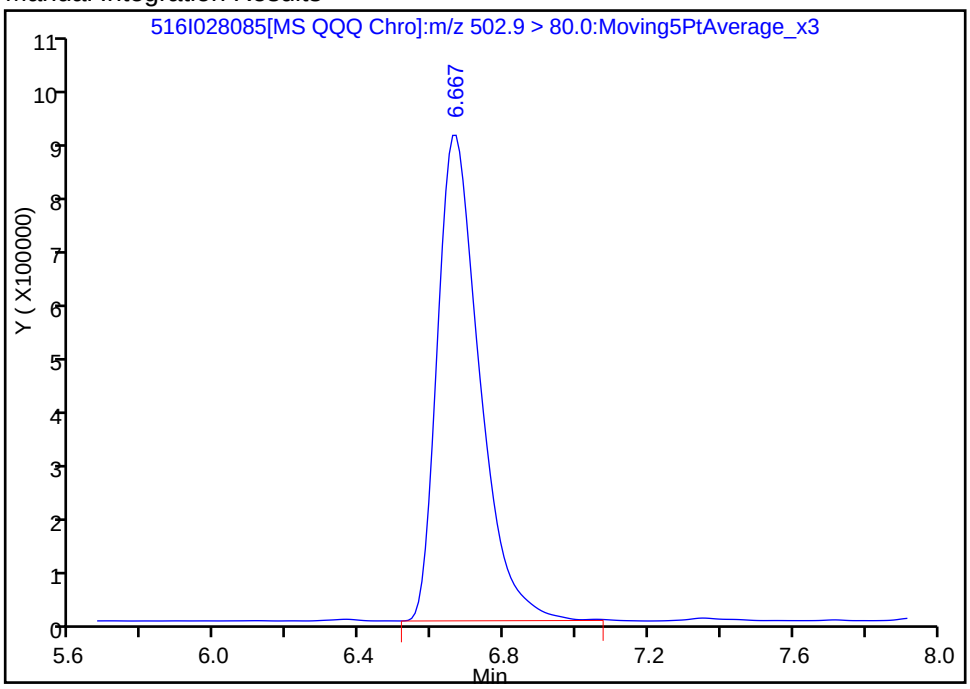
Processing Integration Results

RT: 6.67
Area: 2978958
Amount: 9.560000
Amount Units: ug/L



Manual Integration Results

RT: 6.67
Area: 6941610
Amount: 9.560000
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 09:41:01

Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: CB-FB-0914-16 | Lab Sample ID: 280-88381-18

Matrix: Water | Lab File ID: PC516I028088.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 16:50

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 284.1(mL) | Date Analyzed: 09/28/2016 21:28

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0073	U	0.018	0.0073
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.026	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0061	U	0.026	0.0061
375-95-1	Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0086	U	0.018	0.0086

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	111		60-155
STL01054	13C8 PFOS	114		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028088.d
Lims ID: 280-88381-A-18-A
Client ID: CB-FB-0914-16
Sample Type: Client
Inject. Date: 28-Sep-2016 21:28:45 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-18-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:43:30

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.821	3.963	-0.142		27066288	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.175				ND			
298.9 > 98.9		5.175							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.591	5.638	-0.047		20322269	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.035	6.073	-0.038		2141949	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.064				ND			
398.9 > 98.9		6.064							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.064				ND			
363.0 > 168.9		6.064							
$ 14 13C8 PFOA									
421.0 > 375.9	6.366	6.413	-0.047	1.000	25320254	10.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.366	6.404	-0.038		30550929	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.414				ND			
413.0 > 169.0		6.414							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.648	6.676	-0.028		7730328	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.677				ND			
498.9 > 98.9		6.677							
$ 18 13C8 PFOS									
506.9 > 80.0	6.638	6.685	-0.047	0.999	4435635	10.5			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.658	6.696	-0.038		23863181	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.697				ND			
463.0 > 218.9		6.697							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.903	6.941	-0.038		24418472	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.110	7.148	-0.038		16804666	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.289	7.327	-0.038		28205708	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.500	7.538	-0.038		1037673	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

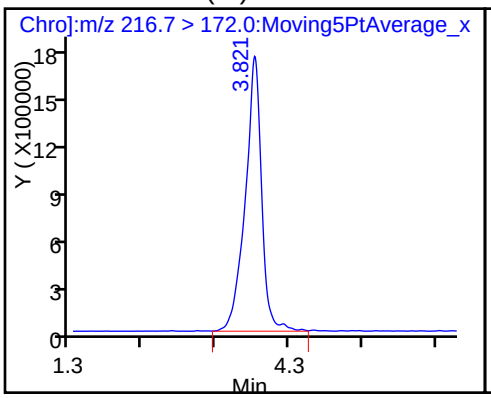
Report Date: 29-Sep-2016 11:09:32 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

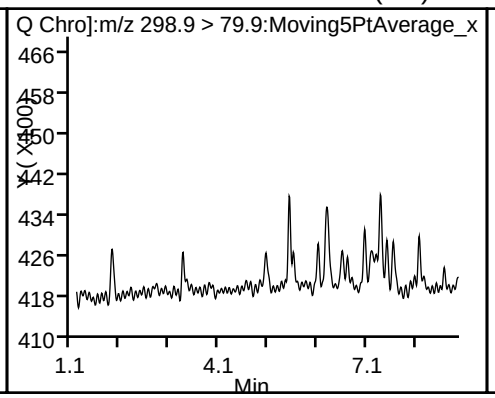
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028088.d

Injection Date:	28-Sep-2016 21:28:45	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-18-A	Lab Sample ID:	280-88381-18		
Client ID:	CB-FB-0914-16				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	12
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

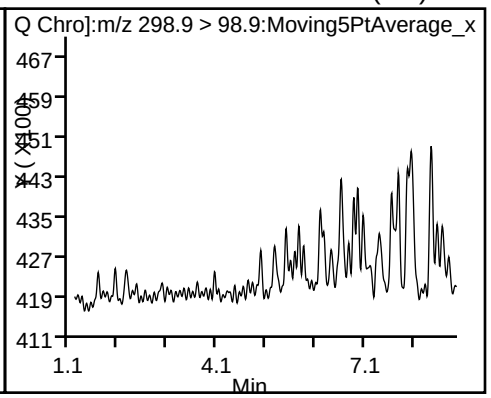
* 1 13C4 PFBA (IS)



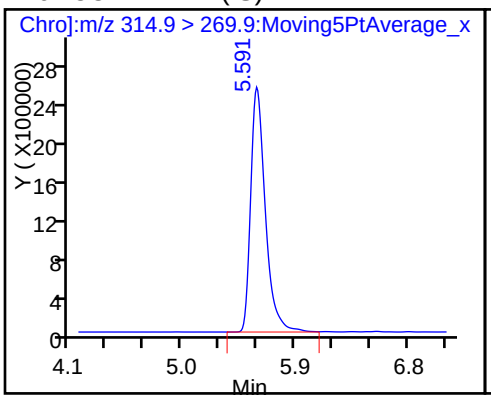
4 Perfluorobutane Sulfonate (ND)



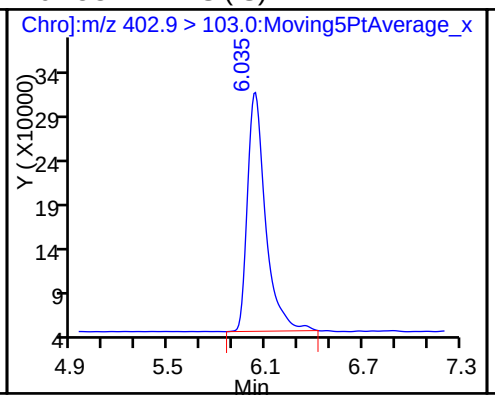
4 Perfluorobutane Sulfonate (ND)



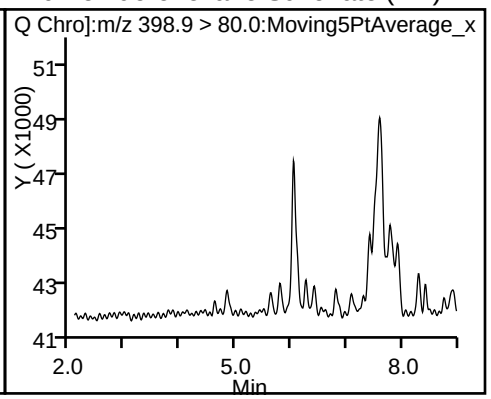
* 6 13C2 PFHxA (IS)



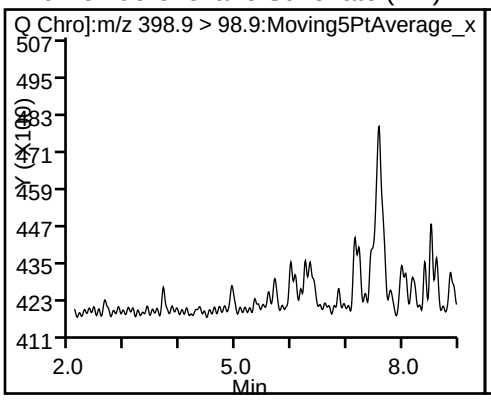
* 9 18O2 PFHxS (IS)



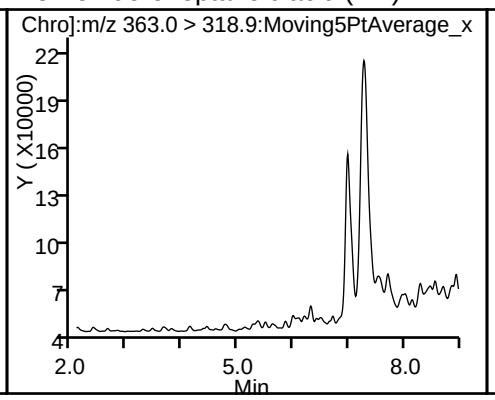
10 Perfluorohexane Sulfonate (ND)



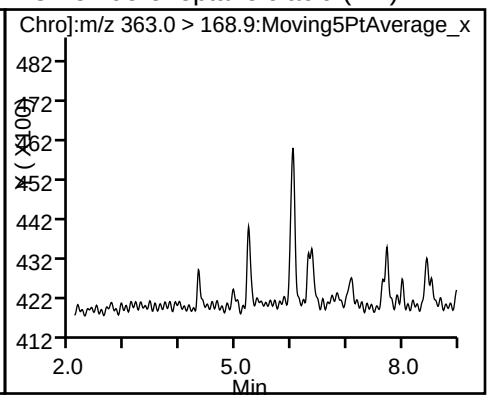
10 Perfluorohexane Sulfonate (ND)



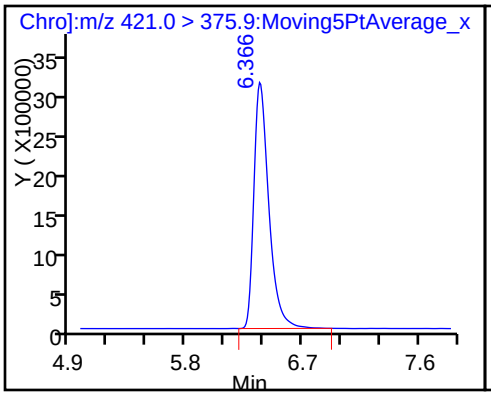
8 Perfluoroheptanoic acid (ND)



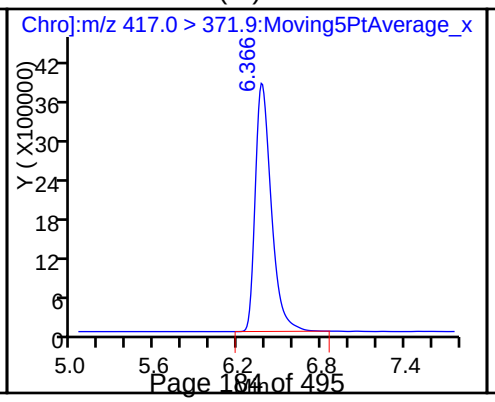
8 Perfluoroheptanoic acid (ND)



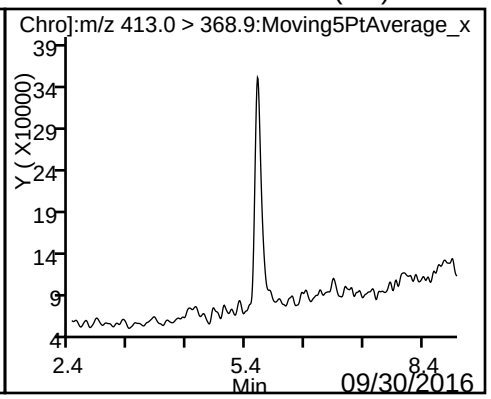
$ 14 13C8 PFOA



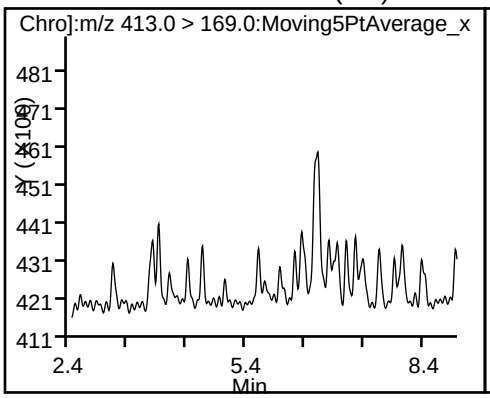
* 15 13C4 PFOA (IS)



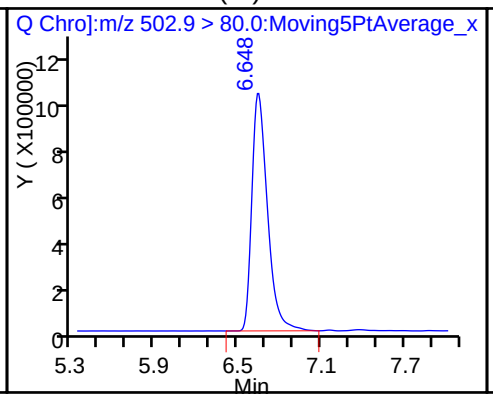
16 Perfluorooctanoic acid (ND)



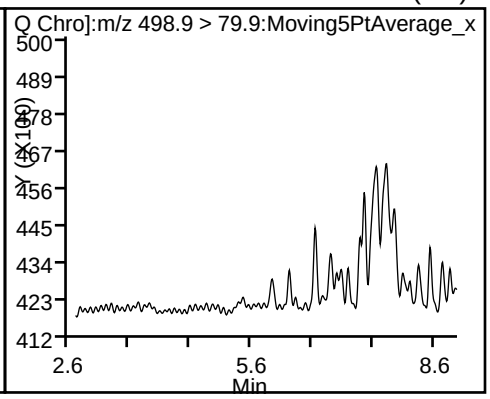
16 Perfluorooctanoic acid (ND)



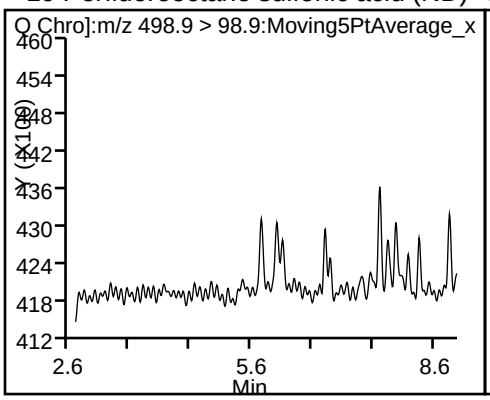
* 17 13C4 PFOS (IS)



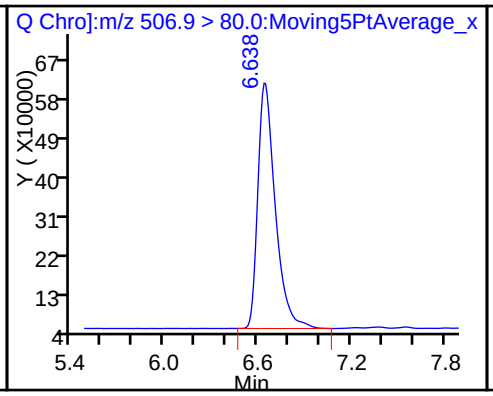
19 Perfluorooctane sulfonic acid (ND)



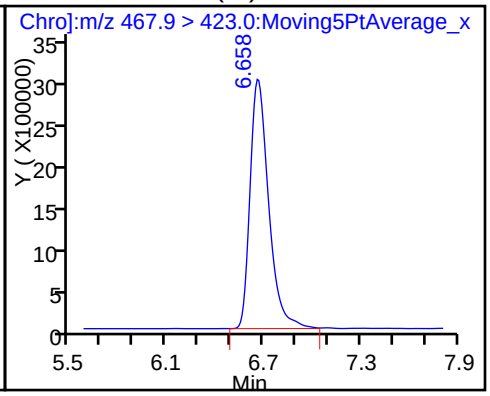
19 Perfluorooctane sulfonic acid (ND)



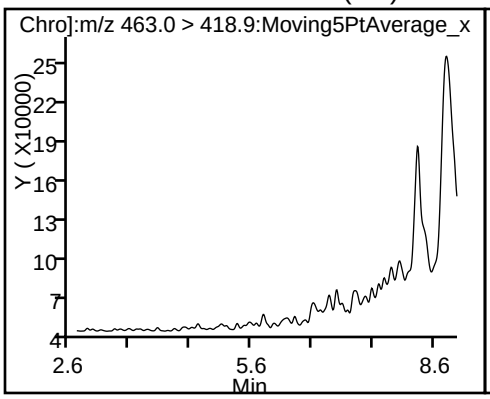
$ 18 13C8 PFOS



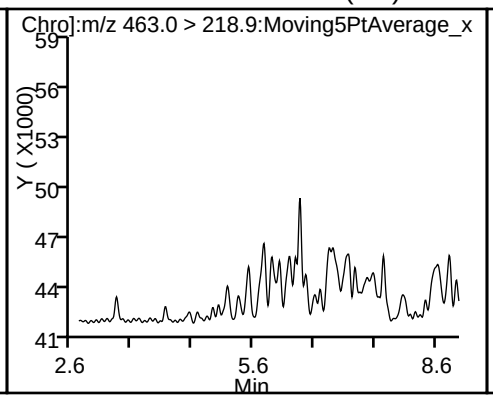
* 21 13C5 PFNA (IS)



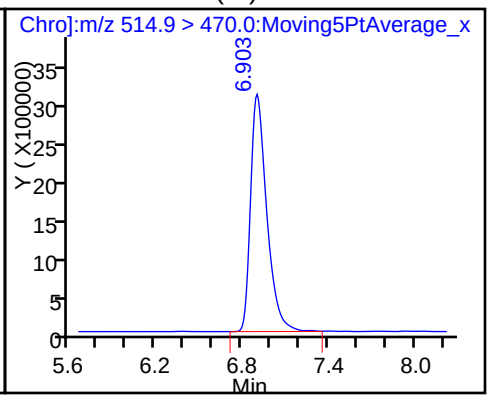
20 Perfluorononanoic acid (ND)



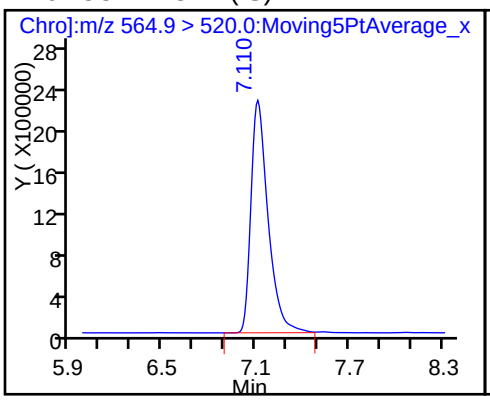
20 Perfluorononanoic acid (ND)



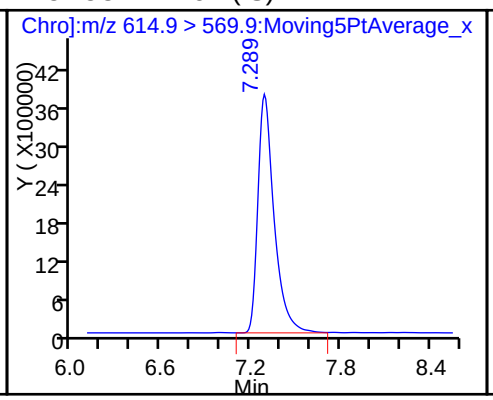
* 22 13C2 PFDA (IS)



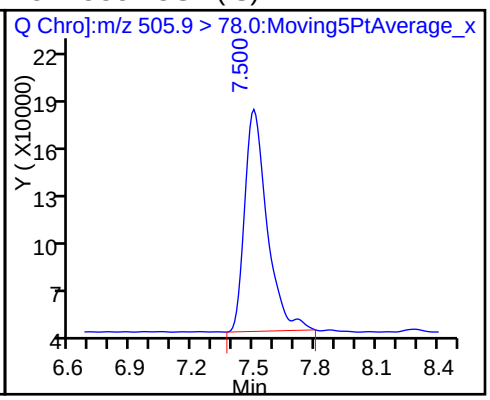
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: CB-EB-091416 | Lab Sample ID: 280-88381-19

Matrix: Water | Lab File ID: PC516I028089.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 16:55

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 284.3(mL) | Date Analyzed: 09/28/2016 21:41

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0072	U	0.018	0.0072
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.026	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0061	U	0.026	0.0061
375-95-1	Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0086	U	0.018	0.0086

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	110		60-155
STL01054	13C8 PFOS	113		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028089.d
Lims ID: 280-88381-A-19-A
Client ID: CB-EB-091416
Sample Type: Client
Inject. Date: 28-Sep-2016 21:41:11 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-19-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:44:26

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.812	3.963	-0.151		26564886	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.175				ND			
298.9 > 98.9		5.175							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.591	5.638	-0.047		20173397	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.045	6.073	-0.028		2177119	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.064				ND			
398.9 > 98.9		6.064							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.064				ND			
363.0 > 168.9		6.064							
$ 14 13C8 PFOA									
421.0 > 375.9	6.385	6.413	-0.028	1.000	25413724	10.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.385	6.404	-0.019		31038643	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.414				ND			
413.0 > 169.0		6.414							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.648	6.676	-0.028		7782186	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.677				ND			
498.9 > 98.9		6.677							
$ 18 13C8 PFOS									
506.9 > 80.0	6.657	6.685	-0.028	1.001	4447522	10.5			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.668	6.696	-0.028		24152666	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.697				ND			
463.0 > 218.9		6.697							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.912	6.941	-0.029		25544892	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.129	7.148	-0.019		16034481	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.299	7.327	-0.028		29516746	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.510	7.538	-0.028		1129037	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

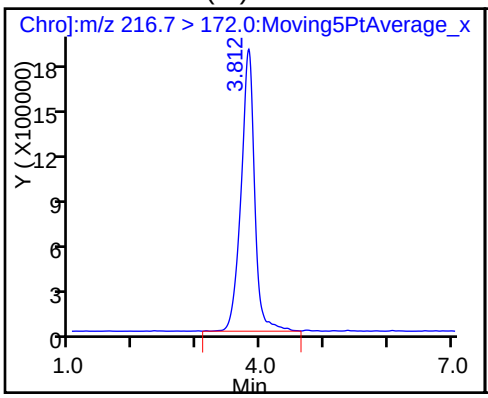
Report Date: 29-Sep-2016 11:09:34 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

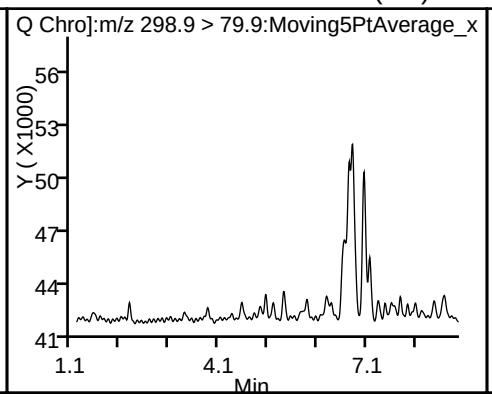
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028089.d

Injection Date:	28-Sep-2016 21:41:11	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-19-A	Lab Sample ID:	280-88381-19		
Client ID:	CB-EB-091416				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	13
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

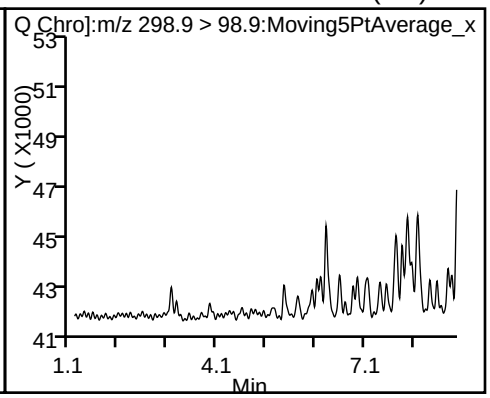
* 1 13C4 PFBA (IS)



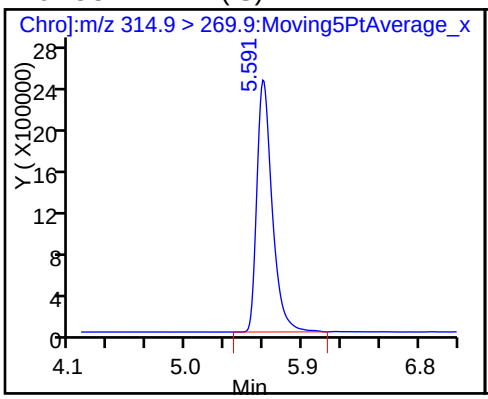
4 Perfluorobutane Sulfonate (ND)



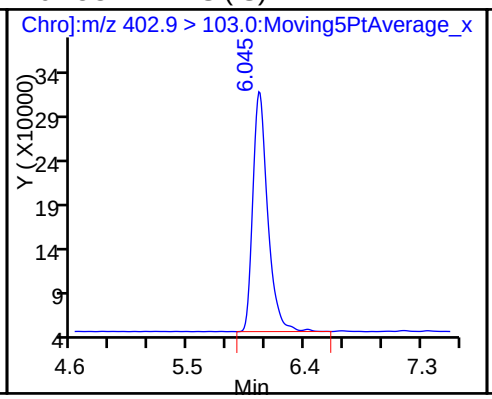
4 Perfluorobutane Sulfonate (ND)



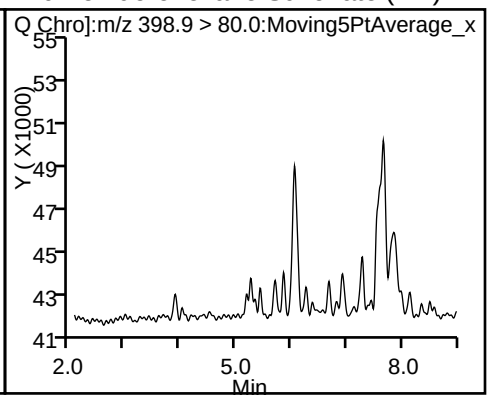
* 6 13C2 PFHxA (IS)



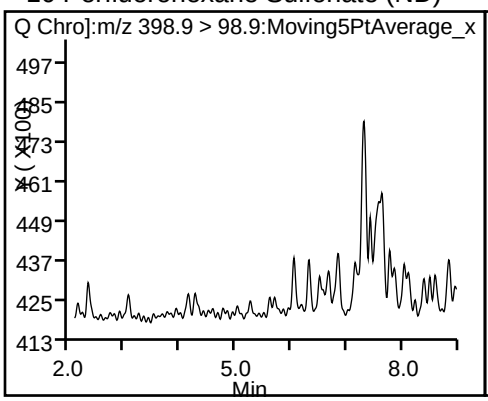
* 9 18O2 PFHxS (IS)



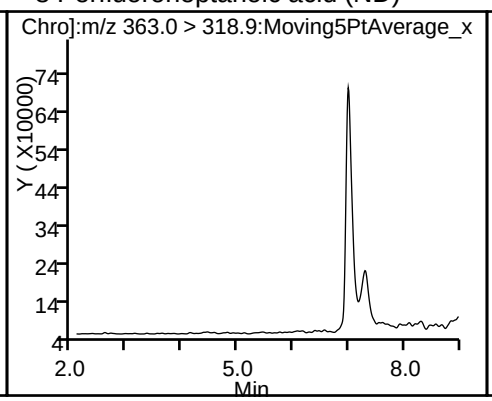
10 Perfluorohexane Sulfonate (ND)



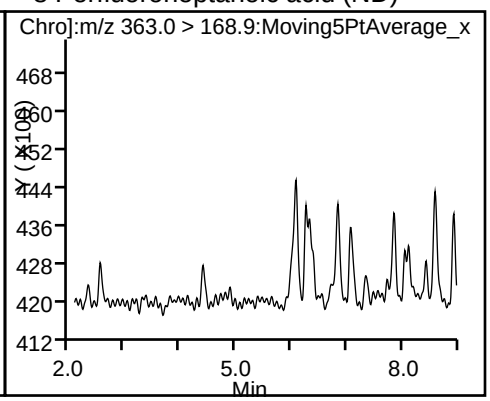
10 Perfluorohexane Sulfonate (ND)



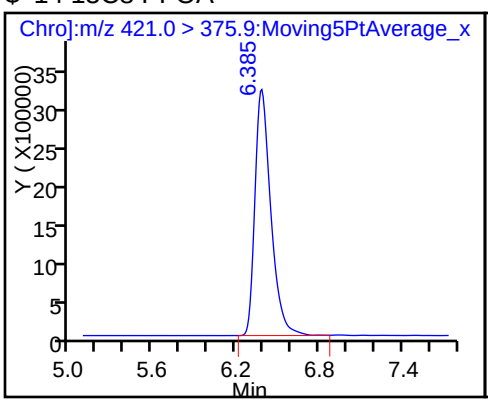
8 Perfluoroheptanoic acid (ND)



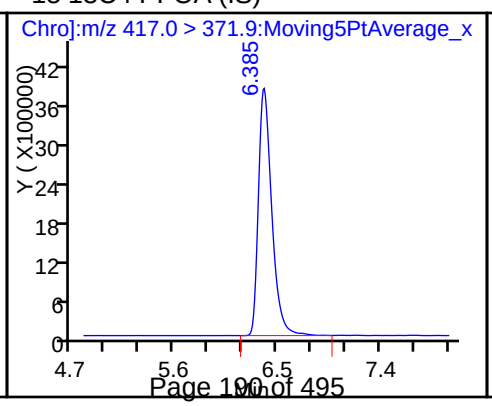
8 Perfluoroheptanoic acid (ND)



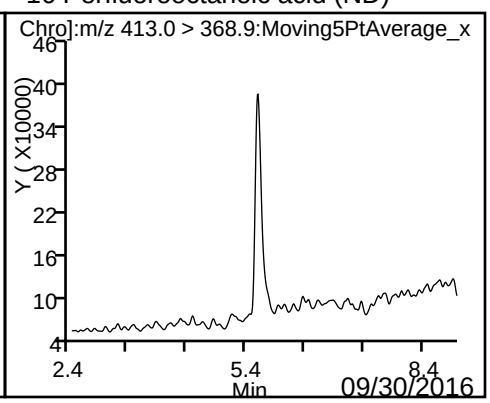
$ 14 13C8 PFOA



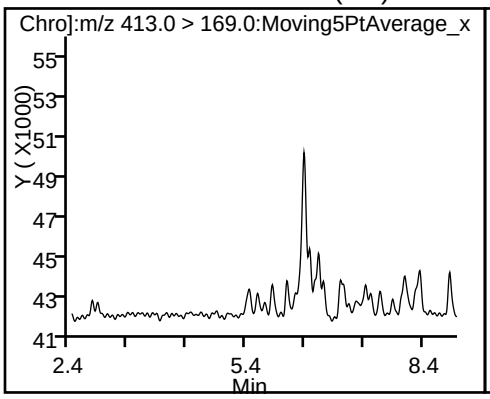
* 15 13C4 PFOA (IS)



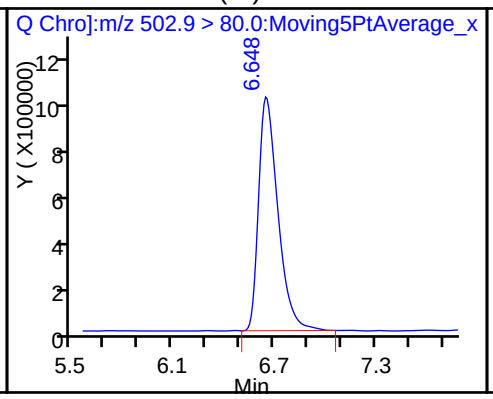
16 Perfluorooctanoic acid (ND)



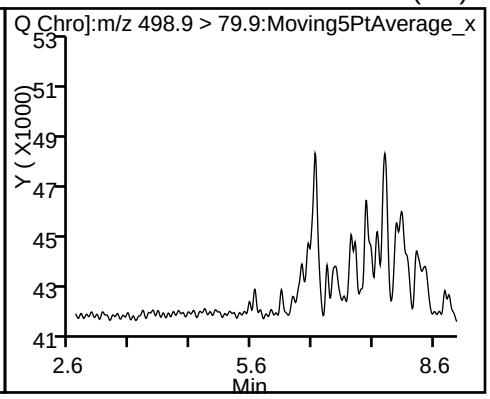
16 Perfluorooctanoic acid (ND)



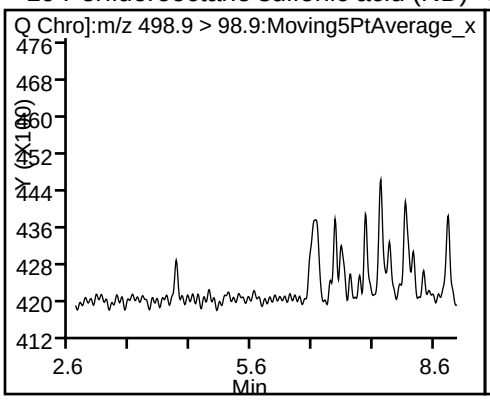
* 17 13C4 PFOS (IS)



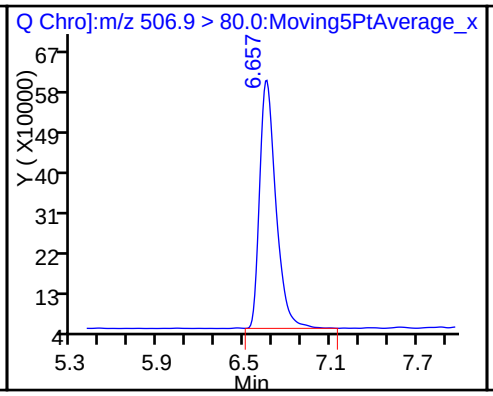
19 Perfluorooctane sulfonic acid (ND)



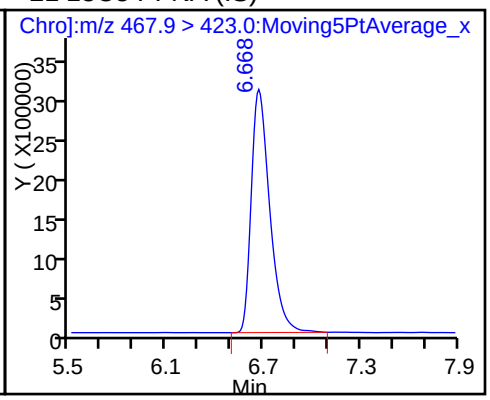
19 Perfluorooctane sulfonic acid (ND)



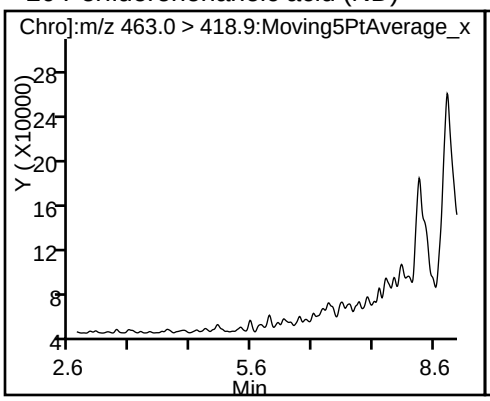
$ 18 13C8 PFOS



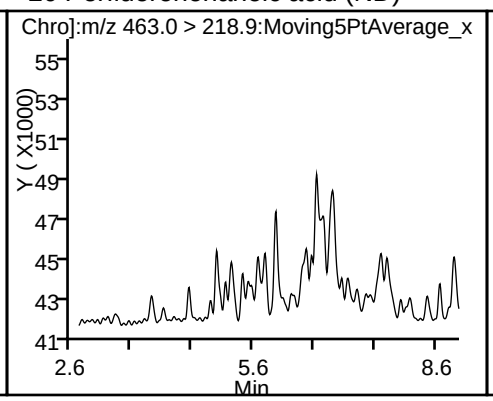
* 21 13C5 PFNA (IS)



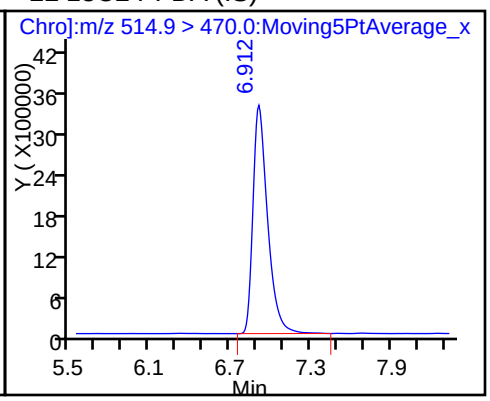
20 Perfluorononanoic acid (ND)



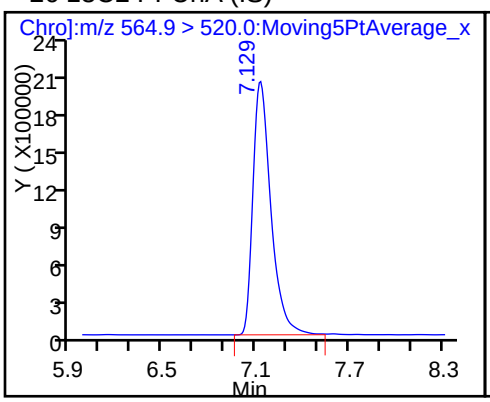
20 Perfluorononanoic acid (ND)



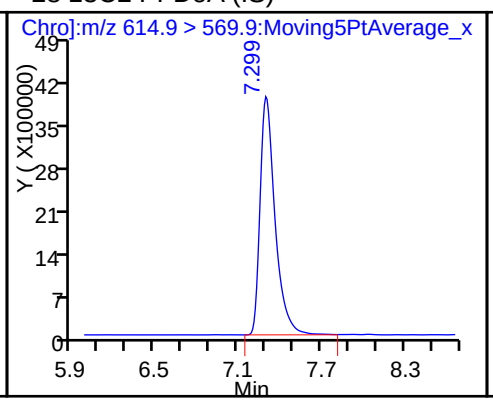
* 22 13C2 PFDA (IS)



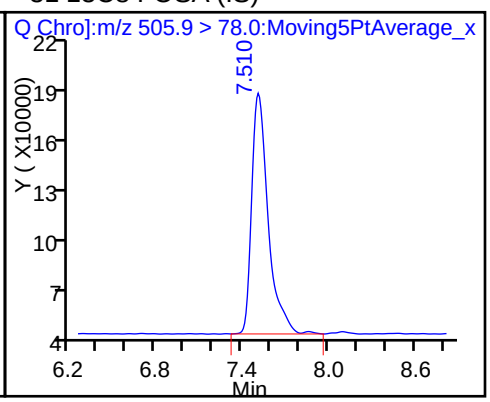
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: ANG-CB-EB-091616 | Lab Sample ID: 280-88381-20

Matrix: Water | Lab File ID: PC516I028091.d

Analysis Method: DV-LC-0012 | Date Collected: 09/16/2016 15:40

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 287.6(mL) | Date Analyzed: 09/28/2016 22:05

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0072	U	0.017	0.0072
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.011	U	0.026	0.011
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0061	U	0.026	0.0061
375-95-1	Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.026	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0085	U	0.017	0.0085

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	112		60-155
STL01054	13C8 PFOS	118		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028091.d
Lims ID: 280-88381-B-20-A
Client ID: ANG-CB-EB-091616
Sample Type: Client
Inject. Date: 28-Sep-2016 22:05:48 ALS Bottle#: 0 Worklist Smp#: 15
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-B-20-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:36 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:56:10

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.755	3.906	-0.151		25575149	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.137				ND			
298.9 > 98.9		5.137							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.572	5.601	-0.029		18873842	10.0			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.035				ND			
398.9 > 98.9		6.035							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.026				ND			
363.0 > 168.9		6.026							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.016	6.035	-0.019		2070846	9.46			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.357	6.376	-0.019		30088069	10.0			
$ 14 13C8 PFOA									
421.0 > 375.9	6.356	6.375	-0.019	1.000	25030730	11.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.376				ND			
413.0 > 169.0		6.376							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.639	6.648	-0.009		7378607	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.648				ND			
498.9 > 98.9		6.648							
$ 18 13C8 PFOS									
506.9 > 80.0	6.638	6.648	-0.010	1.000	4381441	10.9			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.649	6.668	-0.019		24072787	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.668				ND			
463.0 > 218.9		6.668							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.903	6.912	-0.009		24190735	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.110	7.120	-0.010		16164561	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.289	7.299	-0.010		31708910	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.491	7.510	-0.019		1063671	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

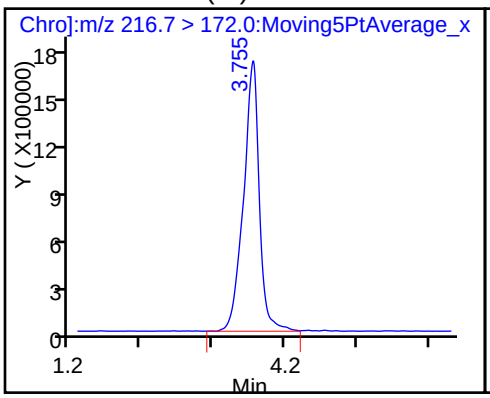
Report Date: 29-Sep-2016 11:09:39 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

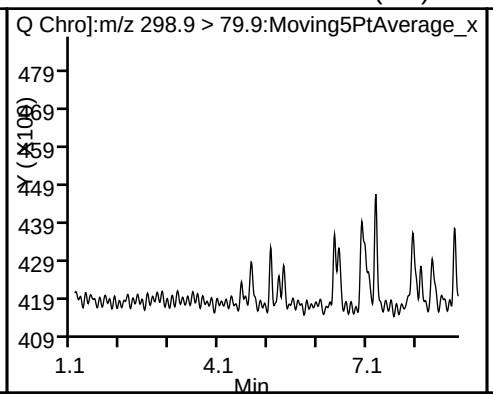
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028091.d

Injection Date:	28-Sep-2016 22:05:48	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-B-20-A	Lab Sample ID:	280-88381-20		
Client ID:	ANG-CB-EB-091616				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	15
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

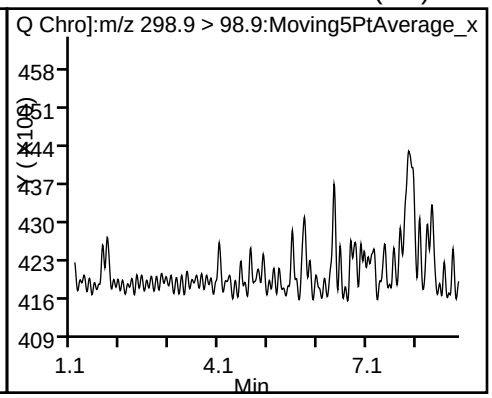
* 1 13C4 PFBA (IS)



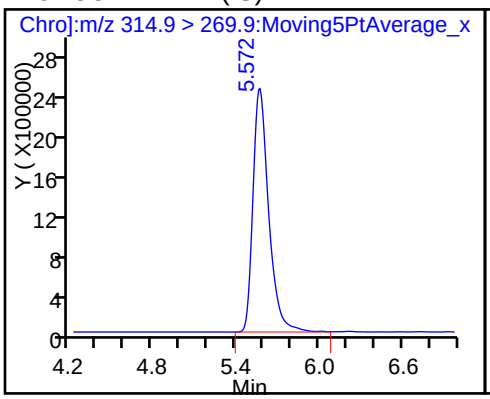
4 Perfluorobutane Sulfonate (ND)



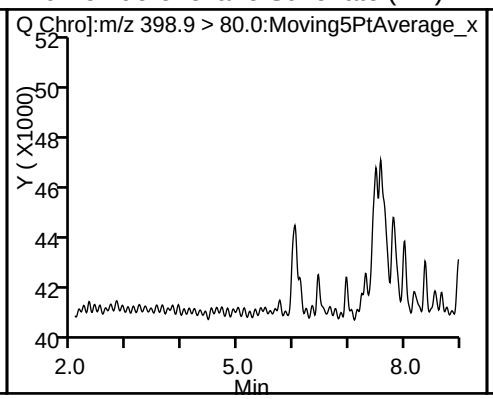
4 Perfluorobutane Sulfonate (ND)



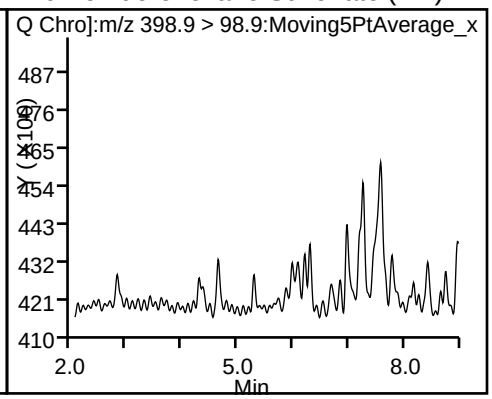
* 6 13C2 PFHxA (IS)



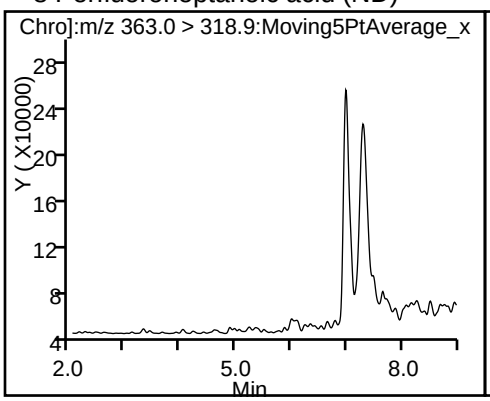
10 Perfluorohexane Sulfonate (ND)



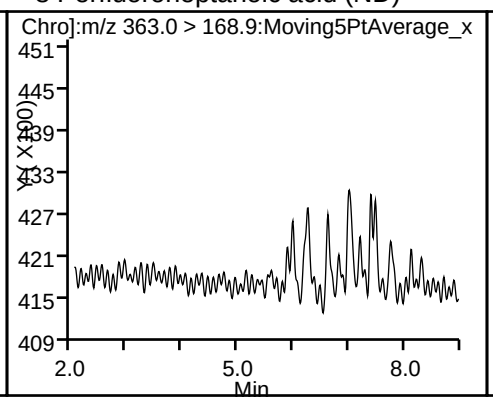
10 Perfluorohexane Sulfonate (ND)



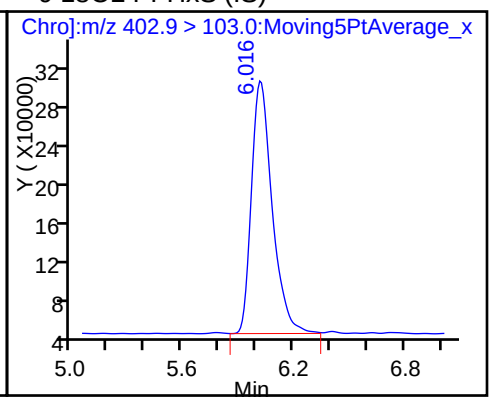
8 Perfluoroheptanoic acid (ND)



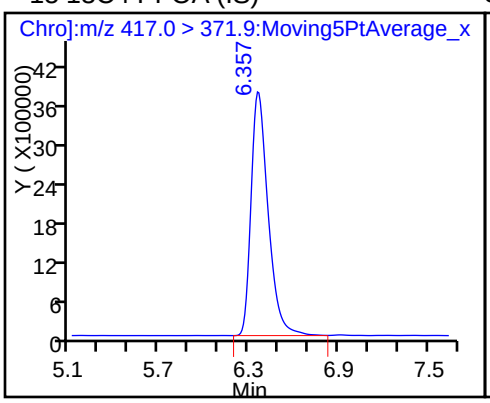
8 Perfluoroheptanoic acid (ND)



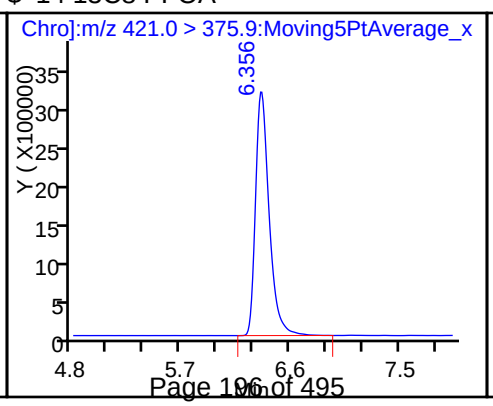
* 9 18O2 PFHxS (IS)



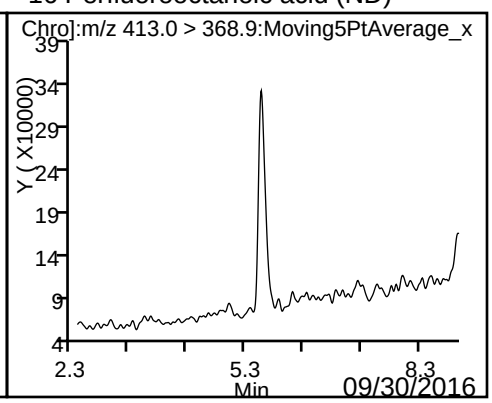
* 15 13C4 PFOA (IS)



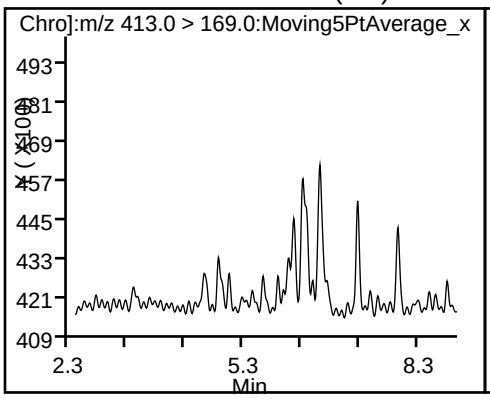
$ 14 13C8 PFOA



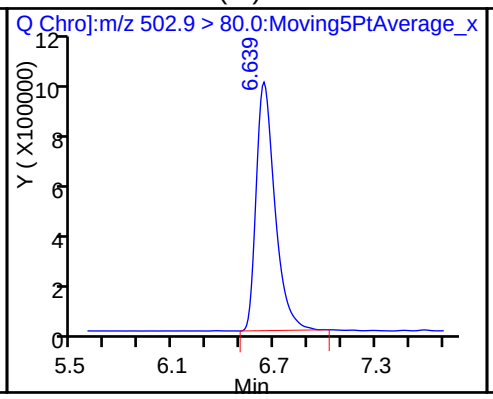
16 Perfluorooctanoic acid (ND)



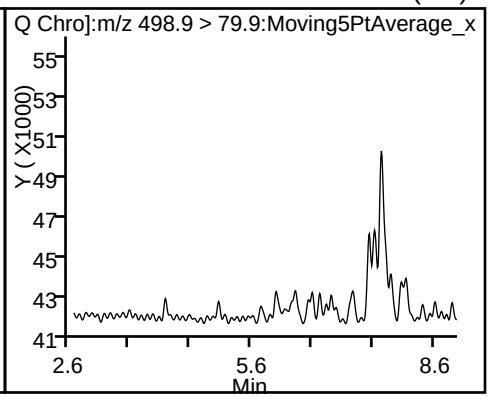
16 Perfluorooctanoic acid (ND)



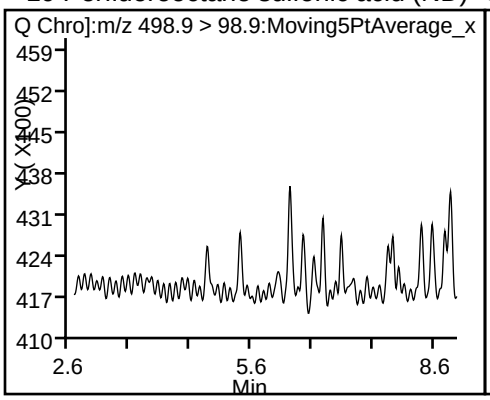
* 17 13C4 PFOS (IS)



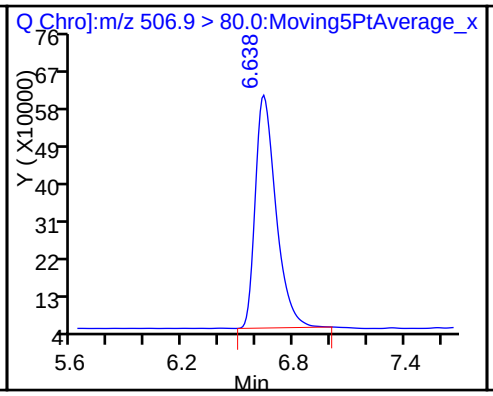
19 Perfluorooctane sulfonic acid (ND)



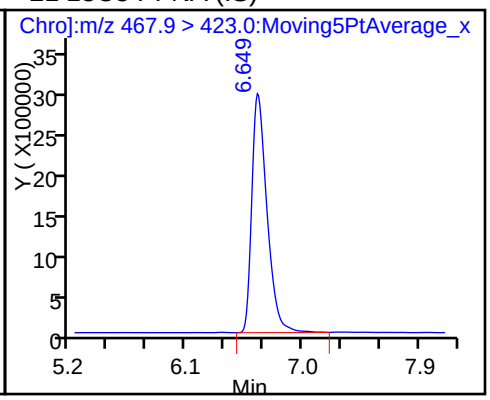
19 Perfluorooctane sulfonic acid (ND)



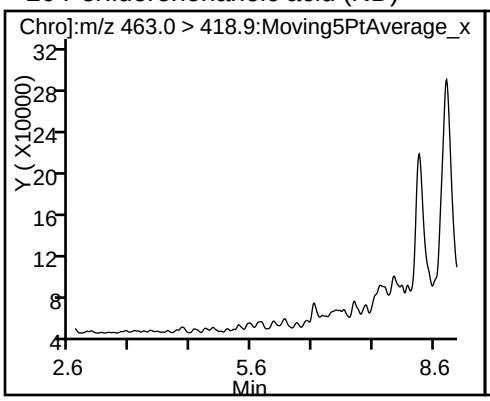
$ 18 13C8 PFOS



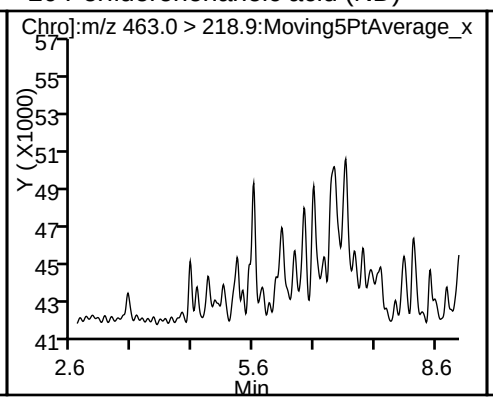
* 21 13C5 PFNA (IS)



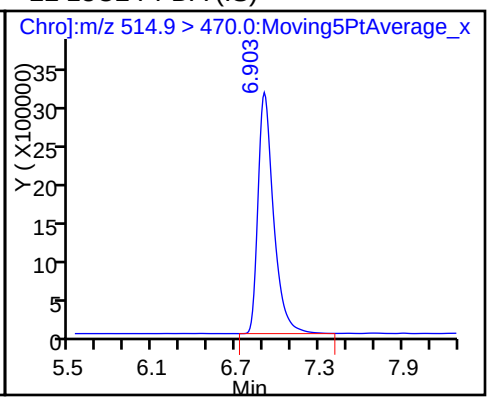
20 Perfluorononanoic acid (ND)



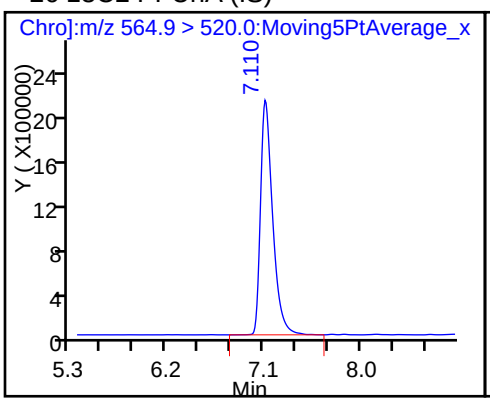
20 Perfluorononanoic acid (ND)



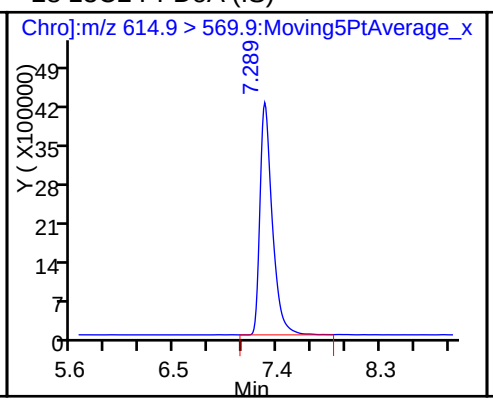
* 22 13C2 PFDA (IS)



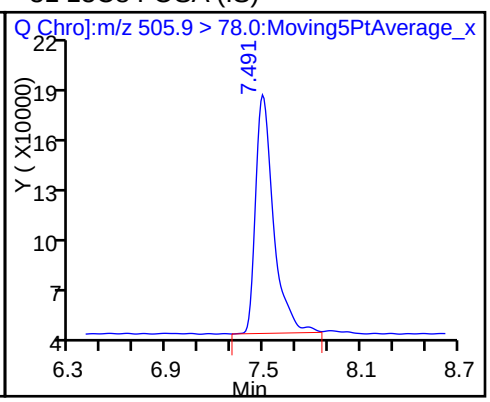
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: ANG-FB-091616 | Lab Sample ID: 280-88381-21

Matrix: Water | Lab File ID: PC516I028092.d

Analysis Method: DV-LC-0012 | Date Collected: 09/16/2016 15:50

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 281.6(mL) | Date Analyzed: 09/28/2016 22:18

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0073	U	0.018	0.0073
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.027	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0062	U	0.027	0.0062
375-95-1	Perfluorononanoic acid (PFNA)	0.015	U	0.036	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.027	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0087	U	0.018	0.0087

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	115		60-155
STL01054	13C8 PFOS	117		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028092.d
Lims ID: 280-88381-A-21-A
Client ID: ANG-FB-091616
Sample Type: Client
Inject. Date: 28-Sep-2016 22:18:07 ALS Bottle#: 0 Worklist Smp#: 16
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-21-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:36 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:56:40

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.812	3.906	-0.094		24547914	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.137				ND			
298.9 > 98.9		5.137							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.620	5.601	0.019		18258164	10.0			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.035				ND			
398.9 > 98.9		6.035							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.026				ND			
363.0 > 168.9		6.026							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.073	6.035	0.038		1964923	9.46			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.395	6.376	0.019		27894007	10.0			
$ 14 13C8 PFOA									
421.0 > 375.9	6.394	6.375	0.019	1.000	23964637	11.3			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.376				ND			
413.0 > 169.0		6.376							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.676	6.648	0.028		6967640	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.648				ND			
498.9 > 98.9		6.648							
$ 18 13C8 PFOS									
506.9 > 80.0	6.667	6.648	0.019	0.999	4130818	10.9			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.687	6.668	0.019		22583957	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.668				ND			
463.0 > 218.9		6.668							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.941	6.912	0.029		23162370	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.148	7.120	0.028		14612887	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.337	7.299	0.038		25575982	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.557	7.510	0.047		865608	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

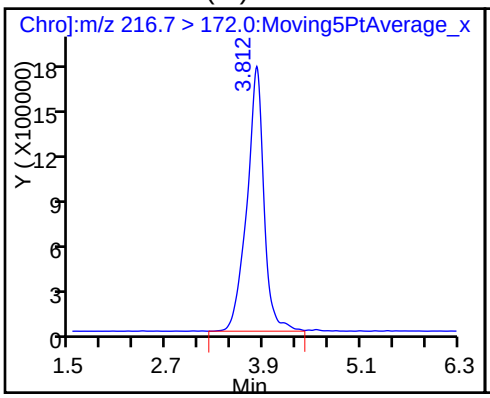
Report Date: 29-Sep-2016 11:09:42 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

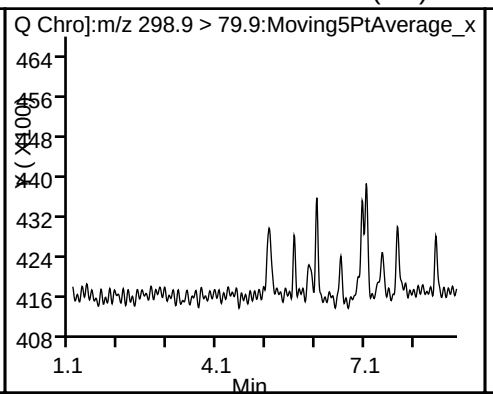
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028092.d

Injection Date:	28-Sep-2016 22:18:07	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-A-21-A	Lab Sample ID:	280-88381-21		
Client ID:	ANG-FB-091616				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	16
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		

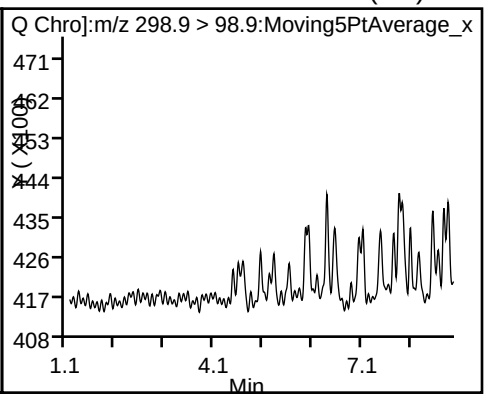
* 1 13C4 PFBA (IS)



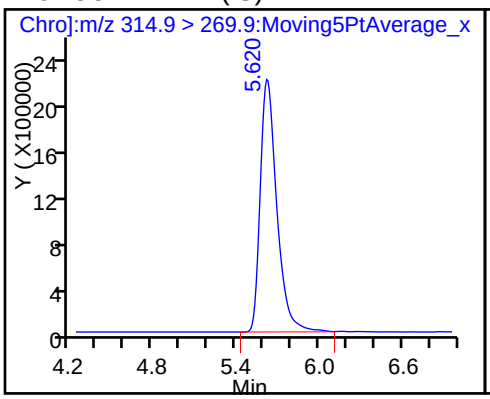
4 Perfluorobutane Sulfonate (ND)



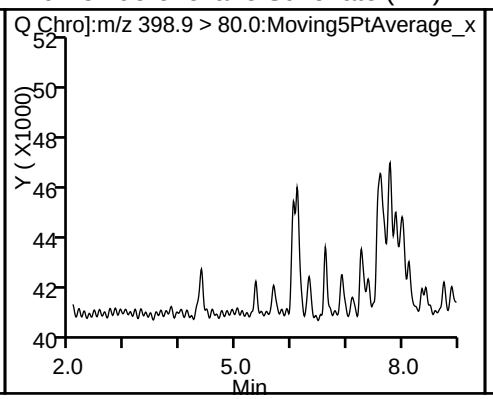
4 Perfluorobutane Sulfonate (ND)



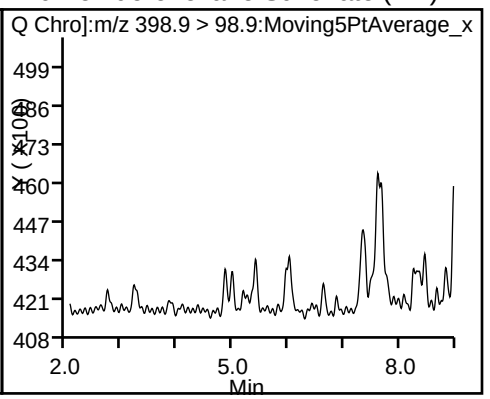
* 6 13C2 PFHxA (IS)



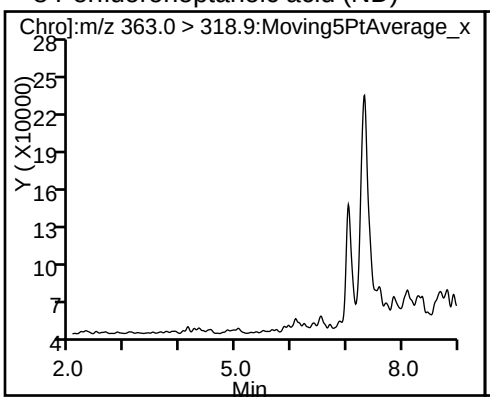
10 Perfluorohexane Sulfonate (ND)



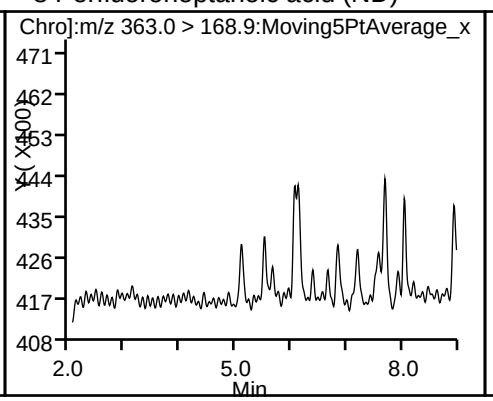
10 Perfluorohexane Sulfonate (ND)



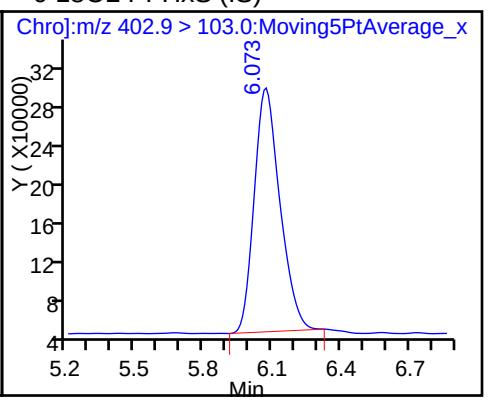
8 Perfluoroheptanoic acid (ND)



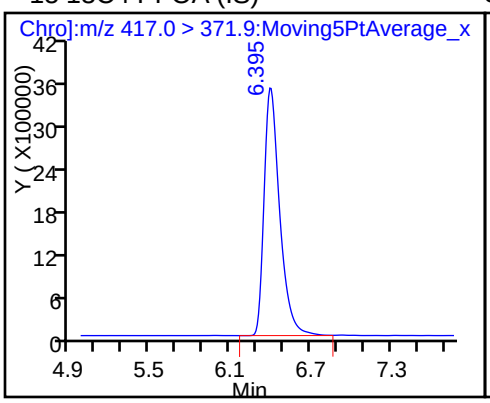
8 Perfluoroheptanoic acid (ND)



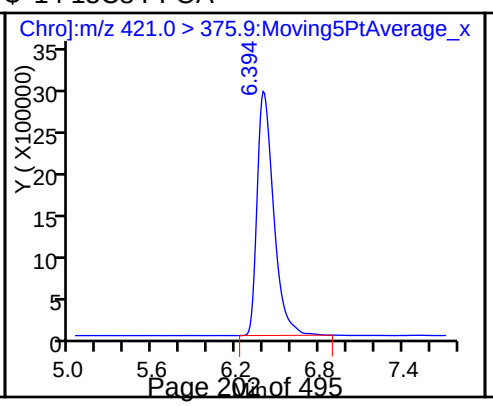
* 9 18O2 PFHxS (IS)



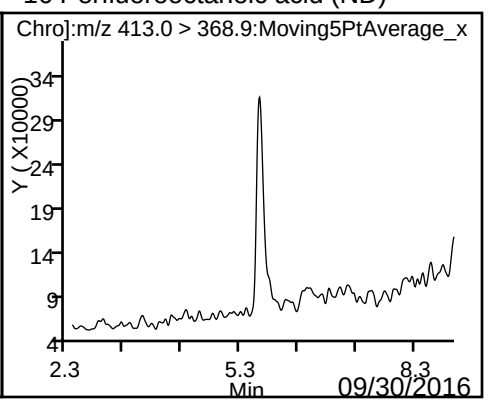
* 15 13C4 PFOA (IS)



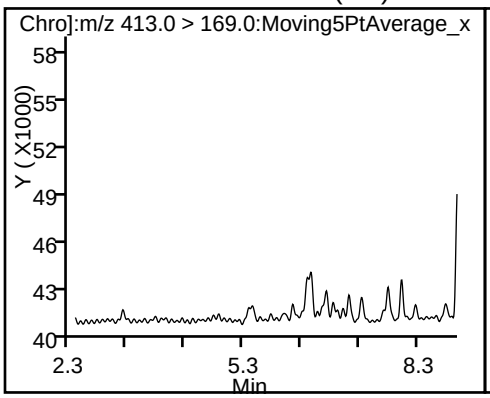
$ 14 13C8 PFOA



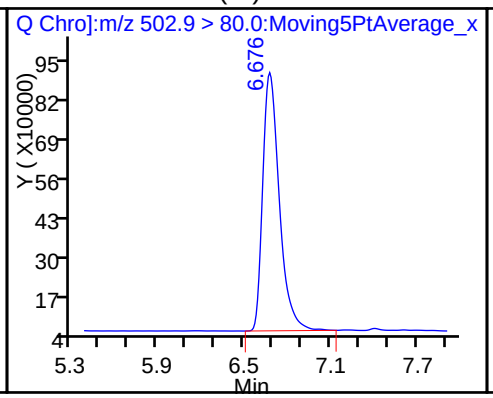
16 Perfluorooctanoic acid (ND)



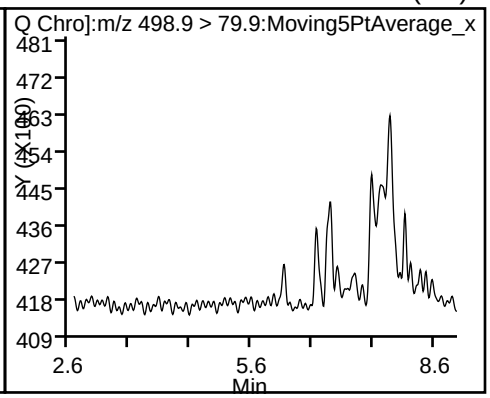
16 Perfluorooctanoic acid (ND)



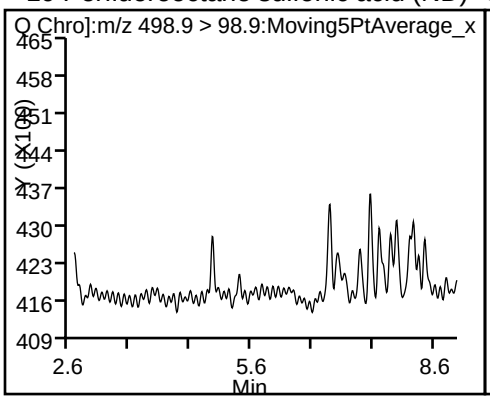
* 17 13C4 PFOS (IS)



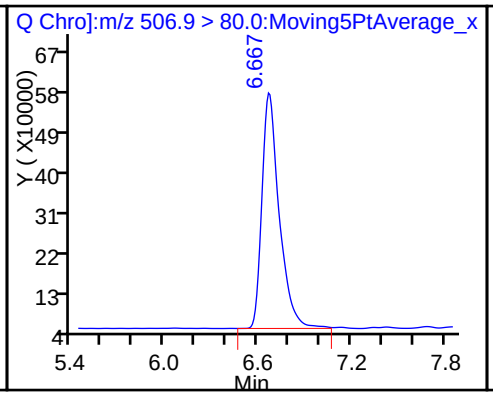
19 Perfluorooctane sulfonic acid (ND)



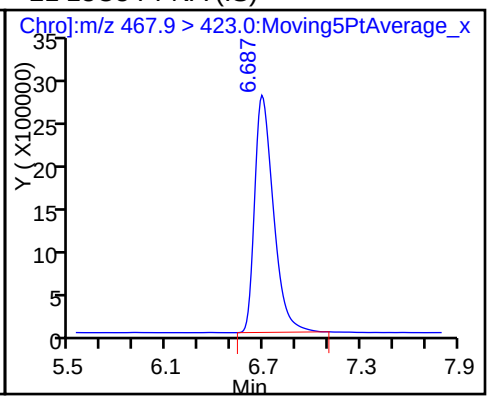
19 Perfluorooctane sulfonic acid (ND)



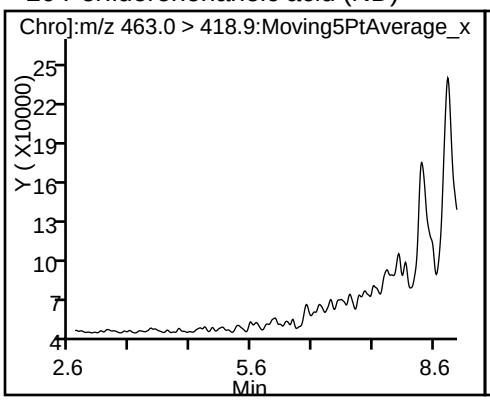
$ 18 13C8 PFOS



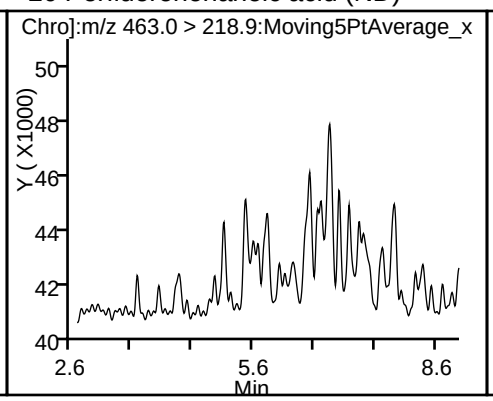
* 21 13C5 PFNA (IS)



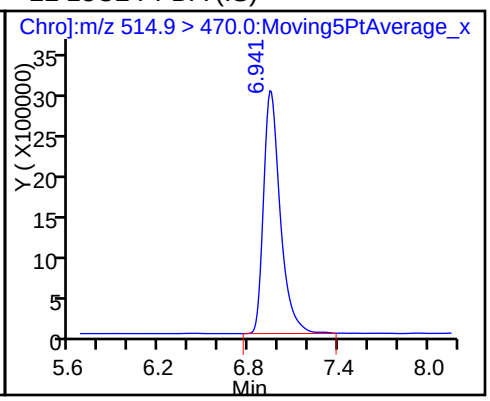
20 Perfluorononanoic acid (ND)



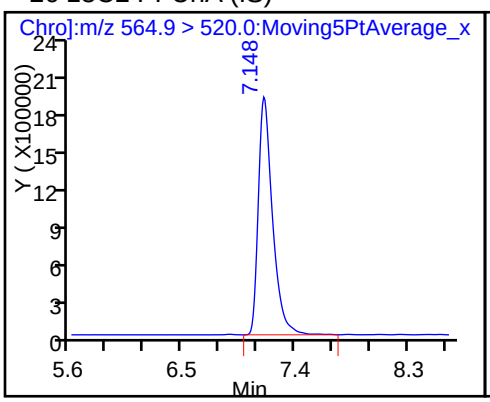
20 Perfluorononanoic acid (ND)



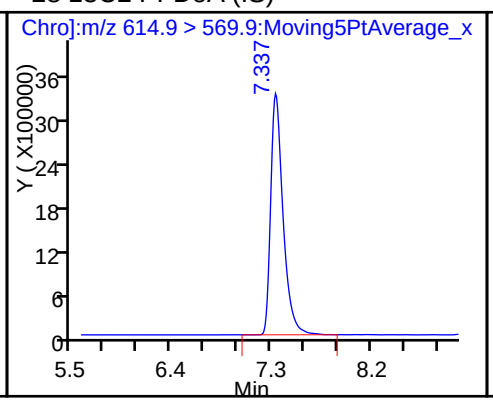
* 22 13C2 PFDA (IS)



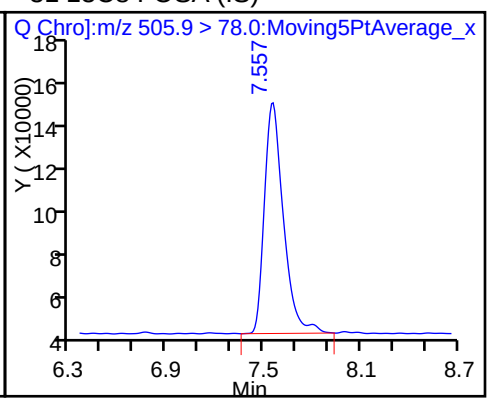
* 26 13C2 PFUnA (IS)



* 28 13C2 PFDoA (IS)



* 31 13C8 FOSA (IS)



FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-88381-1 Analy Batch No.: 343000

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2016 16:19 Calibration End Date: 09/20/2016 17:57 Calibration ID: 27083

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-343000/3	PC516I020006.d
Level 2	STD0005 280-343000/4	PC516I020007.d
Level 3	STD0010 280-343000/5	PC516I020008.d
Level 4	STD0020 280-343000/6	PC516I020009.d
Level 5	STD0050 280-343000/7	PC516I020010.d
Level 6	STD0100 280-343000/8	PC516I020011.d
Level 7	STD0200 280-343000/9	PC516I020012.d
Level 8	STD0500 280-343000/10	PC516I020013.d
Level 9	STD1250 280-343000/11	PC516I020014.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.9891 1.0881	1.0286 1.1324	1.0523 1.1515	1.1355 1.1627	1.1546	Lin2	-0.033	1.1319							0.9990		0.9800
Perfluoropentanoic acid (PFPA)	1.1249 1.1662	1.0705 1.1583	0.9972 1.0964	1.0562 1.0497	1.1073	Lin2	0.0011	1.0908							0.9970		0.9800
Perfluorobutane Sulfonate (PFBS)	4.2197 5.1419	4.8544 4.7559	4.6395 5.0205	4.9592 4.7222	5.0854	Lin2	-0.122	4.9584							0.9990		0.9800
Perfluorobutanesulfonic acid (PFBS)	4.2197 5.1419	4.8544 4.7559	4.6395 5.0205	4.9592 4.7222	5.0854	Lin2	-0.122	4.9584							0.9990		0.9800
Perfluorohexanoic acid (PFHxA)	1.0481 0.9355	1.0142 0.9612	0.8667 0.9390	0.9327 0.9419	0.9687	Lin2	0.0219	0.9348							0.9980		0.9800
Perfluorohexane Sulfonate (PFHxS)	3.6521 4.0320	4.2030 3.6097	3.6175 3.6937	3.8840 3.5079	3.7297	Lin2	0.0082	3.7614							0.9960		0.9800
Perfluorohexanesulfonic acid	3.6521 4.0320	4.2030 3.6097	3.6175 3.6937	3.8840 3.5079	3.7297	Lin2	0.0082	3.7614							0.9960		0.9800
Perfluoroheptanoic acid (PFHpA)	0.8547 0.9809	0.9462 0.9783	1.0230 0.9485	1.0649 0.8868	1.0222	Lin2	-0.023	0.9896							0.9960		0.9800
Perfluoroheptane Sulfonate	0.8894 1.1442	1.1223 1.1611	1.3279 1.1380	1.2507 1.0772	1.1999	Lin2	-0.048	1.1952							0.9930		0.9800
Perfluoroheptanesulfonic Acid (PFHpS)	0.8894 1.1442	1.1223 1.1611	1.3279 1.1380	1.2507 1.0772	1.1999	Lin2	-0.048	1.1952							0.9930		0.9800
Perfluorooctanoic acid (PFOA)	1.5934 1.0375	1.1580 1.0692	1.1613 0.9785	1.1930 0.9070	1.1246	Lin2	0.1098	1.0275							0.9930		0.9800
Perfluorooctanesulfonic acid (PFOS)	1.0469 1.2369	1.2871 1.2309	1.3094 1.2190	1.3033 1.0649	1.3290	Lin2	-0.028	1.2538							0.9930		0.9800
Perfluorononanoic acid (PFNA)	0.8004 1.1285	1.1651 1.1279	1.0744 1.1572	1.1361 1.1768	1.1923	Lin2	-0.065	1.1710							0.9970		0.9800

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-88381-1 Analy Batch No.: 343000

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2016 16:19 Calibration End Date: 09/20/2016 17:57 Calibration ID: 27083

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	0.9537 1.0267	1.0098 1.0143	1.0473 1.0327	1.0659 1.0252	1.0626	Lin2	-0.016	1.0425							1.0000		0.9800
Perfluorodecane sulfonate (PFDS)	1.2634 1.2334	1.1320 1.2505	1.2133 1.3236	1.2542 1.2544	1.3132	Lin2	-0.008	1.2569							0.9980		0.9800
Perfluorodecane Sulfonic acid	1.2634 1.2334	1.1320 1.2505	1.2133 1.3236	1.2542 1.2544	1.3132	Lin2	-0.008	1.2569							0.9980		0.9800
Perfluoroundecanoic acid (PFUnA)	1.5739 1.3851	1.7377 1.5007	1.2794 1.3921	1.4758 1.4262	1.4720	Lin2	0.0393	1.4327							0.9920		0.9800
Perfluorododecanoic acid (PFDoA)	1.2979 0.9580	1.1616 1.0407	1.0417 1.0214	1.0633 0.9839	1.0049	Lin2	0.0612	1.0033							0.9990		0.9800
Perfluorooctane Sulfonamide (FOSA)	1.0411 1.0659	1.0126 1.0500	1.0063 1.1047	1.0615 1.0867	1.0688	Lin2	-0.009	1.0643							0.9990		0.9800
Perfluorotridecanoic Acid (PFTriA)	1.1055 0.8105	0.9482 0.9135	0.8221 0.8440	0.9441 0.8429	0.8544	Lin2	0.0494	0.8496							0.9960		0.9800
Perfluorotetradecanoic acid (PFTeA)	0.7613 0.6635	0.7150 0.6918	0.7360 0.6880	0.7058 0.7240	0.6470	Lin2	0.0153	0.6885							0.9980		0.9800
13C8 PFOA	0.9276 0.8090	0.8278 0.7591	0.8783 0.7211	0.8585 0.6644	0.6986	Lin2	0.0386	0.7557							0.9920		0.9800
13C8 PFOS	0.6247 0.5507	0.5348 0.5211	0.5786 0.5230	0.5779 0.4691	0.4755	Lin2	0.0205	0.5184							0.9940		0.9800

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-88381-1 Analy Batch No.: 343000

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2016 16:19 Calibration End Date: 09/20/2016 17:57 Calibration ID: 27083

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-343000/3	PC516I020006.d
Level 2	STD0005 280-343000/4	PC516I020007.d
Level 3	STD0010 280-343000/5	PC516I020008.d
Level 4	STD0020 280-343000/6	PC516I020009.d
Level 5	STD0050 280-343000/7	PC516I020010.d
Level 6	STD0100 280-343000/8	PC516I020011.d
Level 7	STD0200 280-343000/9	PC516I020012.d
Level 8	STD0500 280-343000/10	PC516I020013.d
Level 9	STD1250 280-343000/11	PC516I020014.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorobutanoic acid (PFBA)	BA	Lin2	682936 39994617	1742818 82029519	3755353 198972066	7801285 480951659	21508338	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoropentanoic acid (PFPA)	HXA	Lin2	596265 30681331	1367324 57267566	2703740 133619150	5430816 298933771	14788775	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorobutane Sulfonate (PFBS)	HXS	Lin2	252908 14445668	666807 28027091	1369586 69260845	2681679 161962462	7803245	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorobutanesulfonic acid (PFBS)	HXS	Lin2	252908 14445668	666807 28027091	1369586 69260845	2681679 161962462	7803245	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorohexanoic acid (PFHxA)	HXA	Lin2	555579 24613489	1295461 47519775	2349804 114428545	4795970 268228608	12937453	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorohexane Sulfonate (PFHxS)	HXS	Lin2	233728 12095469	616468 22714973	1140290 54412052	2242658 128473186	6110899	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluorohexanesulfonic acid	HXS	Lin2	233728 12095469	616468 22714973	1140290 54412052	2242658 128473186	6110899	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluoroheptanoic acid (PFHpA)	OA	Lin2	708975 39162427	1920865 72349928	4272752 164642017	8487907 347876937	21193966	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoroheptane Sulfonate	PFOS	Lin2	171875 12243357	548423 24270254	1325168 56871258	2461873 131546462	6391370	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluoroheptanesulfonic Acid (PFHpS)	PFOS	Lin2	171875 12243357	548423 24270254	1325168 56871258	2461873 131546462	6391370	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluorooctanoic acid (PFOA)	OA	Lin2	1321664 41421645	2350756 79074145	4850788 169838921	9509302 355809526	23317286	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctanesulfonic acid (PFOS)	PFOS	Lin2	202960 13276185	630969 25808939	1310908 61111761	2573469 130448320	7101668	0.191 9.55	0.478 19.1	0.955 47.8	1.91 119	4.78
Perfluorononanoic acid (PFNA)	NA	Lin2	466026 31489647	1644354 57540613	3242858 122670542	6371593 254683894	17639095	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorodecanoic acid (PFDA)	DA	Lin2	603829 32237127	1635946 62256405	3434684 149162205	6791915 334740758	17812234	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-88381-1 Analy Batch No.: 343000

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 09/20/2016 16:19 Calibration End Date: 09/20/2016 17:57 Calibration ID: 27083

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorodecane sulfonate (PFDS)	PFOS	Lin2	247494 13377201	560734 26494674	1227412 67054900	2502401 155280095	7090518	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluorodecane Sulfonic acid	PFOS	Lin2	247494 13377201	560734 26494674	1227412 67054900	2502401 155280095	7090518	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluoroundecanoic acid (PFUnA)	UNA	Lin2	684499 31416385	2009228 59064684	2911504 132964459	6958474 263645691	17928204	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorododecanoic acid (PFDoA)	DOA	Lin2	1162879 44288615	2660622 87737859	4921591 205665191	9779034 439734706	25097670	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctane Sulfonamide (FOSA)	FOSA	Lin2	654507 36029063	1595267 69694265	3336168 168358537	7115039 367419064	18875705	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotridecanoic Acid (PFTriA)	DOA	Lin2	990505 37469820	2171801 77014763	3884039 169950610	8682233 376700238	21337792	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotetradecanoic acid (PFTeA)	DOA	Lin2	682095 30675115	1637658 58324850	3477326 138526186	6490819 323561373	16157441	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOA	OA	Lin2	769455 32297239	1680430 56135935	3668395 125163457	6842668 260626751	14485859	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOS	PFOS	Lin2	121240 5917562	262429 10938686	579880 26247769	1142284 57527663	2543536	0.191 9.56	0.478 19.1	0.956 47.8	1.91 120	4.78

Curve Type Legend:
Lin2 = Linear 1/conc^2 ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d
Lims ID: STD0002
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 20-Sep-2016 16:19:09 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0002, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:09:45 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:28:09

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.247	4.295	-0.048		34523529	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.238	4.295	-0.057	0.998	682936	0.2038			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.270	5.327	-0.057	0.901	596265	0.2053			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.412	5.440	-0.028	0.865	252908	0.1753			
298.9 > 98.9	5.374	5.440	-0.066	0.859	69973		3.61(2.57-2.57)		
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.412	5.440	-0.028	0.865	252908	0.1753			R
298.9 > 98.9	5.374	5.440	-0.066	0.859	69973		3.61(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.847	5.904	-0.057		26503710	10.0			
7 Perfluorohexanoic acid									M
313.0 > 268.9	5.828	5.904	-0.076	0.997	555579	0.2008			
313.0 > 118.6	5.913	5.904	0.009	1.011	3731		148.91(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.254	6.339	-0.085	0.950	708975	0.1956			
363.0 > 168.9	6.273	6.339	-0.066	0.953	169783		4.18(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.253	6.338	-0.085		3203295	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.244	6.339	-0.095	0.999	233728	0.1813			
398.9 > 98.9	6.225	6.339	-0.114	0.995	114405		2.04(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.244	6.339	-0.095	0.999	233728	0.1813			
398.9 > 98.9	6.225	6.339	-0.114	0.995	114405		2.04(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									M
449.0 > 79.9	6.564	6.678	-0.114	0.959	171875	0.1817			M
449.0 > 98.9	6.574	6.678	-0.104	0.960	51920		3.31(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									M
449.0 > 79.9	6.564	6.678	-0.114	0.959	171875	0.1817			M
449.0 > 98.9	6.574	6.678	-0.104	0.960	51920		3.31(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.574	6.688	-0.114	0.999	769455	0.1944			
16 Perfluorooctanoic acid									M
413.0 > 368.9	6.584	6.688	-0.104	1.000	1321664	0.2033			
413.0 > 169.0	6.603	6.688	-0.085	1.003	392651		3.37(2.86-5.31)		
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.584	6.688	-0.104		41474015	10.0			
$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.970	-0.105	1.003	121240	0.1909			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.847	6.961	-0.114		9703382	9.56			
19 Perfluorooctane sulfonic acid									RM
498.9 > 79.9	6.847	6.970	-0.123	1.000	202960	0.1815			RM
498.9 > 98.9	6.857	6.970	-0.113	1.001	74436		2.73(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.876	6.990	-0.114		29112662	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.848	6.990	-0.142	0.996	466026	0.1925			
463.0 > 218.9	6.886	6.990	-0.104	1.001	81365		5.73(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.234	-0.104		31656903	10.0			
23 Perfluorodecanoic acid									M
513.0 > 468.9	7.130	7.234	-0.104	1.000	603829	0.1985			M
513.0 > 219.0	7.111	7.234	-0.123	0.997	56261		10.73(10.49-19.48)		
25 Perfluorodecane Sulfonate									M
598.9 > 79.9	7.299	7.413	-0.114	1.066	247494	0.2004			
598.9 > 99.0	7.309	7.413	-0.104	1.067	85749		2.89(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									M
598.9 > 79.9	7.299	7.413	-0.114	1.066	247494	0.2004			M
598.9 > 99.0	7.119	7.413	-0.294	1.040	6767		36.57(2.84-2.84)		M
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.442	-0.104		21745479	10.0			
27 Perfluoroundecanoic acid									RM
563.0 > 518.9	7.329	7.452	-0.124	0.999	684499	0.1923			RM
563.0 > 268.9	7.329	7.452	-0.124	0.999	87886		7.79(3.47-6.45)		M
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.526	7.621	-0.095		44798200	10.0			
29 Perfluorododecanoic acid									R
613.0 > 568.9	7.536	7.621	-0.085	1.001	1162879	0.1977			R
613.0 > 168.9	7.526	7.621	-0.095	1.000	63937		18.19(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.677	7.782	-0.105	1.020	990505	0.2021			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.614	7.633	-0.019		31433171	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.634	7.634	0.0	1.003	654507	0.2042			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.800	7.904	-0.104	1.036	682095	0.1990			
712.9 > 169.0	7.838	7.904	-0.066	1.041	118836		5.74(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	10.00	Units: uL

Report Date: 21-Sep-2016 12:09:46 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d

Injection Date: 20-Sep-2016 16:19:09 Instrument ID: LC_LCMS5

Lims ID: STD0002

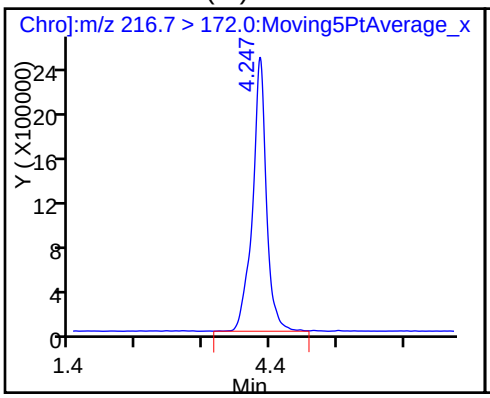
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

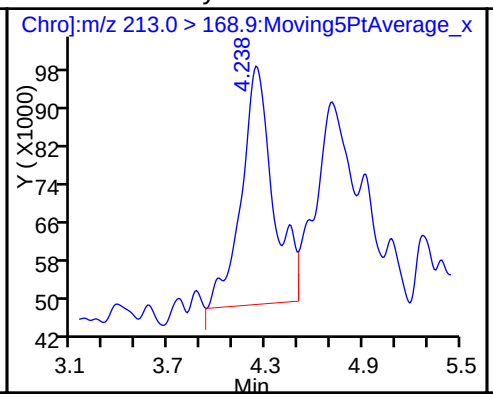
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

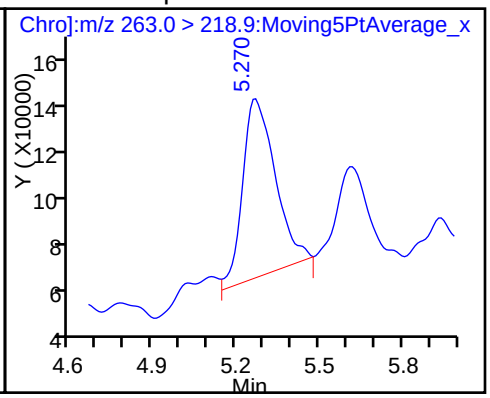
* 1 13C4 PFBA (IS)



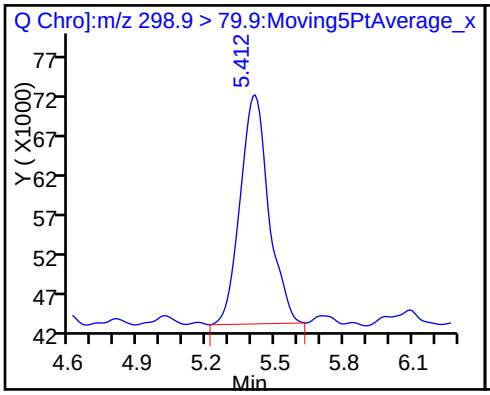
2 Perfluorobutyric acid



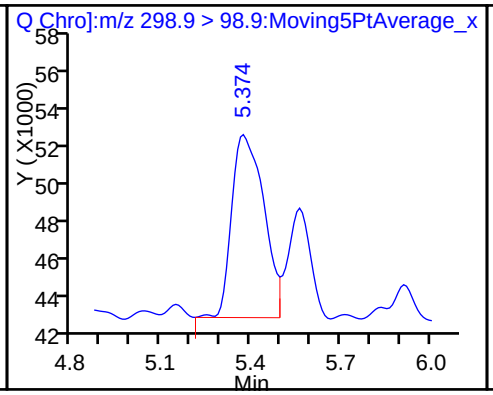
3 Perfluoropentanoic acid



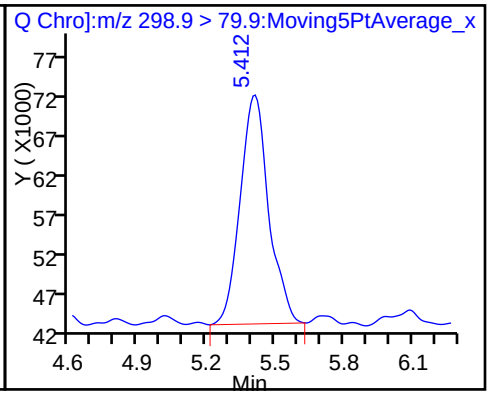
5 Perfluorobutanesulfonic acid



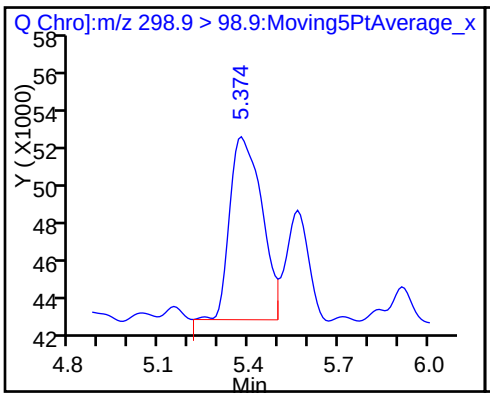
5 Perfluorobutanesulfonic acid



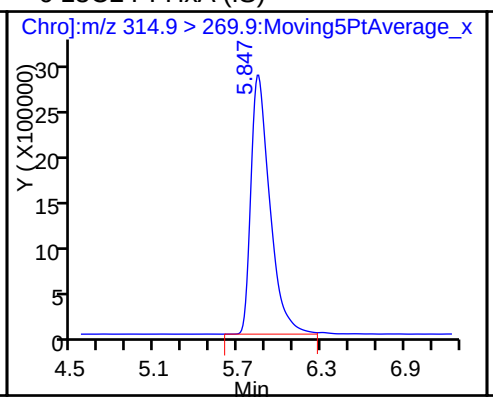
4 Perfluorobutane Sulfonate



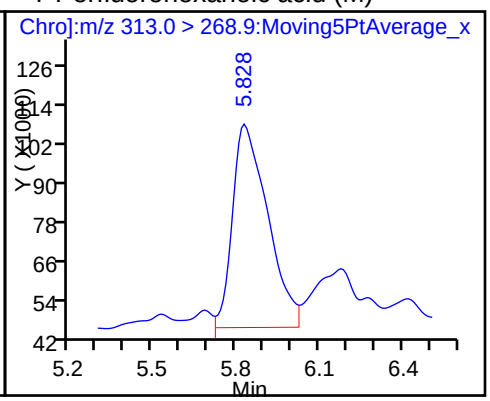
4 Perfluorobutane Sulfonate



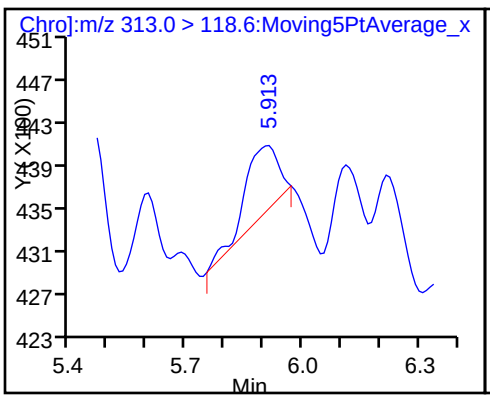
* 6 13C2 PFHxA (IS)



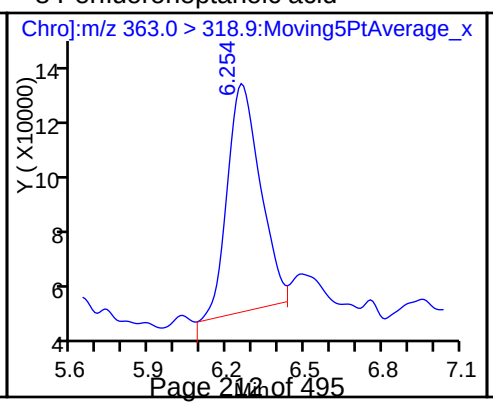
7 Perfluorohexanoic acid (M)



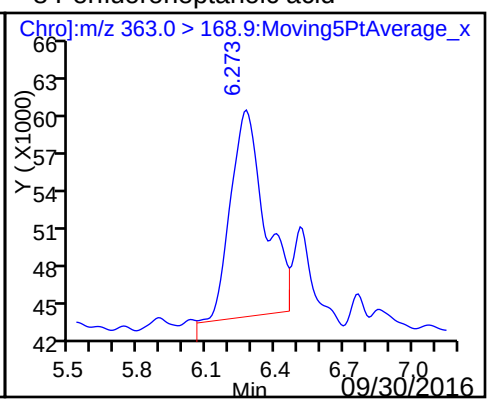
7 Perfluorohexanoic acid



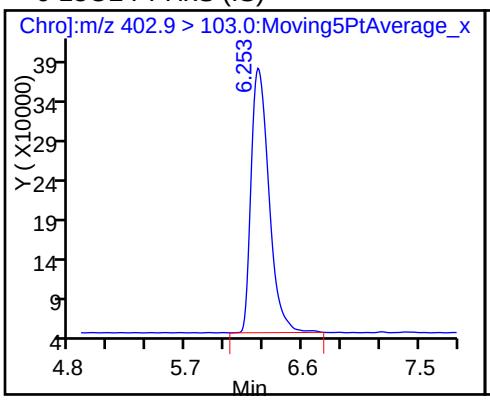
8 Perfluoroheptanoic acid



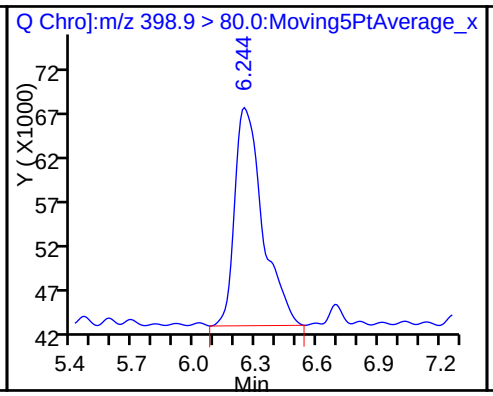
8 Perfluoroheptanoic acid



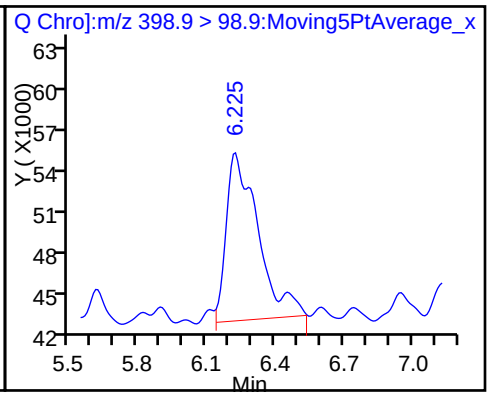
* 9 18O2 PFHxS (IS)



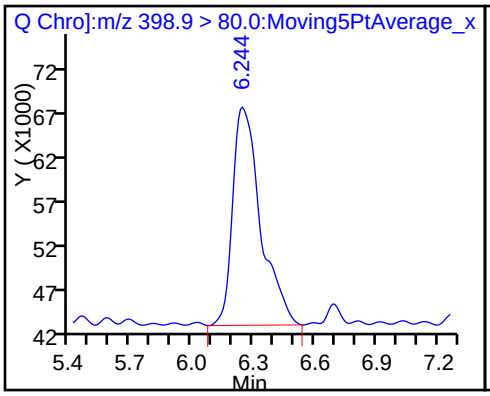
10 Perfluorohexane Sulfonate



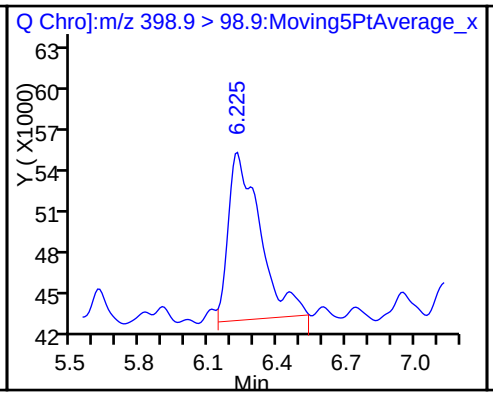
10 Perfluorohexane Sulfonate



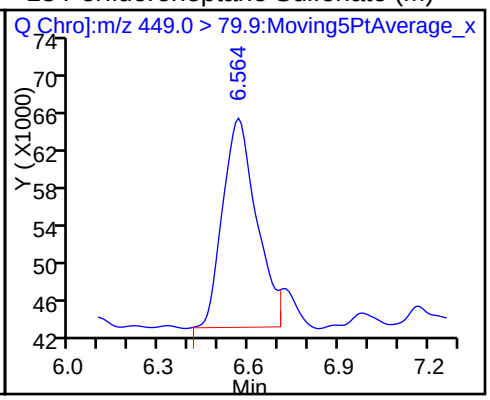
11 Perfluorohexanesulfonic acid



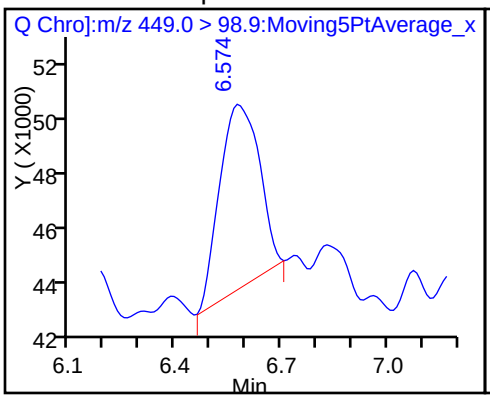
11 Perfluorohexanesulfonic acid



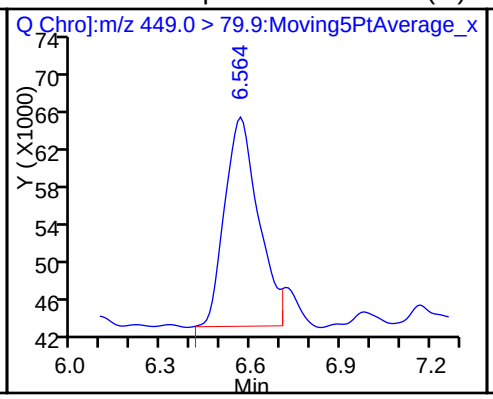
13 Perfluoroheptane Sulfonate (M)



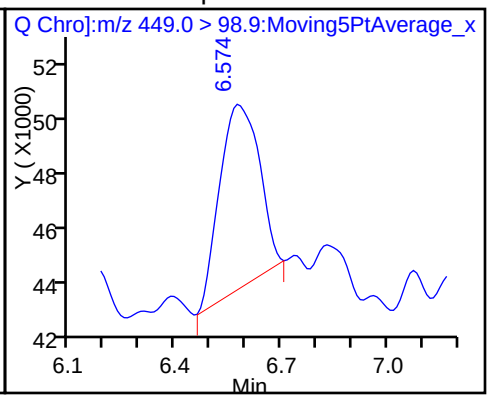
13 Perfluoroheptane Sulfonate



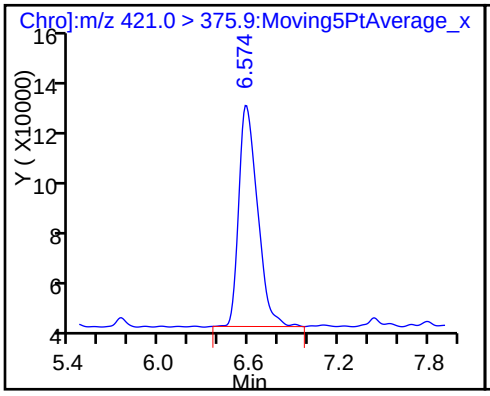
12 Perfluoroheptanesulfonic Acid (M)



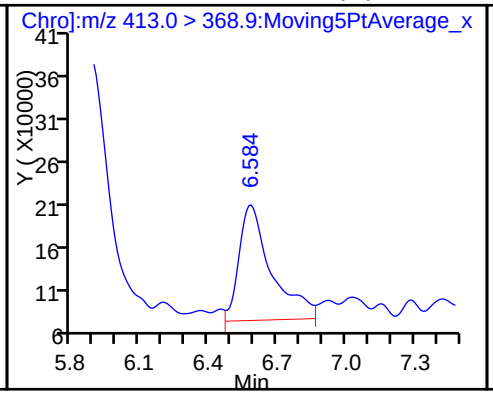
12 Perfluoroheptanesulfonic Acid



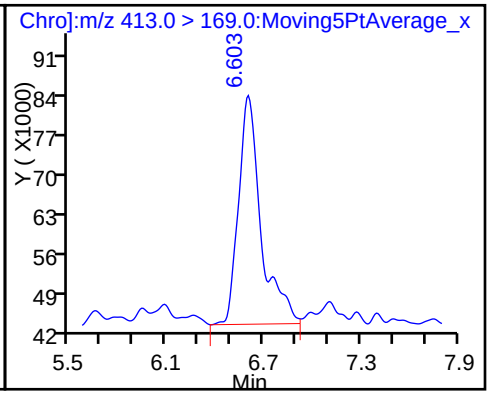
$ 14 13C8 PFOA



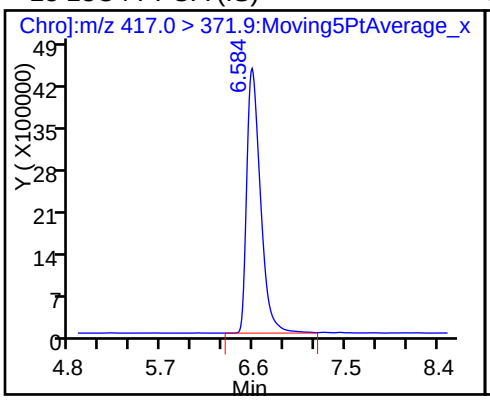
16 Perfluorooctanoic acid (M)



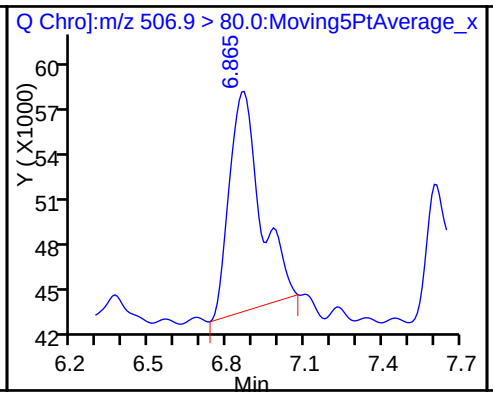
16 Perfluorooctanoic acid



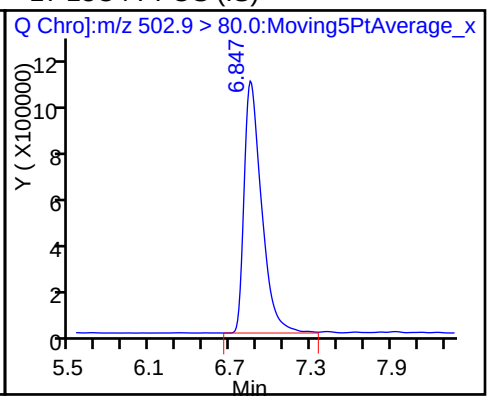
* 15 13C4 PFOA (IS)



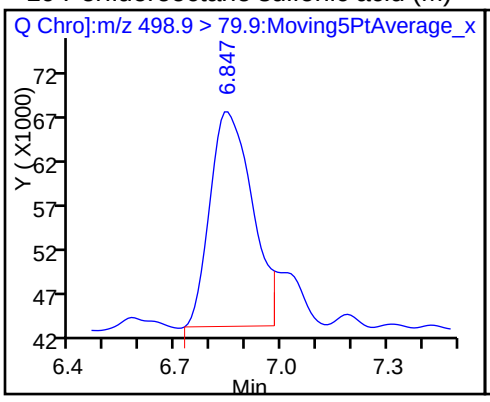
$ 18 13C8 PFOS



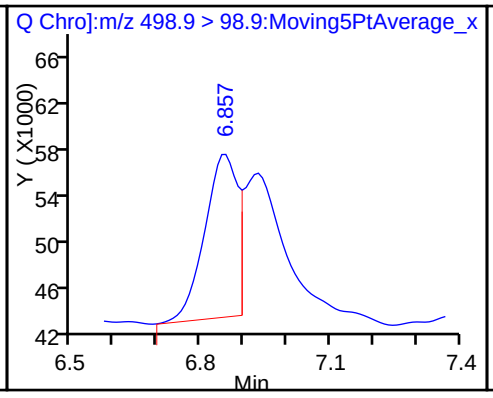
* 17 13C4 PFOS (IS)



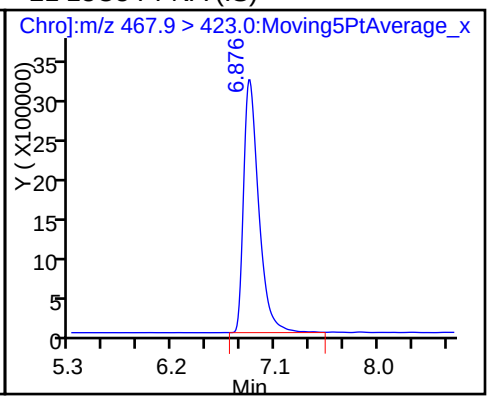
19 Perfluorooctane sulfonic acid (M)



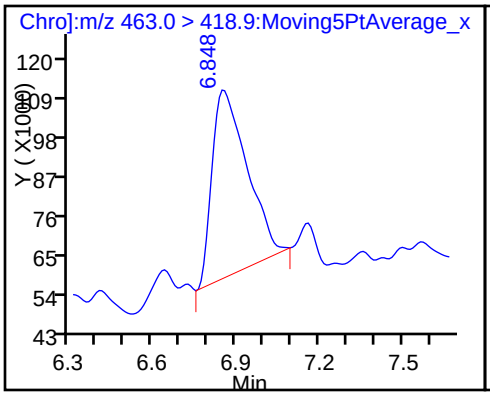
19 Perfluorooctane sulfonic acid



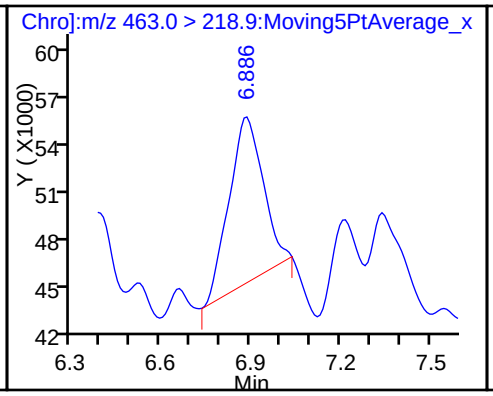
* 21 13C5 PFNA (IS)



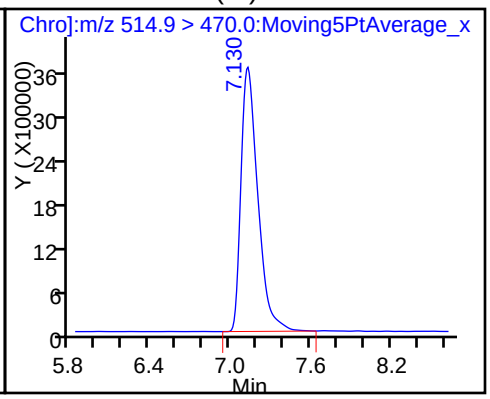
20 Perfluorononanoic acid



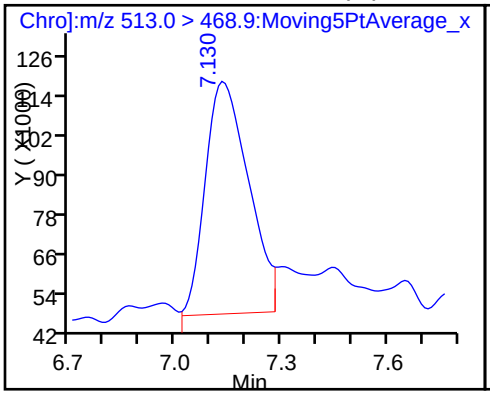
20 Perfluorononanoic acid



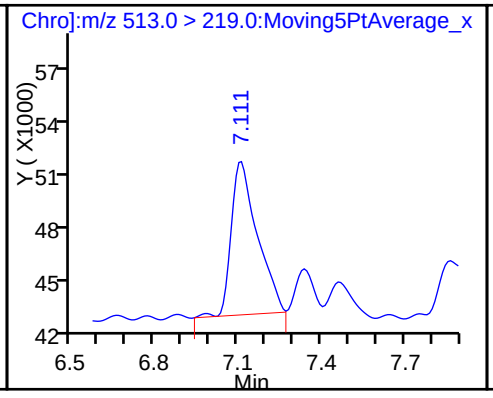
* 22 13C2 PFDA (IS)



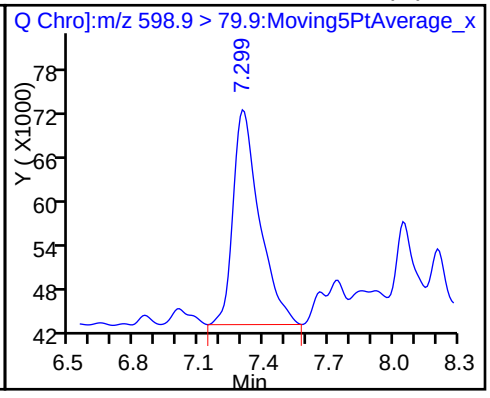
23 Perfluorodecanoic acid (M)



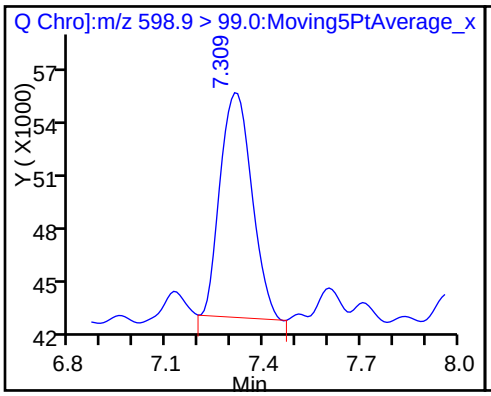
23 Perfluorodecanoic acid



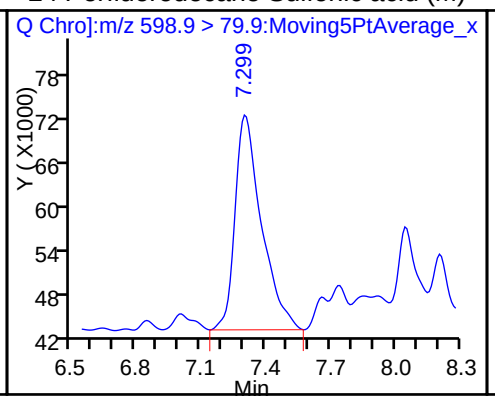
25 Perfluorodecane Sulfonate (M)



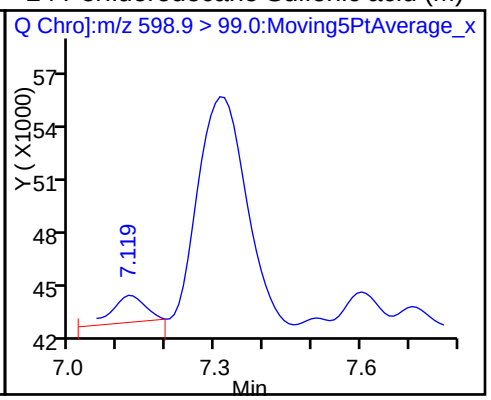
25 Perfluorodecane Sulfonate



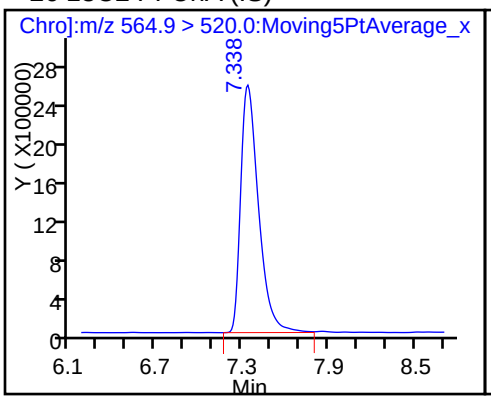
24 Perfluorodecane Sulfonic acid (M)



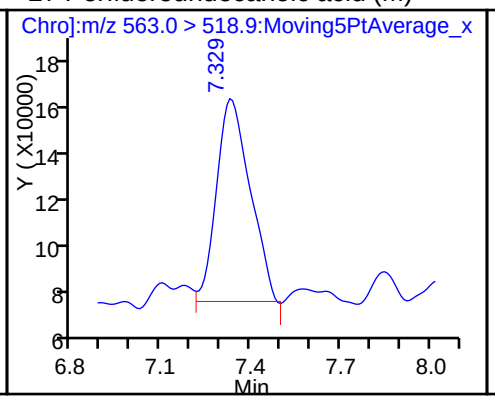
24 Perfluorodecane Sulfonic acid (M)



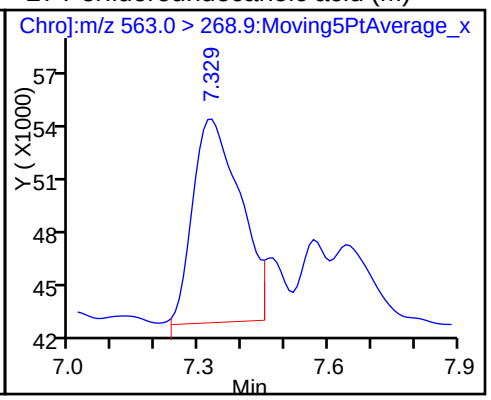
* 26 13C2 PFUnA (IS)



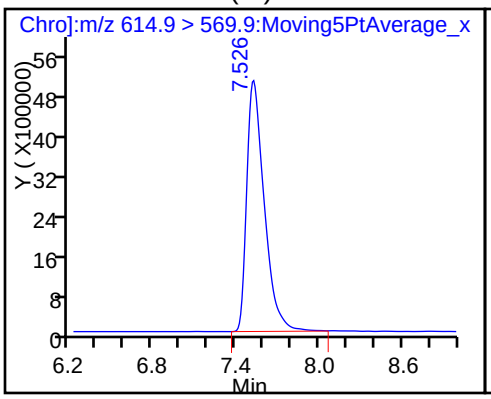
27 Perfluoroundecanoic acid (M)



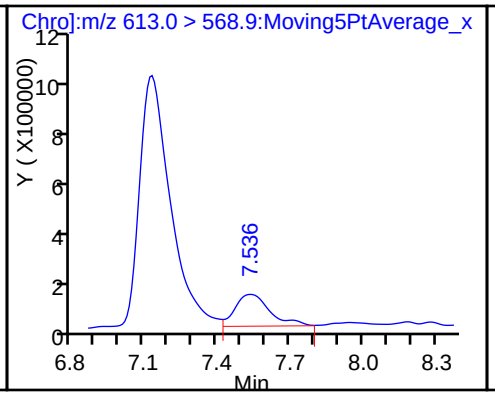
27 Perfluoroundecanoic acid (M)



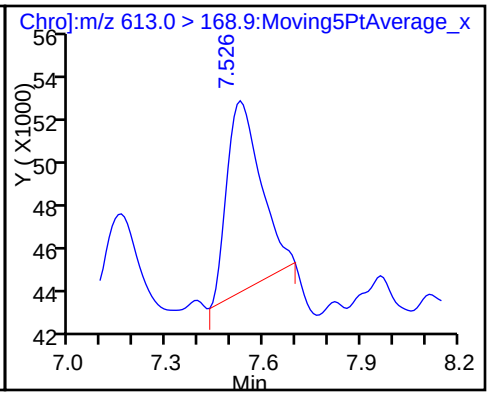
* 28 13C2 PFDoA (IS)



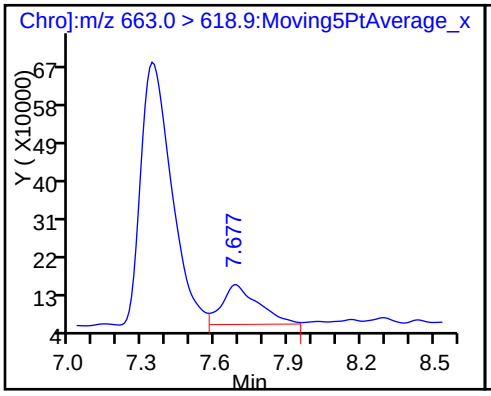
29 Perfluorododecanoic acid



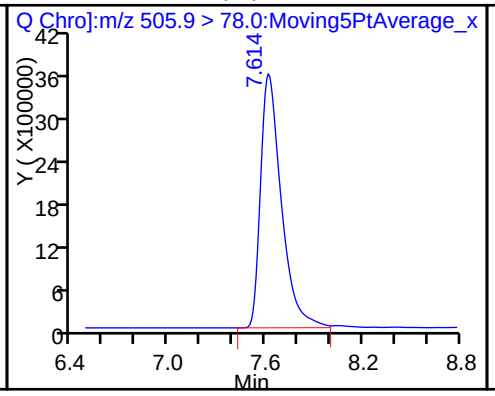
29 Perfluorododecanoic acid



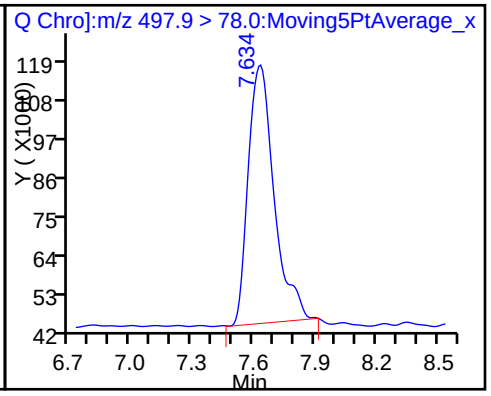
30 Perfluorotridecanoic acid



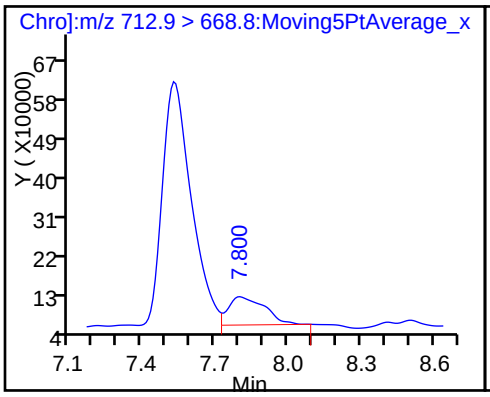
* 31 13C8 FOSA (IS)



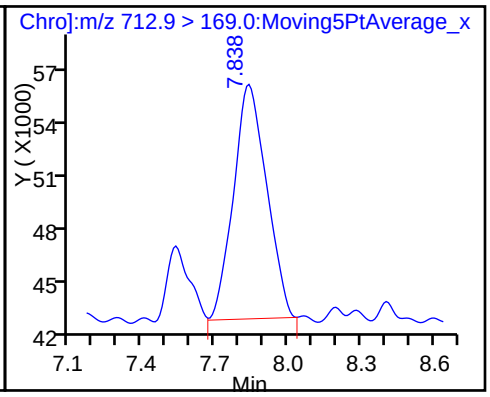
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver

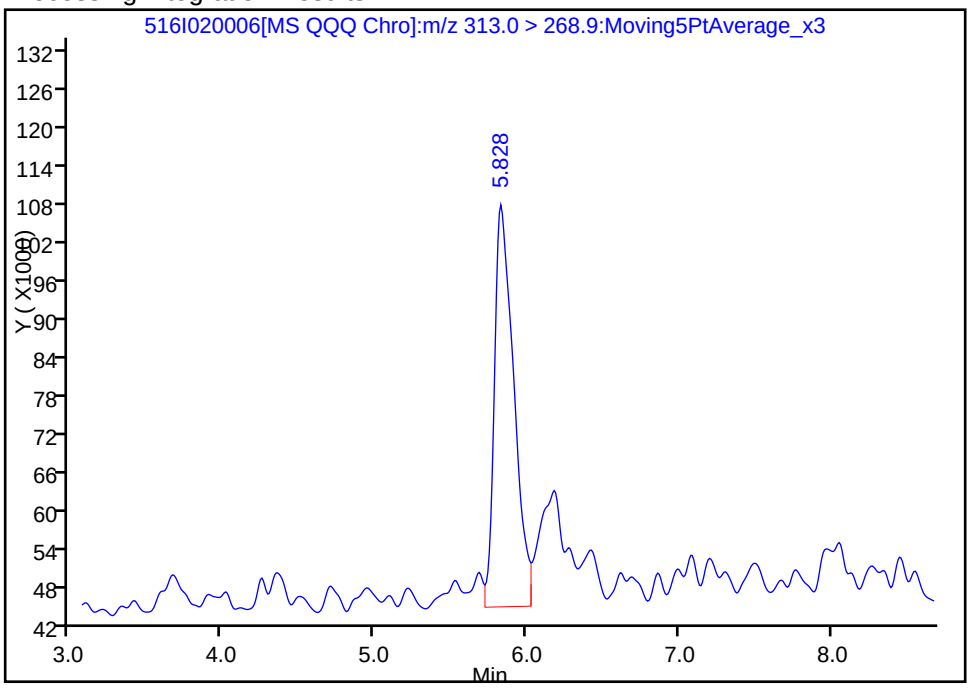
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d
Injection Date: 20-Sep-2016 16:19:09 Instrument ID: LC_LCMS5
Lims ID: STD0002
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

7 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

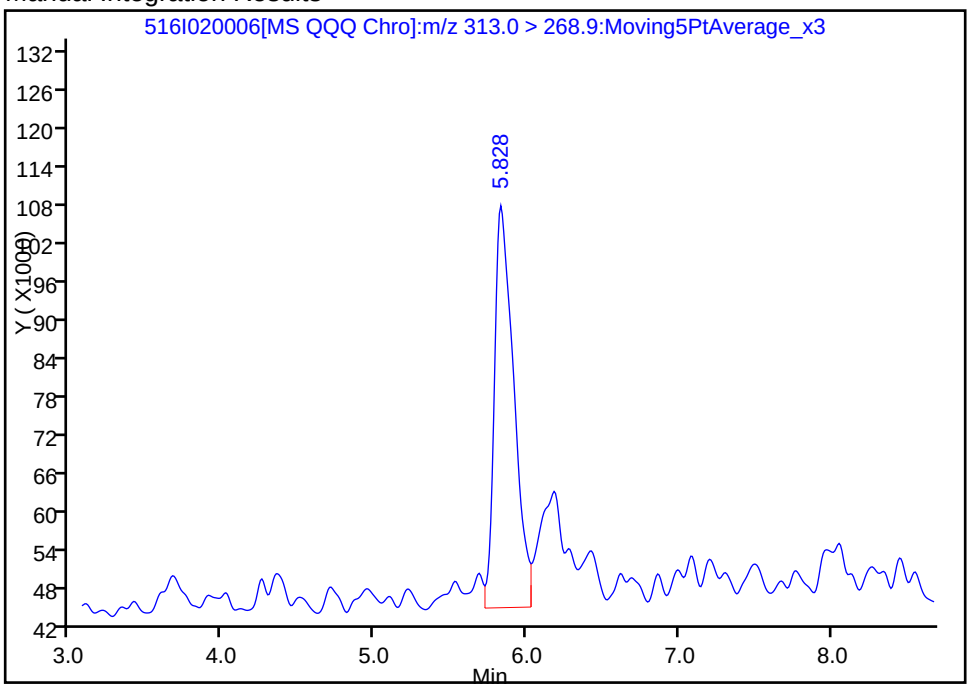
Processing Integration Results

RT: 5.83
Area: 555579
Amount: 0.197612
Amount Units: ug/L



Manual Integration Results

RT: 5.83
Area: 555579
Amount: 0.200786
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:28:09
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

TestAmerica Denver

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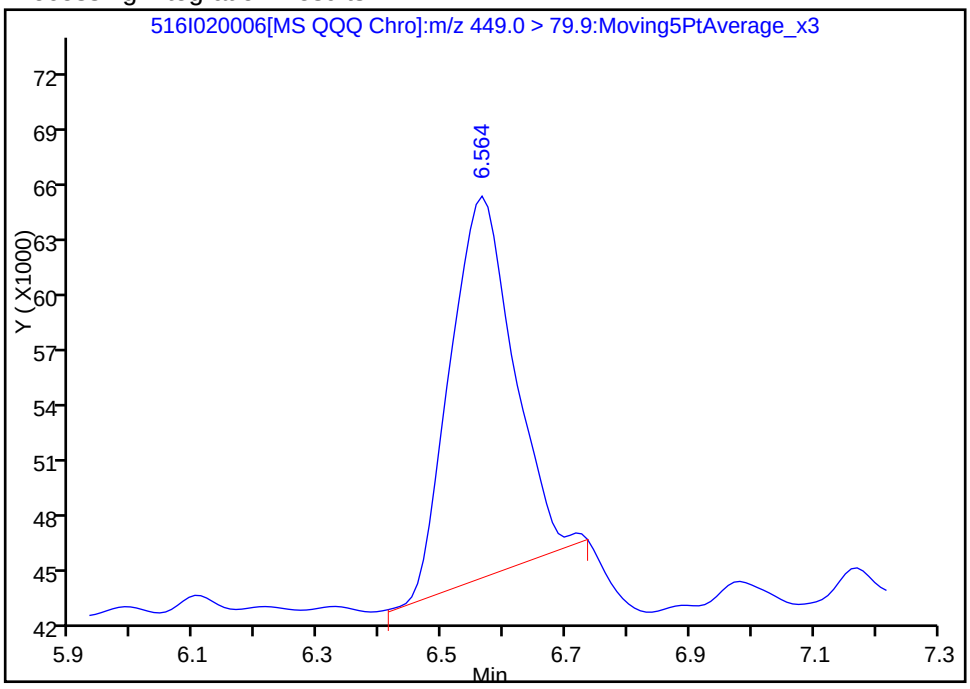
Injection Date:	20-Sep-2016 16:19:09	Instrument ID:	LC_LCMS5		
Lims ID:	STD0002				
Client ID:					
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

13 Perfluoroheptane Sulfonate, CAS: STL01836

Signal: 1

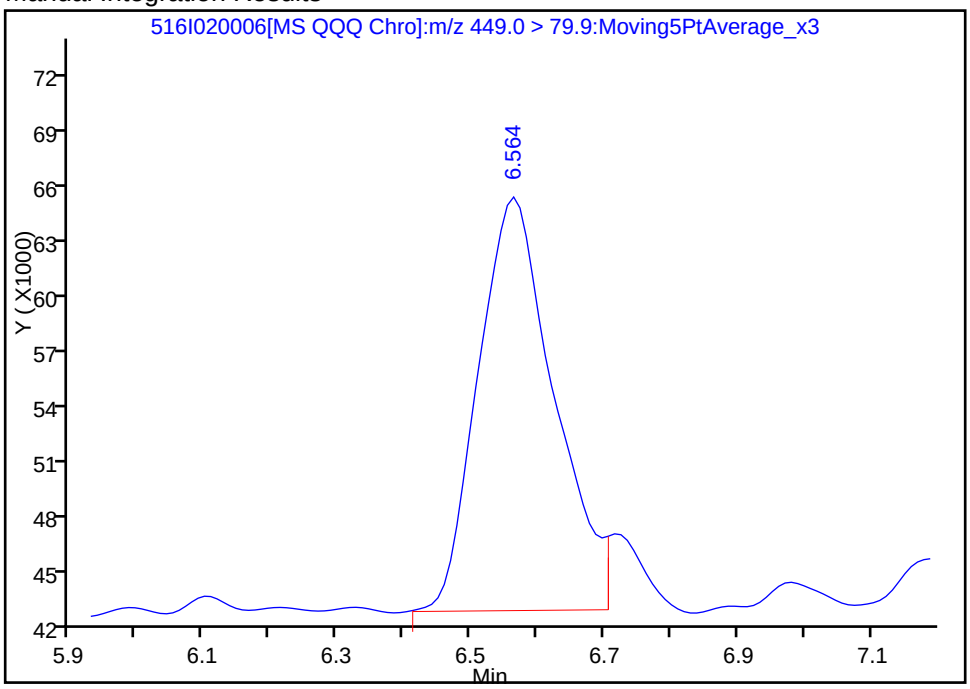
Processing Integration Results

RT: 6.56
Area: 144055
Amount: 0.189464
Amount Units: ug/L



Manual Integration Results

RT: 6.56
Area: 171875
Amount: 0.181699
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:28:09
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver

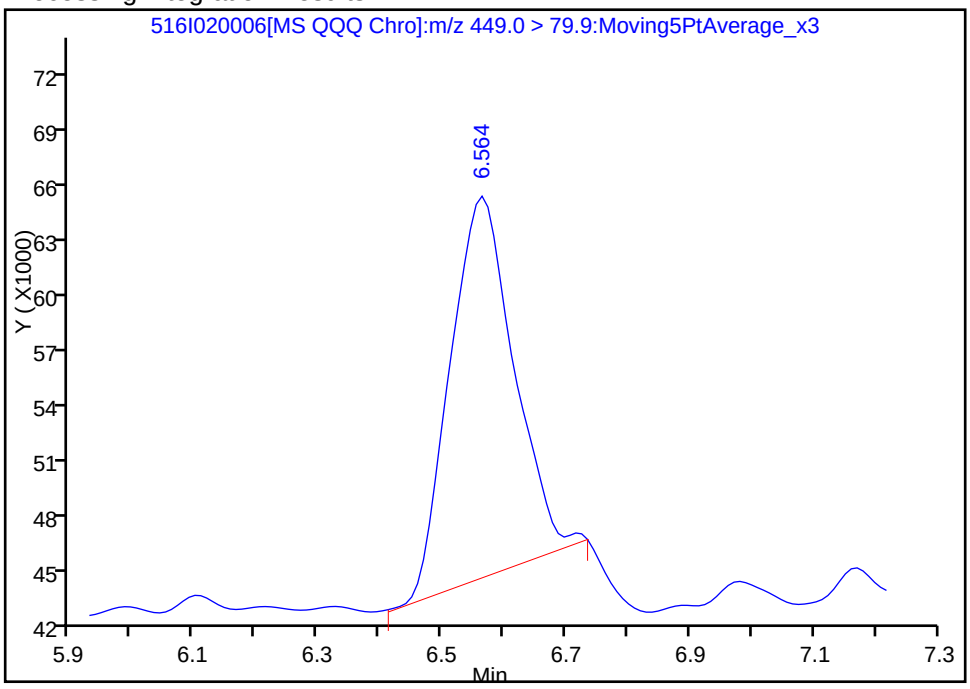
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d				
Injection Date:	20-Sep-2016 16:19:09	Instrument ID:	LC_LCMS5		
Lims ID:	STD0002				
Client ID:					
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

12 Perfluoroheptanesulfonic Acid, CAS: 375-92-8

Signal: 1

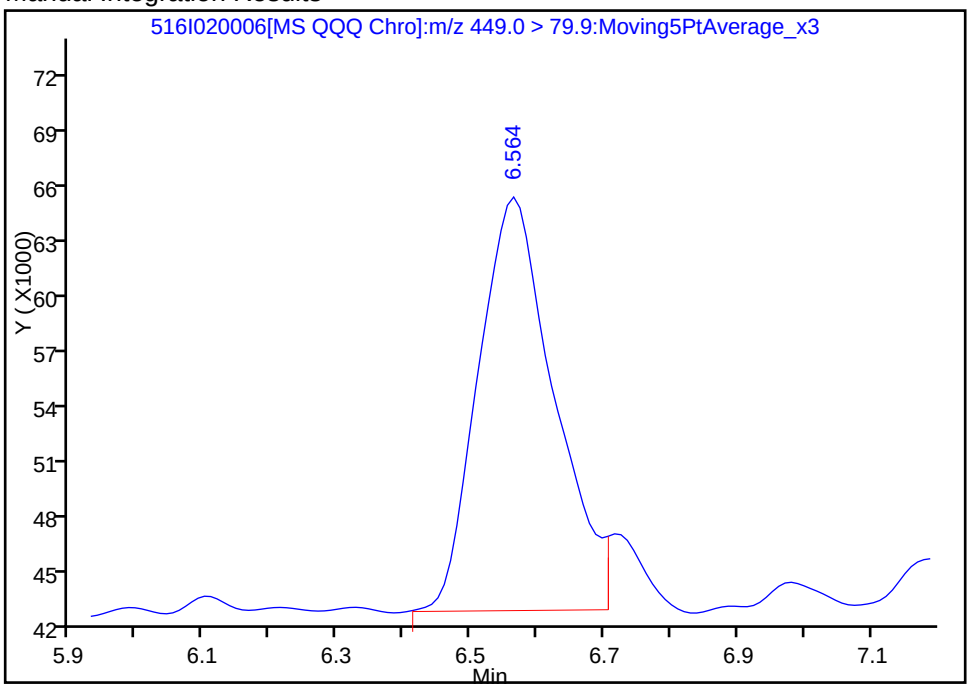
Processing Integration Results

RT: 6.56
Area: 144055
Amount: 0.189464
Amount Units: ug/L



Manual Integration Results

RT: 6.56
Area: 171875
Amount: 0.181699
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:28:09
Audit Action: Manually Integrated Audit Reason:

TestAmerica Denver

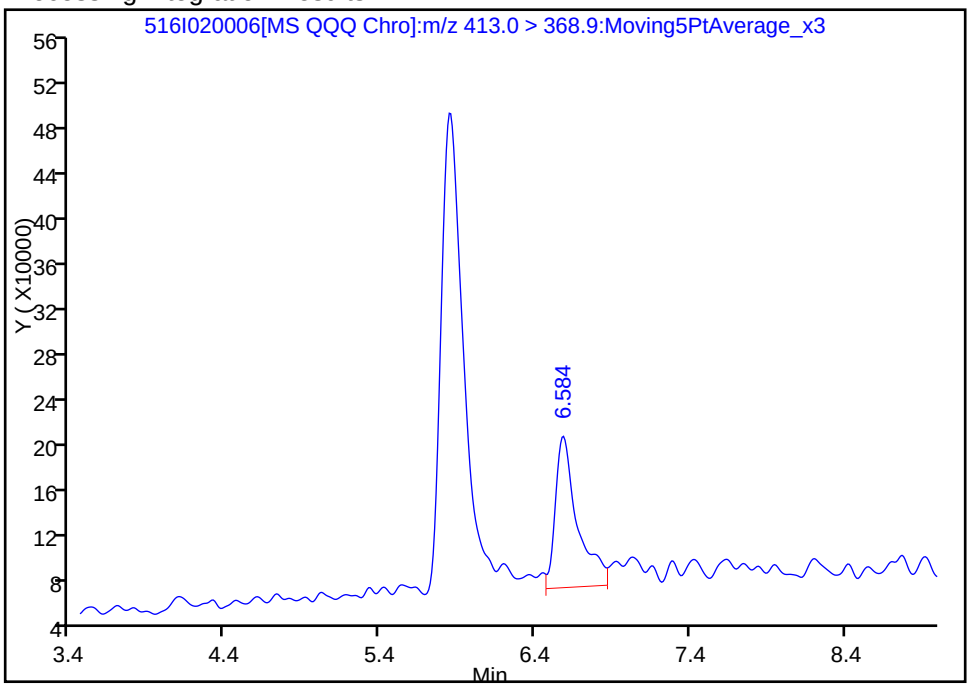
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d
Injection Date: 20-Sep-2016 16:19:09 Instrument ID: LC_LCMS5
Lims ID: STD0002
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

16 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

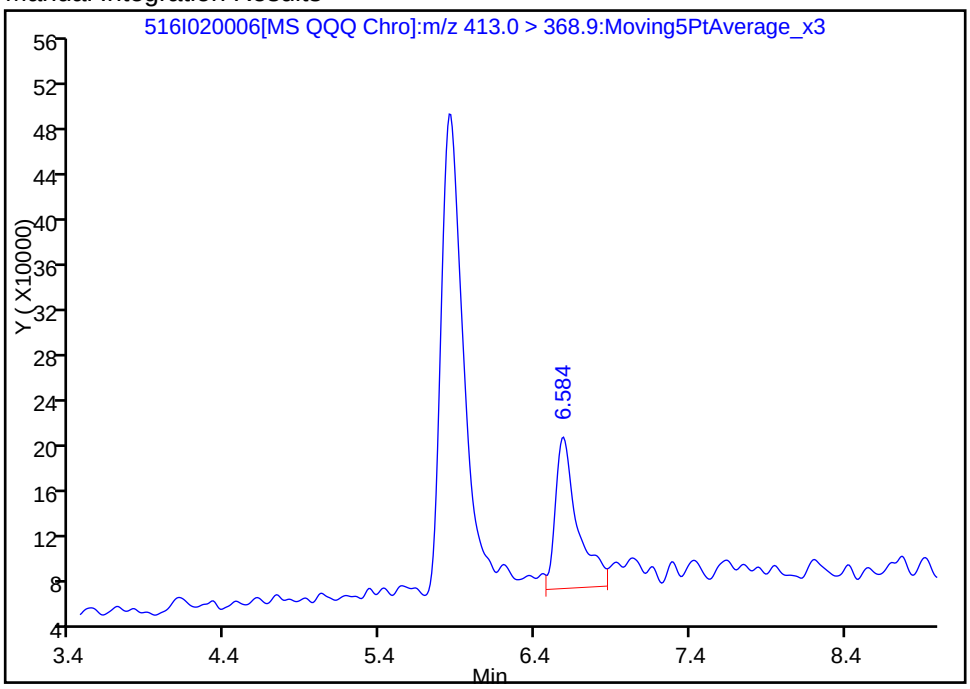
Processing Integration Results

RT: 6.58
Area: 1321664
Amount: 0.275097
Amount Units: ug/L



Manual Integration Results

RT: 6.58
Area: 1321664
Amount: 0.203280
Amount Units: ug/L



Reviewer: meyera, 21-Sep-2016 10:11:04
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason:

TestAmerica Denver

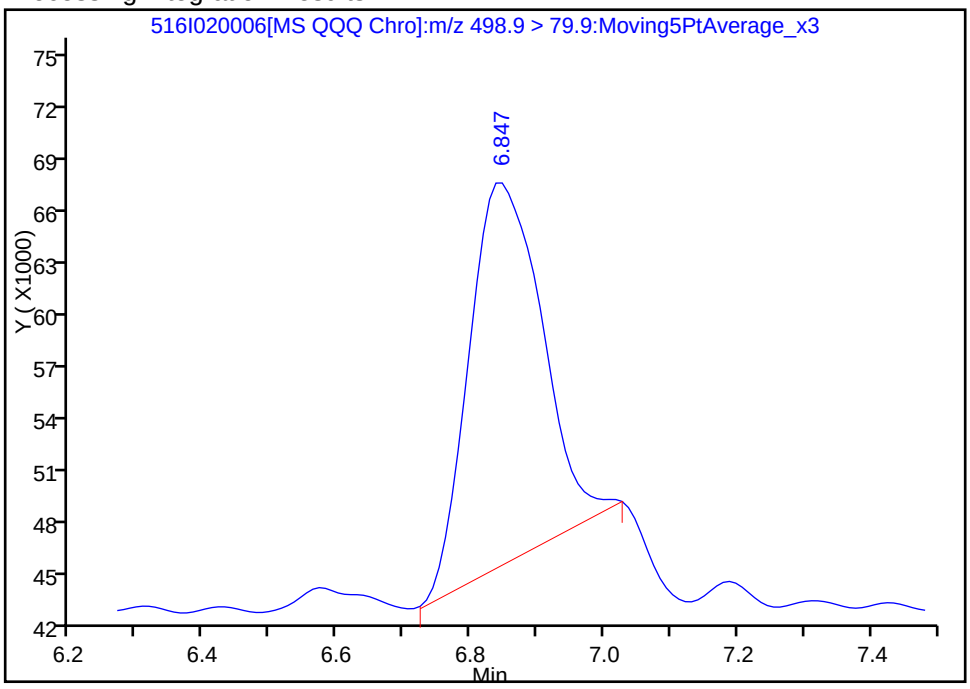
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d				
Injection Date:	20-Sep-2016 16:19:09	Instrument ID:	LC_LCMS5		
Lims ID:	STD0002				
Client ID:					
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

19 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

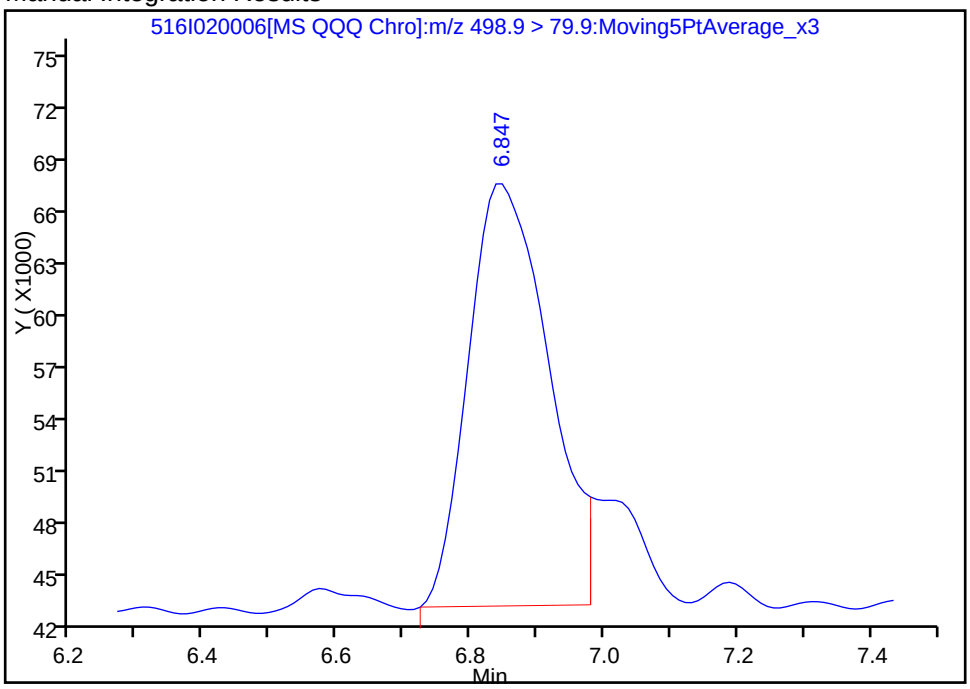
Processing Integration Results

RT: 6.85
Area: 168048
Amount: 0.187254
Amount Units: ug/L



Manual Integration Results

RT: 6.85
Area: 202960
Amount: 0.181540
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:28:09
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver

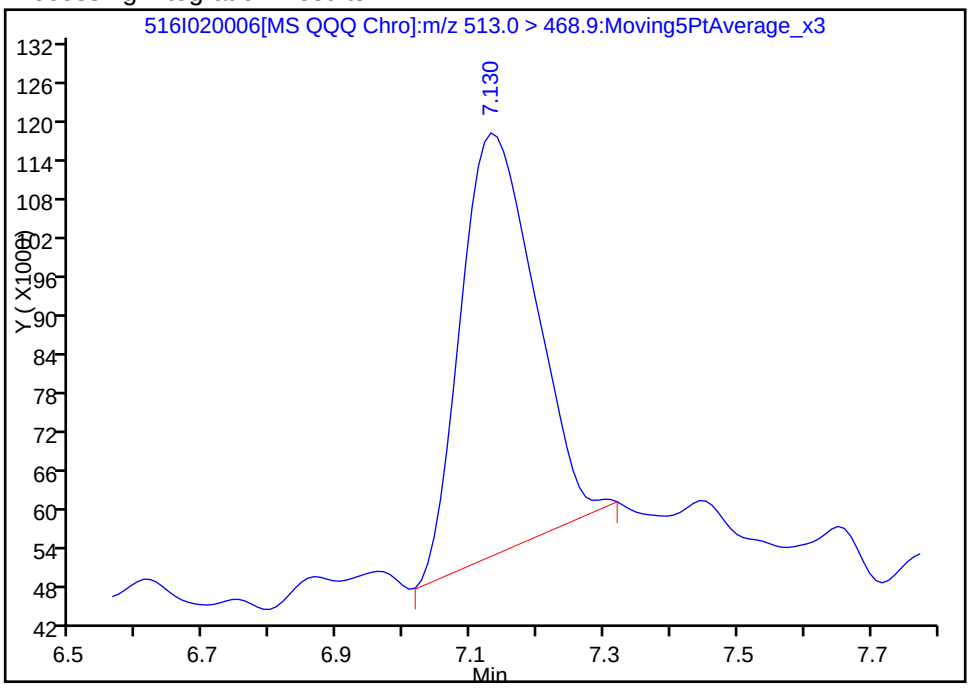
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d
Injection Date: 20-Sep-2016 16:19:09 Instrument ID: LC_LCMS5
Lims ID: STD0002
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

23 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 1

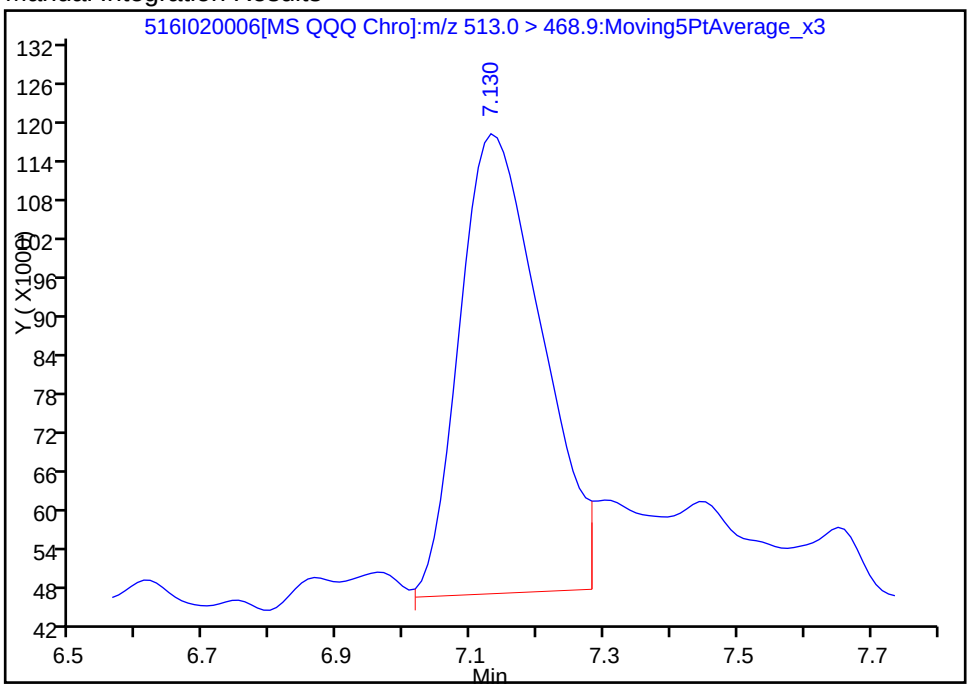
Processing Integration Results

RT: 7.13
Area: 505321
Amount: 0.198711
Amount Units: ug/L



Manual Integration Results

RT: 7.13
Area: 603829
Amount: 0.198542
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:32:00
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver

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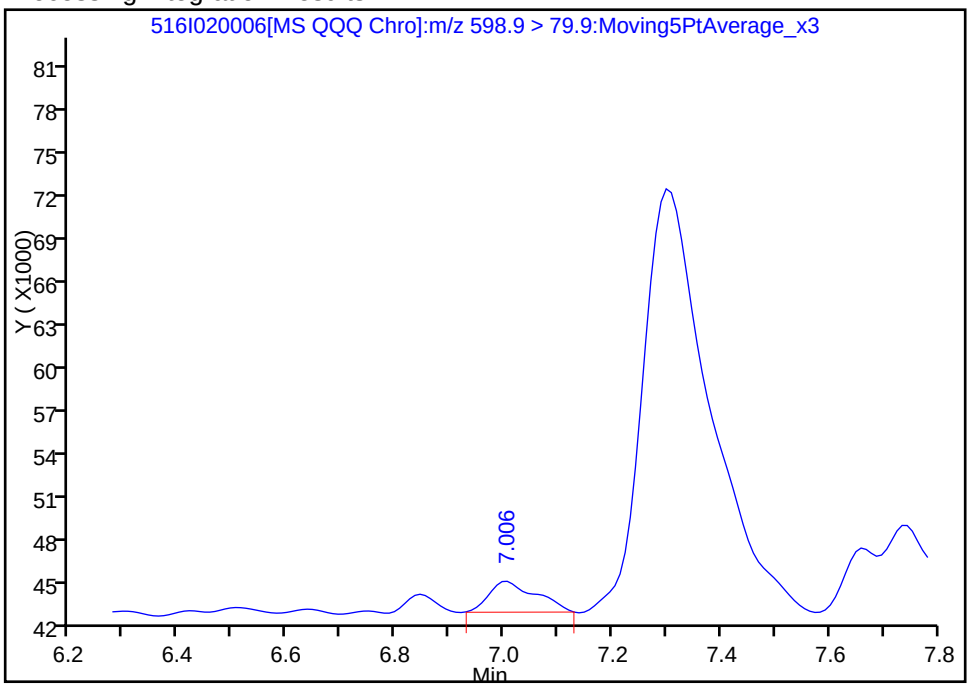
Injection Date:	20-Sep-2016 16:19:09	Instrument ID:	LC_LCMS5		
Lims ID:	STD0002				
Client ID:					
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

25 Perfluorodecane Sulfonate, CAS: 67906-42-7

Signal: 1

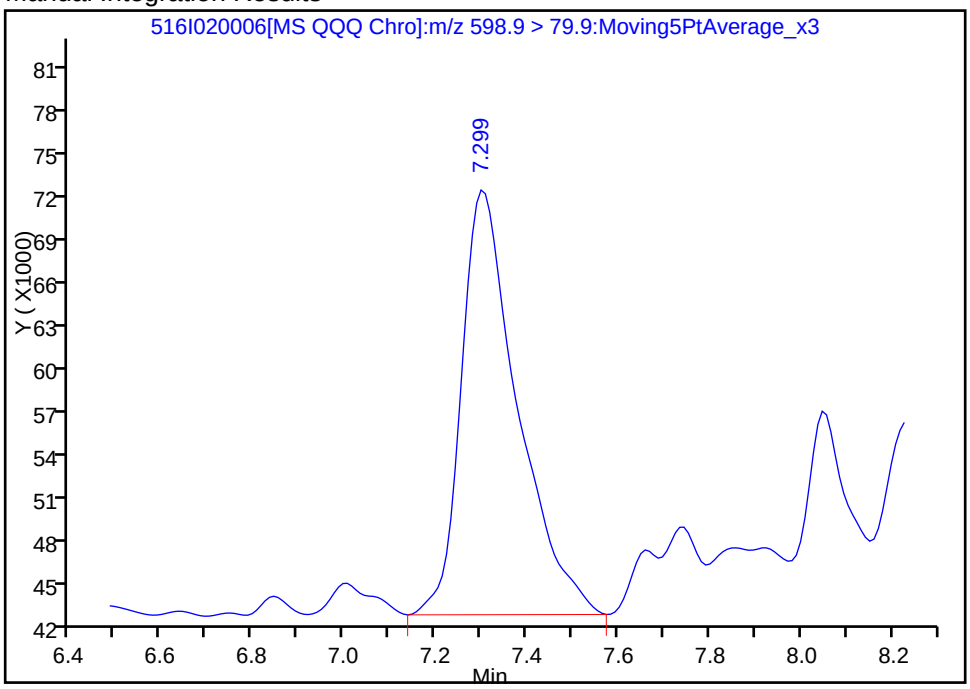
Processing Integration Results

RT: 7.01
Area: 12662
Amount: 0.185405
Amount Units: ug/L



Manual Integration Results

RT: 7.30
Area: 247494
Amount: 0.200390
Amount Units: ug/L



Reviewer: meyera, 21-Sep-2016 10:15:57
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Assign Peak

TestAmerica Denver

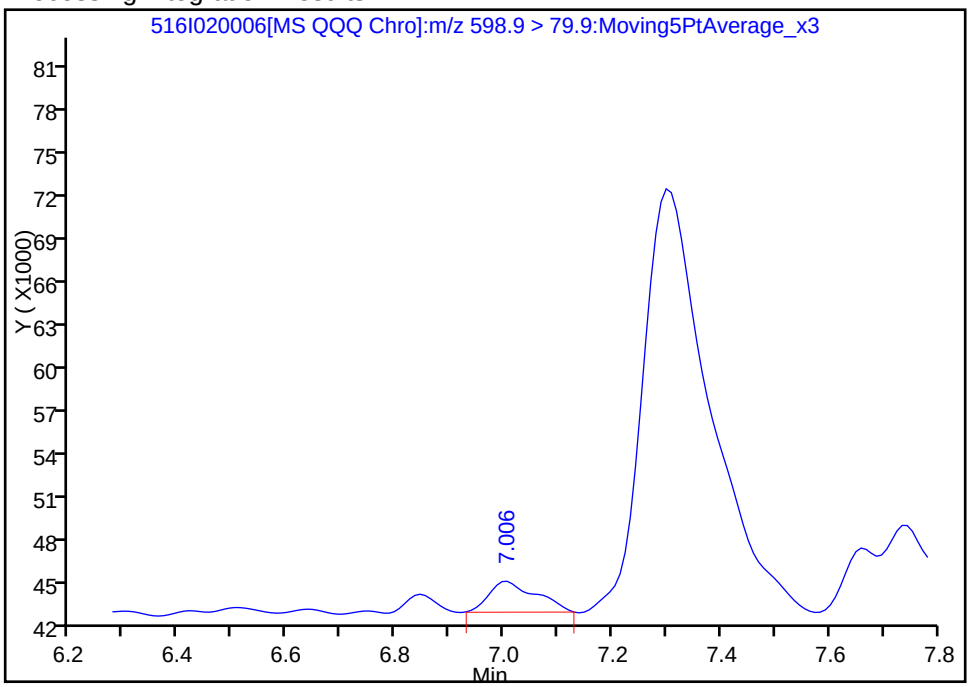
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d
Injection Date: 20-Sep-2016 16:19:09 Instrument ID: LC_LCMS5
Lims ID: STD0002
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

24 Perfluorodecane Sulfonic acid, CAS: 335-77-3

Signal: 1

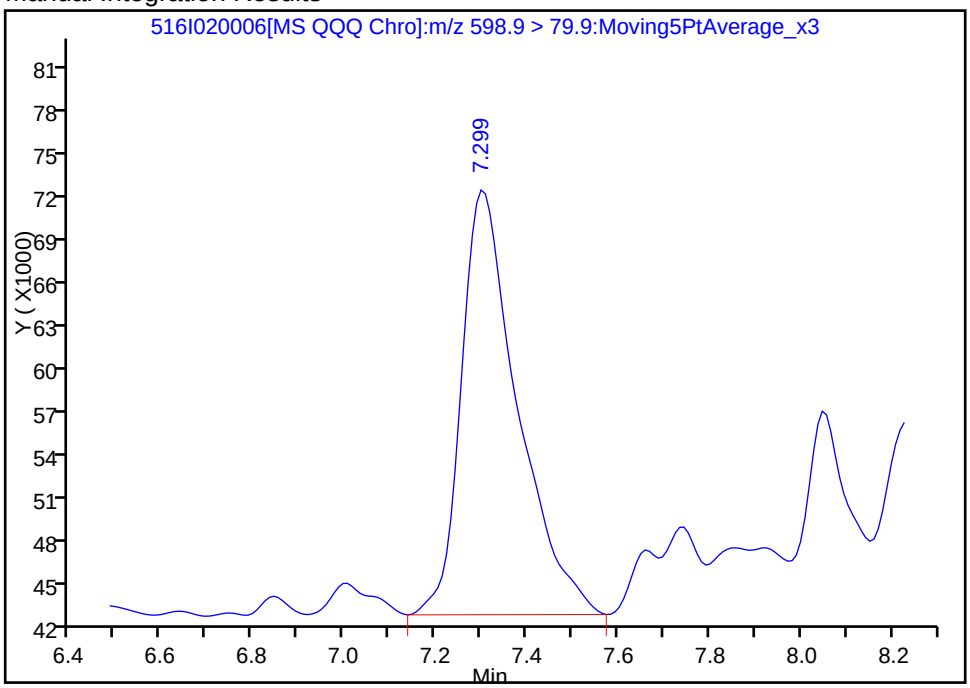
Processing Integration Results

RT: 7.01
Area: 12662
Amount: 0.185405
Amount Units: ug/L



Manual Integration Results

RT: 7.30
Area: 247494
Amount: 0.200390
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:32:00
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Denver

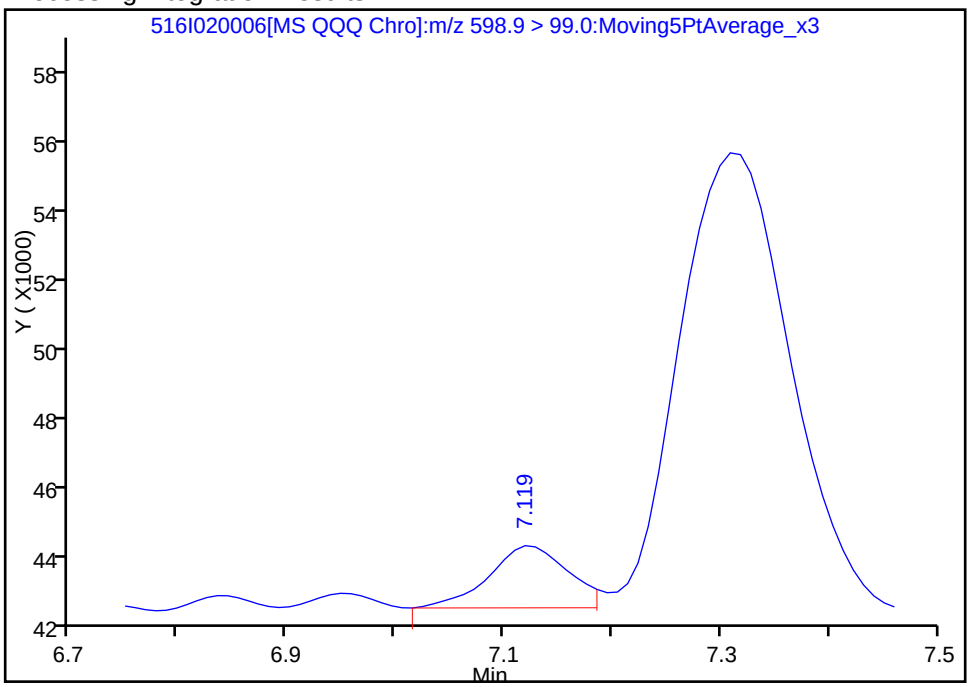
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d
Injection Date: 20-Sep-2016 16:19:09 Instrument ID: LC_LCMS5
Lims ID: STD0002
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

24 Perfluorodecane Sulfonic acid, CAS: 335-77-3

Signal: 2

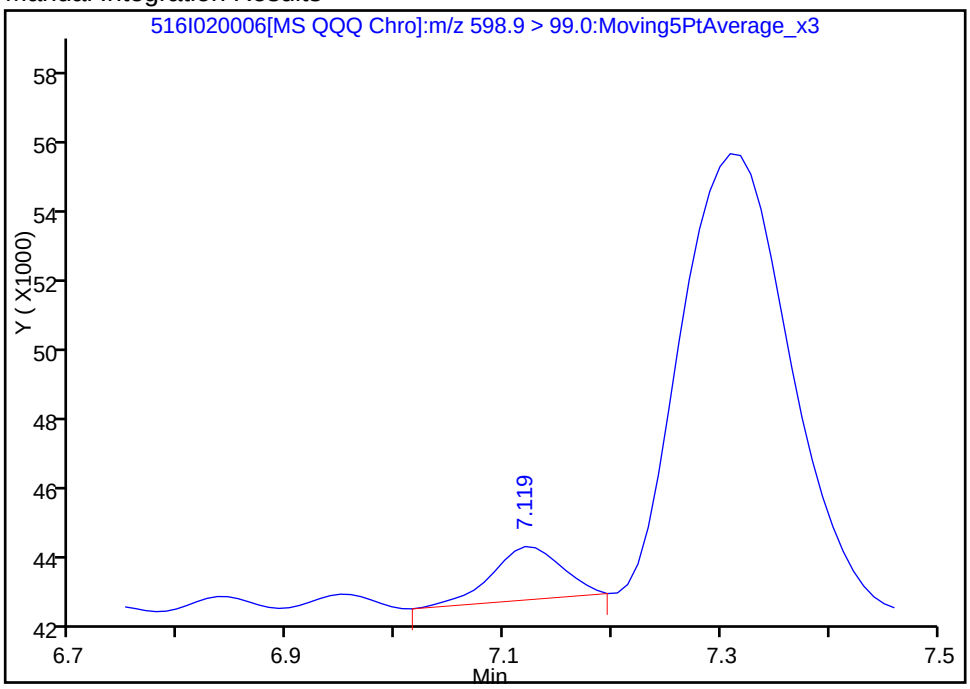
Processing Integration Results

RT: 7.12
Area: 8788
Amount: 0.185405
Amount Units: ug/L



Manual Integration Results

RT: 7.12
Area: 6767
Amount: 0.200390
Amount Units: ug/L



Reviewer: meyera, 21-Sep-2016 10:15:57
Audit Action: Manually Integrated Audit Reason: Assign Peak

TestAmerica Denver

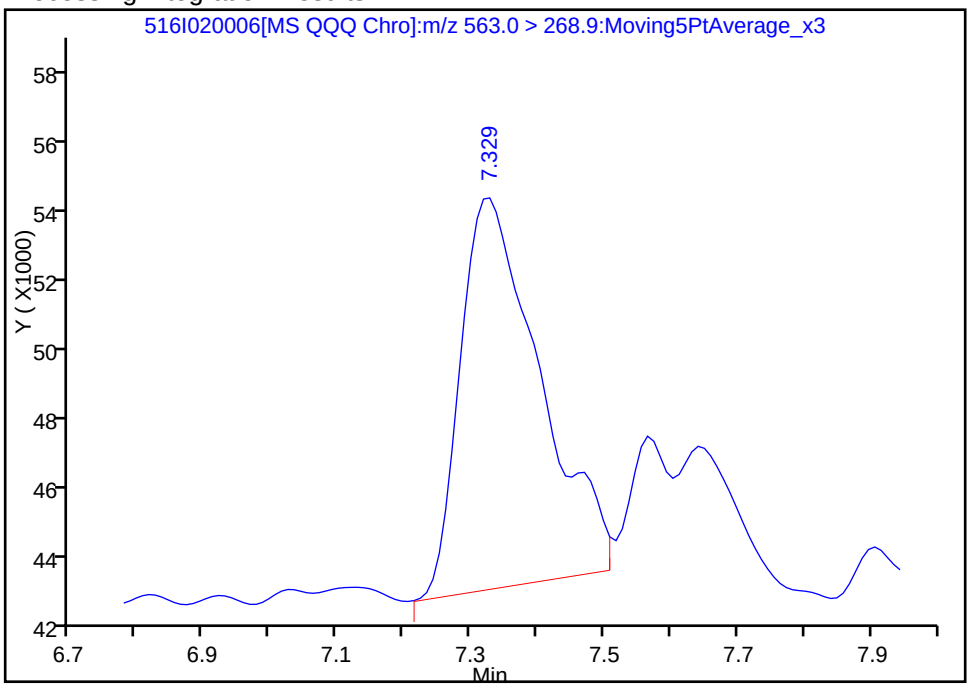
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d				
Injection Date:	20-Sep-2016 16:19:09	Instrument ID:	LC_LCMS5		
Lims ID:	STD0002				
Client ID:					
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

27 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 2

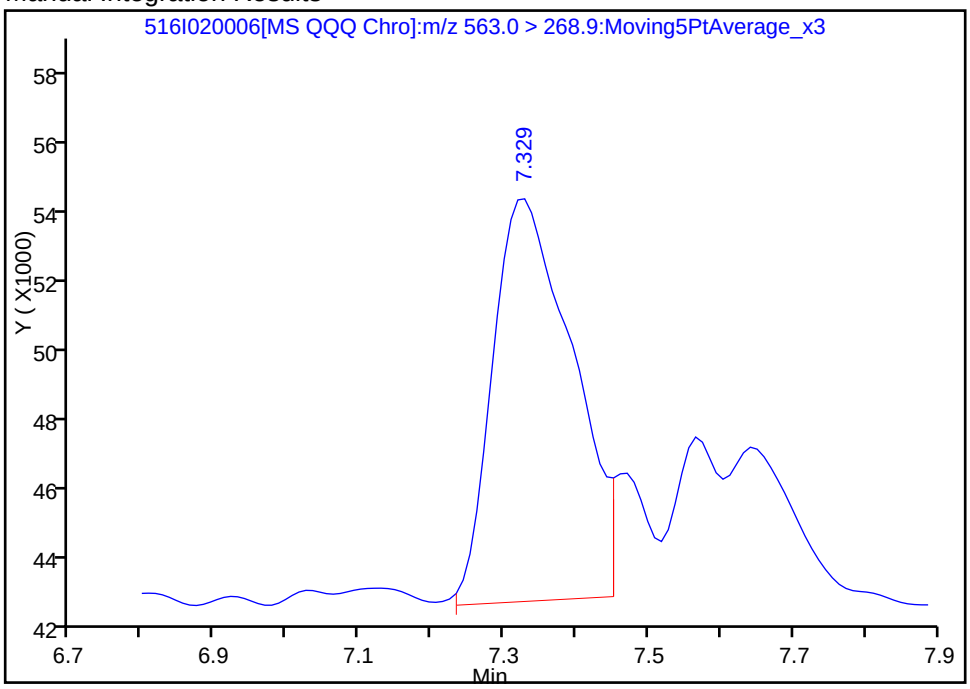
Processing Integration Results

RT: 7.33
Area: 91306
Amount: 0.198897
Amount Units: ug/L



Manual Integration Results

RT: 7.33
Area: 87886
Amount: 0.192304
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:28:09
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Denver

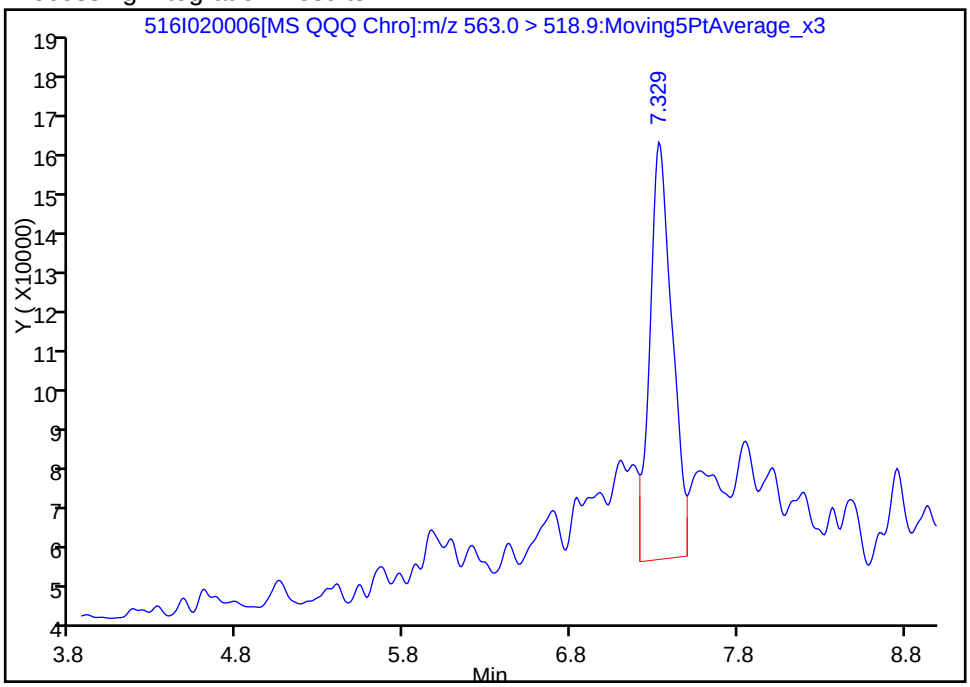
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020006.d
Injection Date: 20-Sep-2016 16:19:09 Instrument ID: LC_LCMS5
Lims ID: STD0002
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

27 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 1

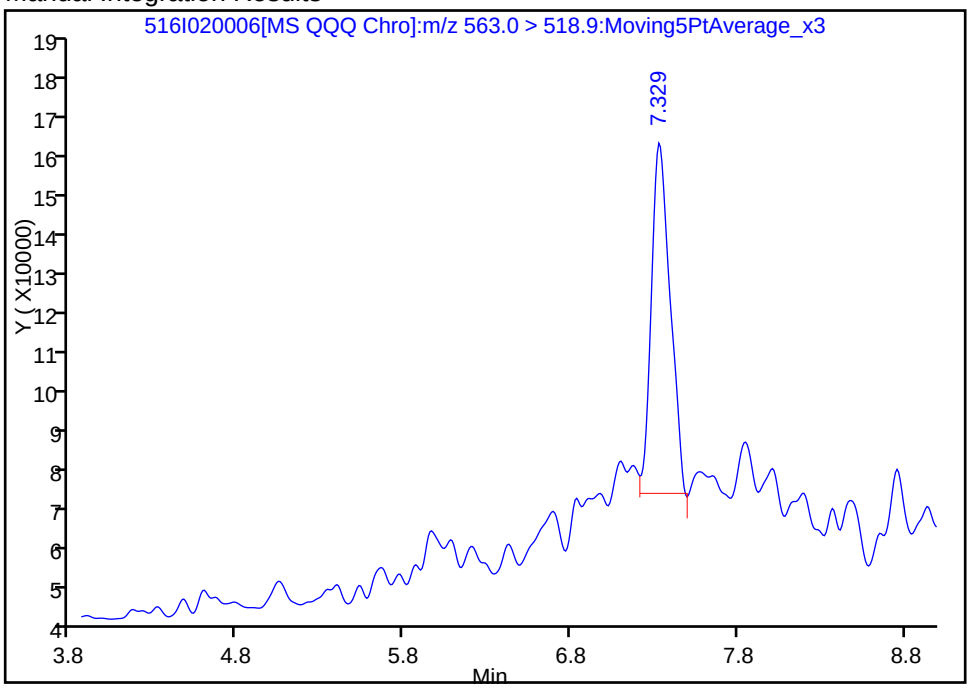
Processing Integration Results

RT: 7.33
Area: 967473
Amount: 0.198897
Amount Units: ug/L



Manual Integration Results

RT: 7.33
Area: 684499
Amount: 0.192304
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:28:09
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020007.d
Lims ID: STD0005
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 20-Sep-2016 16:31:28 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0005, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:09:49 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:25:27

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.219	4.295	-0.076		33886602	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.238	4.295	-0.057	1.005	1742818	0.4835			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.261	5.327	-0.066	0.900	1367324	0.4897			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.383	5.440	-0.057	0.860	666807	0.4579			
298.9 > 98.9	5.374	5.440	-0.066	0.858	173471		3.84(2.57-2.57)		
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.383	5.440	-0.057	0.860	666807	0.4579			R
298.9 > 98.9	5.374	5.440	-0.066	0.858	173471		3.84(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.847	5.904	-0.057		25546165	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.838	5.904	-0.066	0.998	1295461	0.5190			
313.0 > 118.6	5.828	5.904	-0.076	0.997	59830		21.65(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.338	-0.075		2936599	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.244	6.339	-0.095	0.997	616468	0.5258			
398.9 > 98.9	6.272	6.339	-0.067	1.002	263962		2.34(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.244	6.339	-0.095	0.997	616468	0.5258			
398.9 > 98.9	6.272	6.339	-0.067	1.002	263962		2.34(1.85-1.85)		
8 Perfluoroheptanoic acid									M
363.0 > 318.9	6.244	6.339	-0.095	0.948	1920865	0.5010			M
363.0 > 168.9	6.273	6.339	-0.066	0.953	444510		4.32(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.574	6.678	-0.104	0.959	548423	0.4870			
449.0 > 98.9	6.564	6.678	-0.114	0.957	209054		2.62(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.574	6.678	-0.104	0.959	548423	0.4870			
449.0 > 98.9	6.564	6.678	-0.114	0.957	209054		2.62(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.584	6.688	-0.104	1.000	1680430	0.4966			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.584	6.688	-0.104		40601359	10.0			
16 Perfluorooctanoic acid									M
413.0 > 368.9	6.584	6.688	-0.104	1.000	2350756	0.4566			M
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.856	6.961	-0.105		9814528	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.847	6.970	-0.123	0.999	262429	0.4536			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.857	6.970	-0.113	1.000	630969	0.5122			
498.9 > 98.9	6.857	6.970	-0.113	1.000	279636		2.26(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.886	6.990	-0.104		28226583	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.886	6.990	-0.104	1.000	1644354	0.5533			R
463.0 > 218.9	6.895	6.990	-0.095	1.001	326386		5.04(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.234	-0.104		32399937	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.130	7.234	-0.104	1.000	1635946	0.4999			R
513.0 > 219.0	7.130	7.234	-0.104	1.000	168995		9.68(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.318	7.413	-0.095	1.067	560734	0.4410			
598.9 > 99.0	7.318	7.413	-0.095	1.067	210359		2.67(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.318	7.413	-0.095	1.067	560734	0.4410			
598.9 > 99.0	7.318	7.413	-0.095	1.067	210359		2.67(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.347	7.442	-0.095		23125304	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.338	7.452	-0.114	0.999	2009228	0.5790			R
563.0 > 268.9	7.357	7.452	-0.095	1.001	207794		9.67(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.517	7.621	-0.104		45810725	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.517	7.621	-0.104	1.000	2660622	0.5178			
613.0 > 168.9	7.526	7.621	-0.095	1.001	300464		8.86(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.614	7.633	-0.019		31508682	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.615	7.634	-0.019	1.000	1505267	0.4843			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.677	7.782	-0.105	1.021	2171801	0.4999			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.904	-0.113	1.036	1637658	0.4970			
712.9 > 169.0	7.819	7.904	-0.085	1.040	247466		6.62(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	25.00	Units: uL

Report Date: 21-Sep-2016 12:09:49 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020007.d

Injection Date: 20-Sep-2016 16:31:28 Instrument ID: LC_LCMS5

Lims ID: STD0005

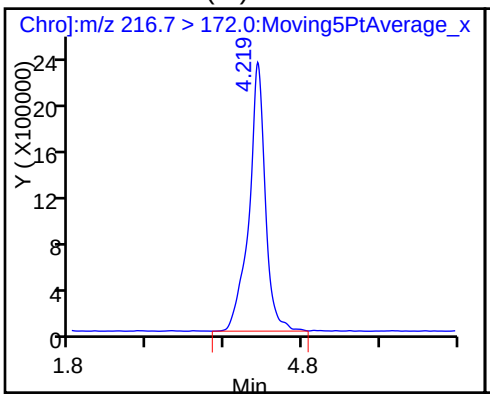
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4

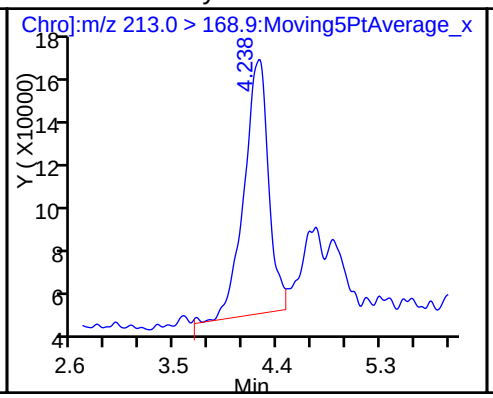
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

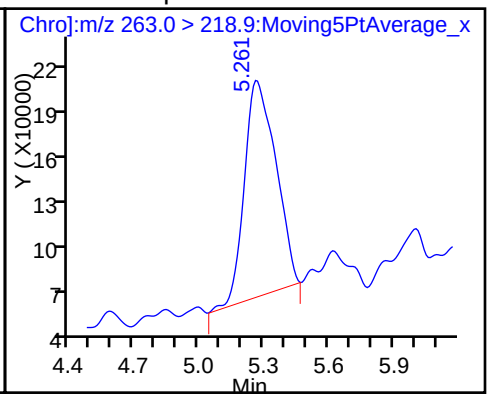
* 1 13C4 PFBA (IS)



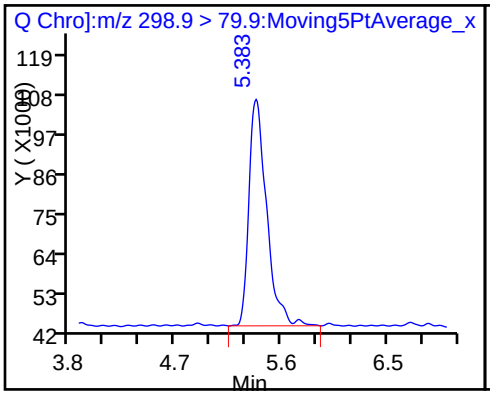
2 Perfluorobutyric acid



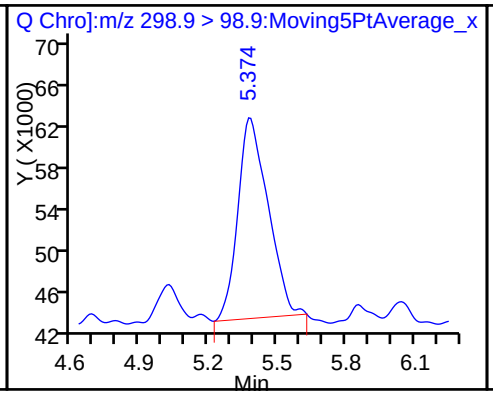
3 Perfluoropentanoic acid



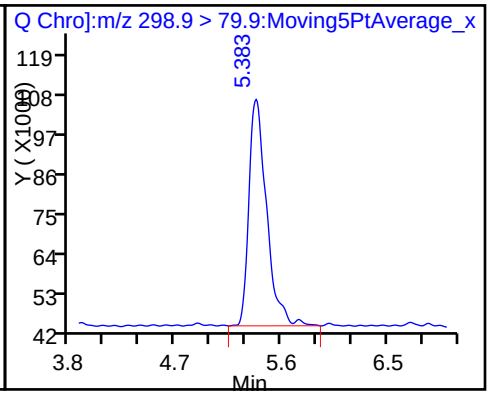
5 Perfluorobutanesulfonic acid



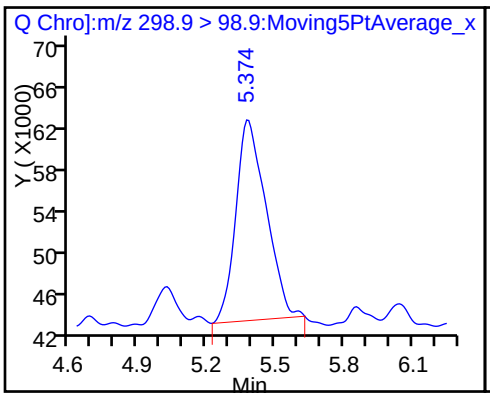
5 Perfluorobutanesulfonic acid



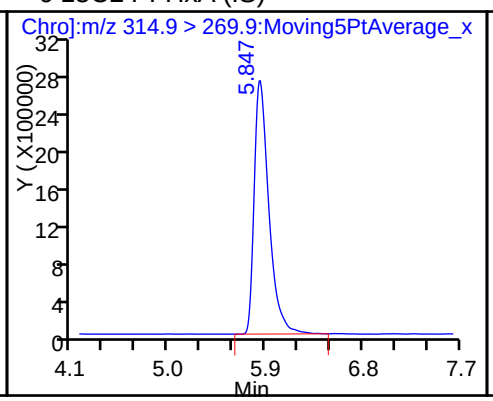
4 Perfluorobutane Sulfonate



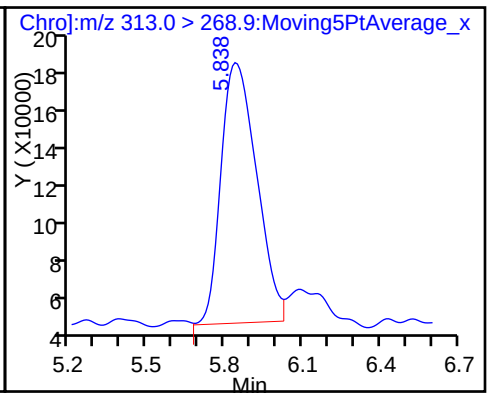
4 Perfluorobutane Sulfonate



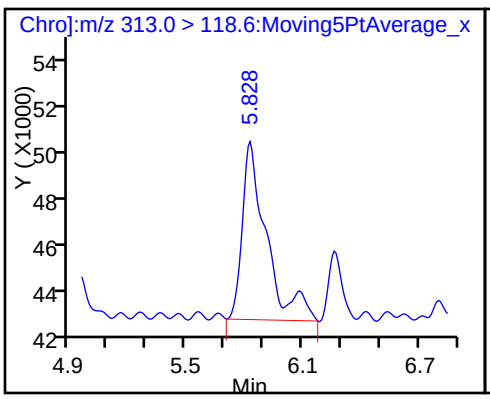
* 6 13C2 PFHxA (IS)



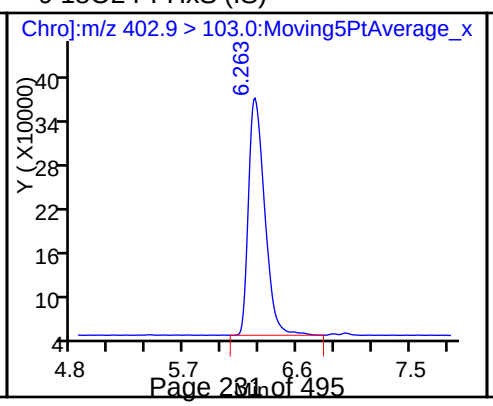
7 Perfluorohexanoic acid



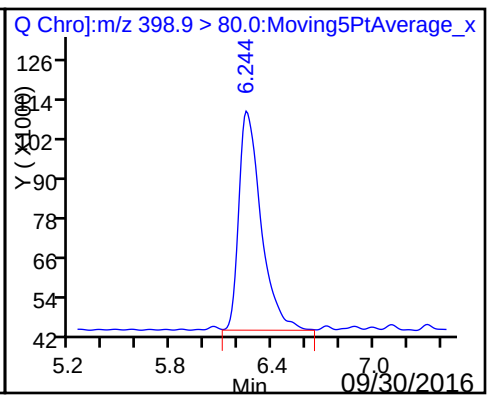
7 Perfluorohexanoic acid



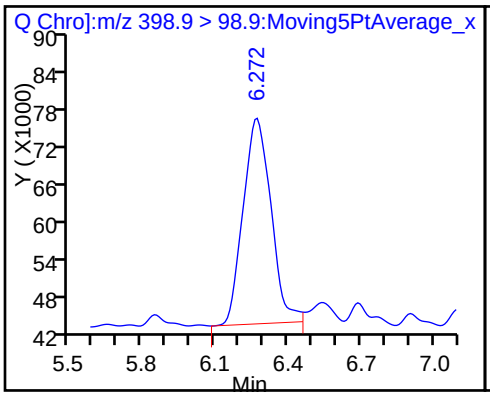
* 9 18O2 PFHxS (IS)



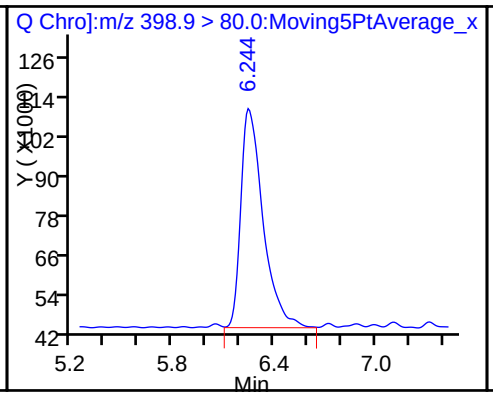
10 Perfluorohexane Sulfonate



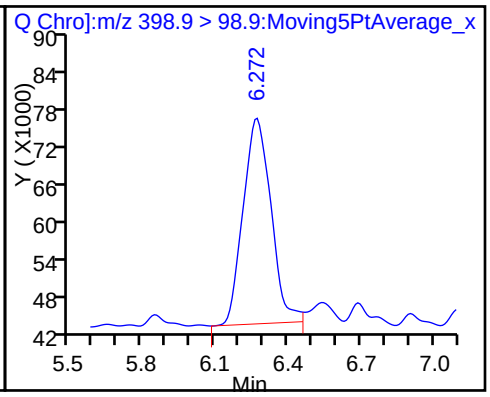
10 Perfluorohexane Sulfonate



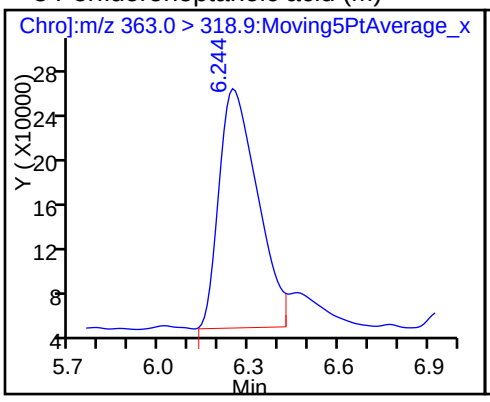
11 Perfluorohexanesulfonic acid



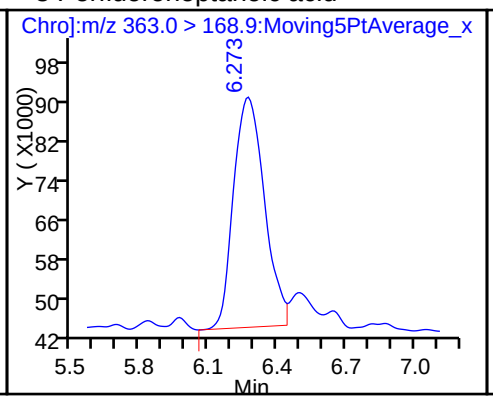
11 Perfluorohexanesulfonic acid



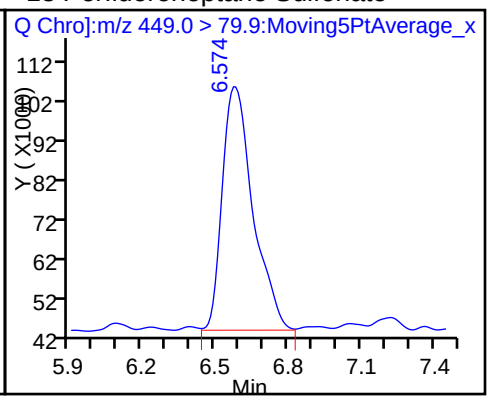
8 Perfluoroheptanoic acid (M)



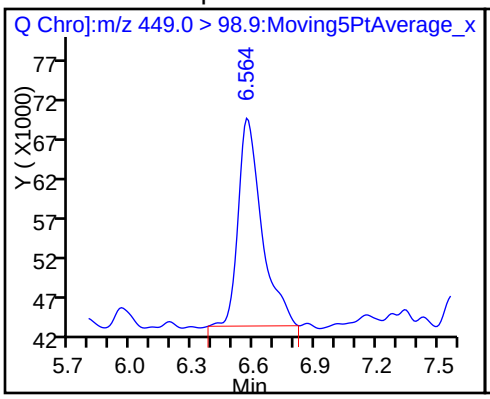
8 Perfluoroheptanoic acid



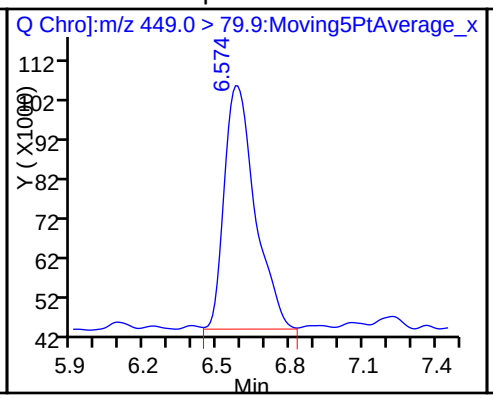
13 Perfluoroheptane Sulfonate



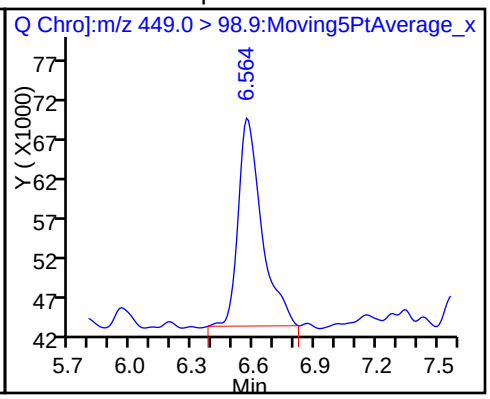
13 Perfluoroheptane Sulfonate



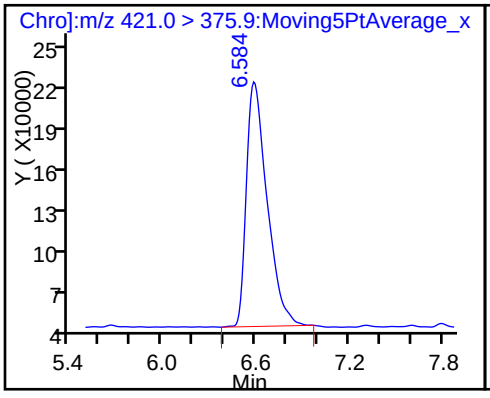
12 Perfluoroheptanesulfonic Acid



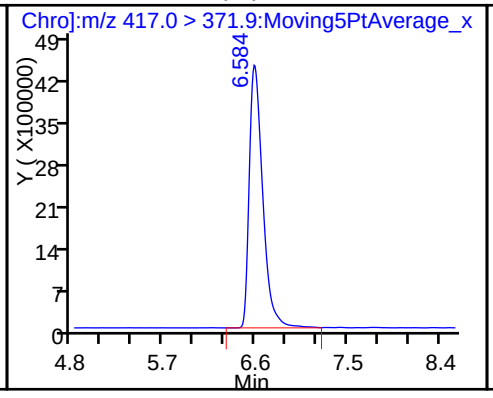
12 Perfluoroheptanesulfonic Acid



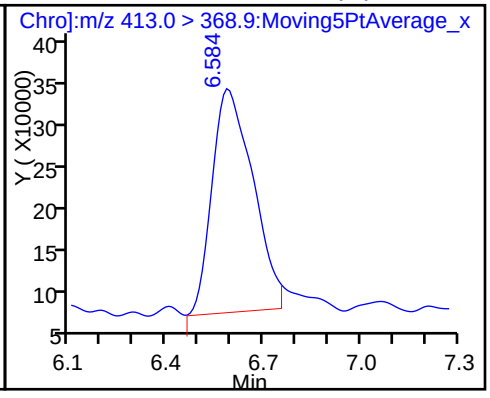
$ 14 13C8 PFOA



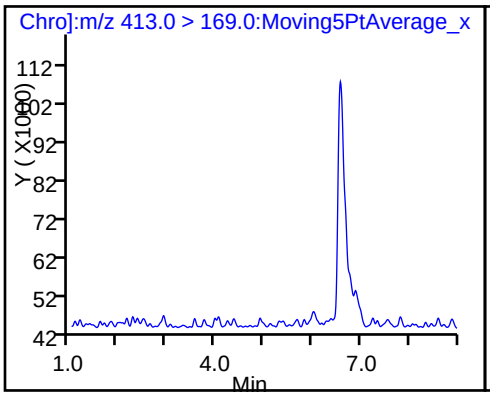
* 15 13C4 PFOA (IS)



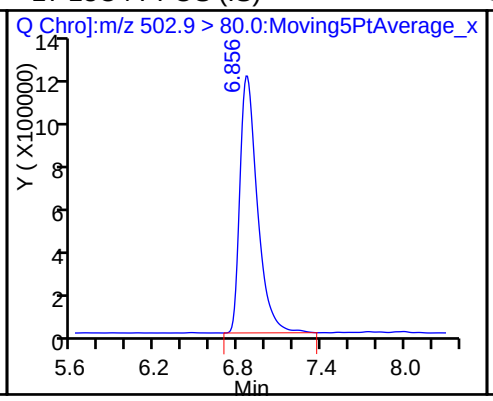
16 Perfluorooctanoic acid (M)



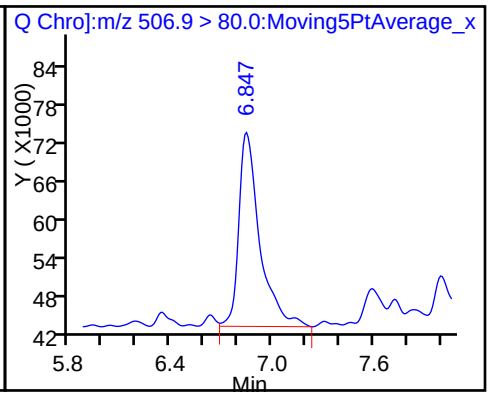
16 Perfluorooctanoic acid



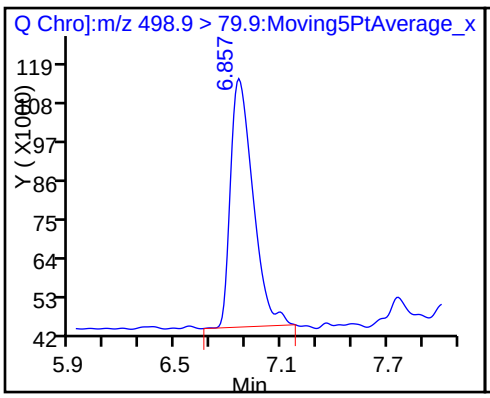
* 17 13C4 PFOS (IS)



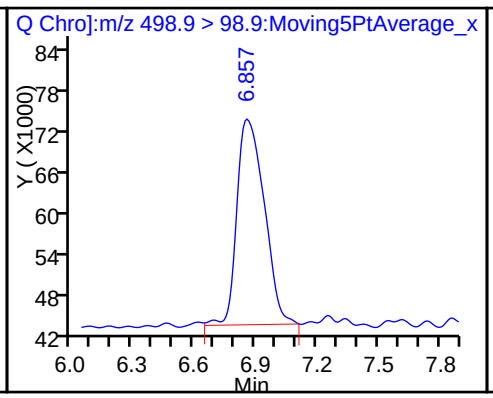
$ 18 13C8 PFOS



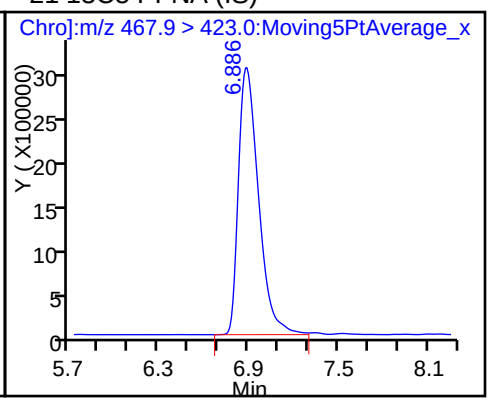
19 Perfluorooctane sulfonic acid



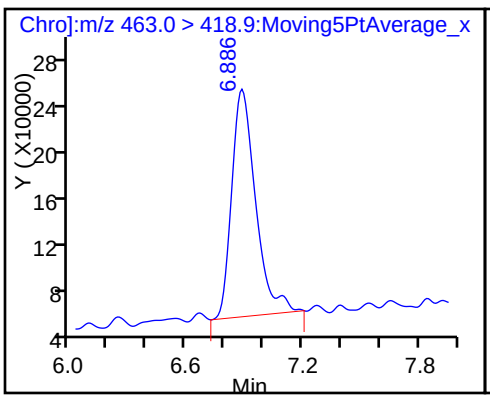
19 Perfluorooctane sulfonic acid



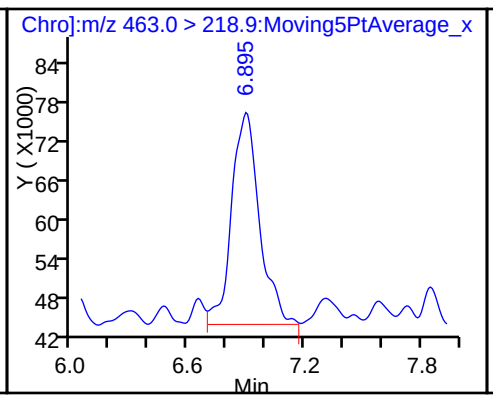
* 21 13C5 PFNA (IS)



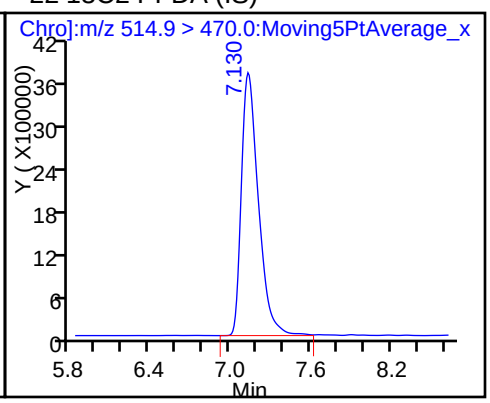
20 Perfluorononanoic acid



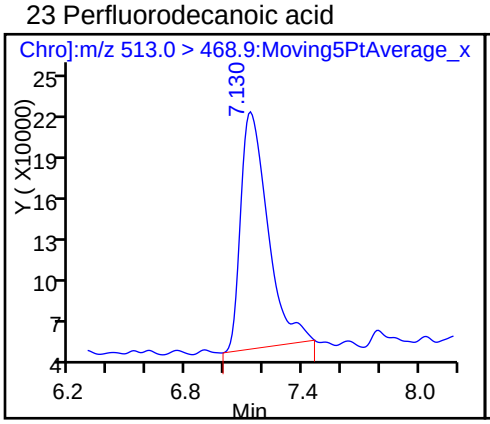
20 Perfluorononanoic acid



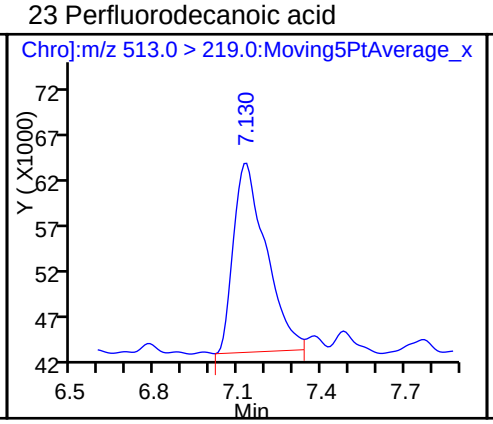
* 22 13C2 PFDA (IS)



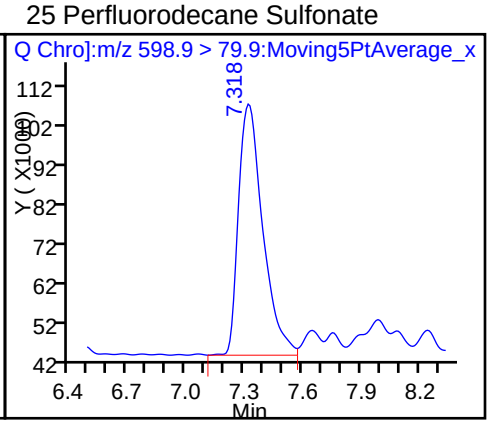
23 Perfluorodecanoic acid



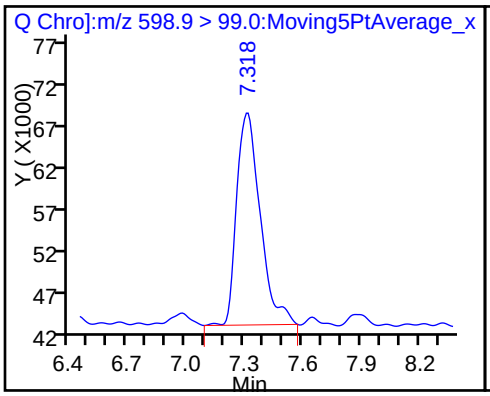
23 Perfluorodecanoic acid



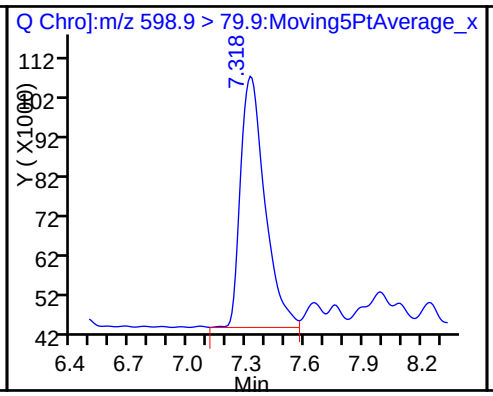
25 Perfluorodecane Sulfonate



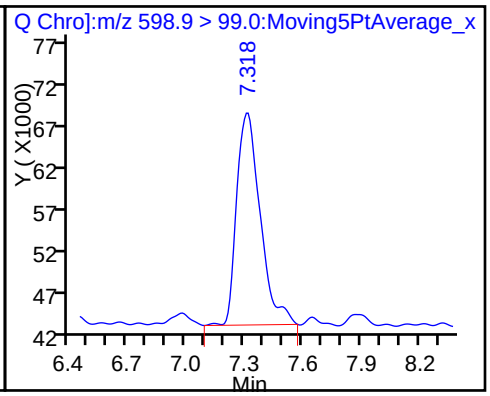
25 Perfluorodecane Sulfonate



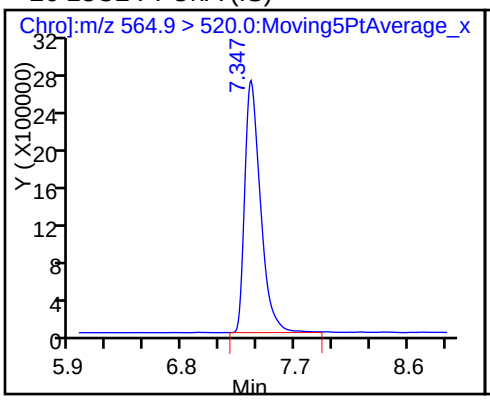
24 Perfluorodecane Sulfonic acid



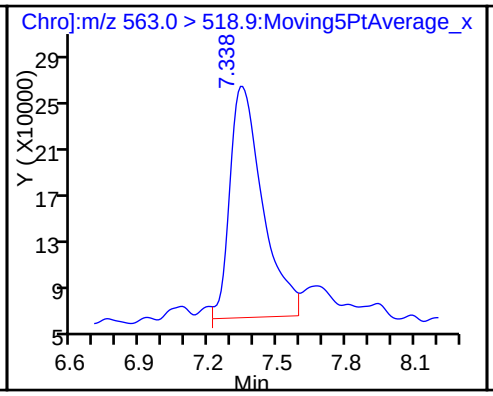
24 Perfluorodecane Sulfonic acid



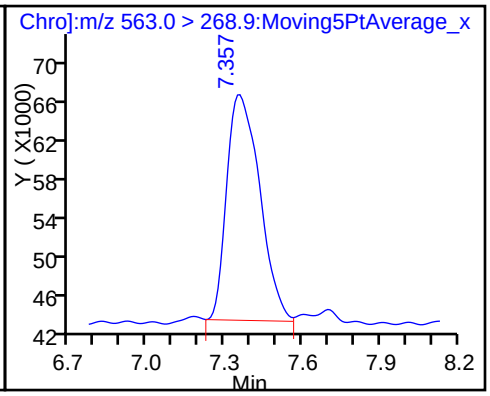
* 26 13C2 PFUnA (IS)



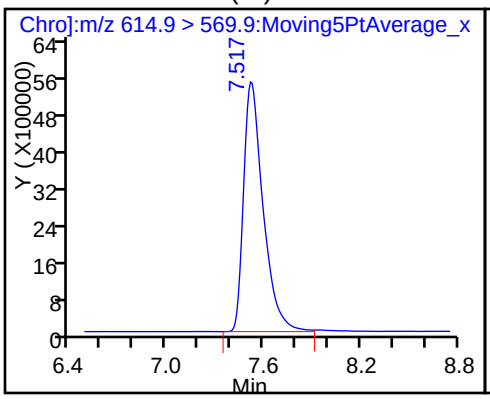
27 Perfluoroundecanoic acid



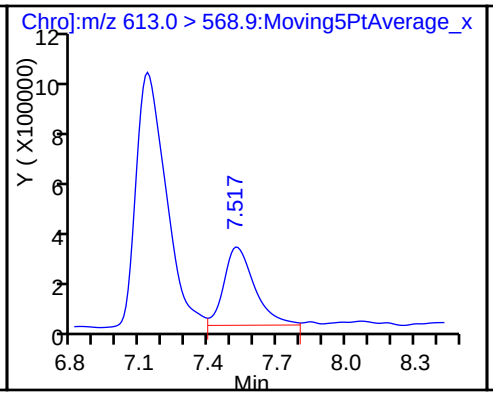
27 Perfluoroundecanoic acid



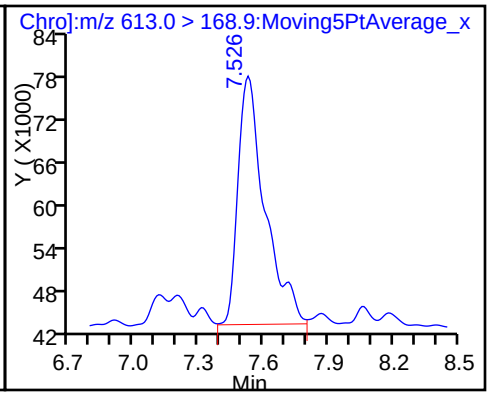
* 28 13C2 PFDoA (IS)



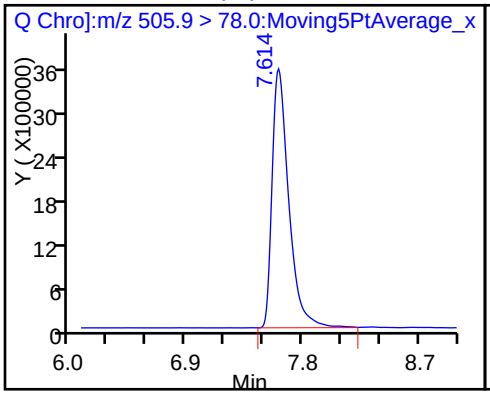
29 Perfluorododecanoic acid



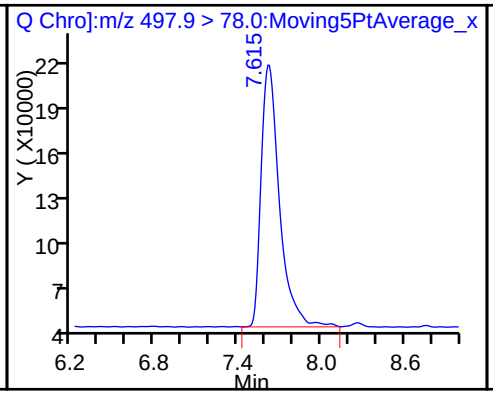
29 Perfluorododecanoic acid



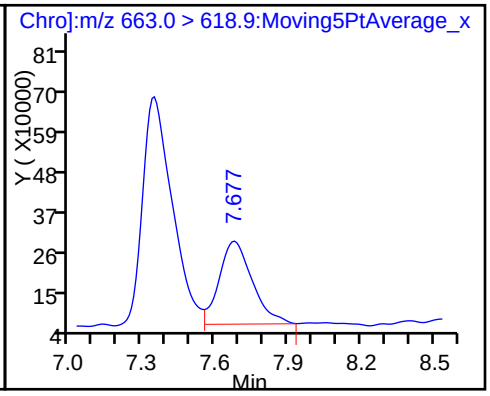
* 31 13C8 FOSA (IS)



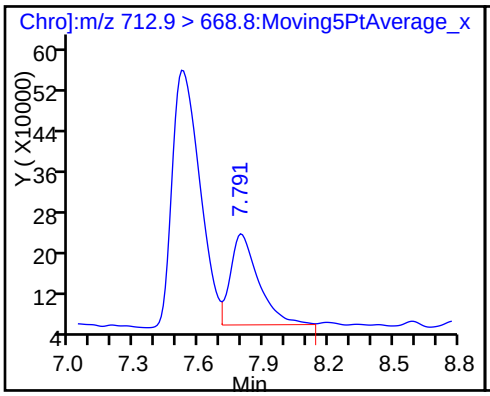
32 Perfluorooctane Sulfonamide



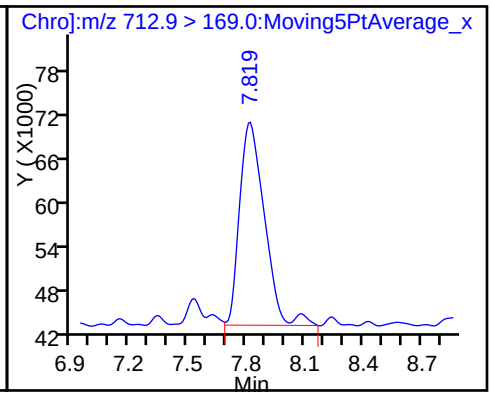
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Denver

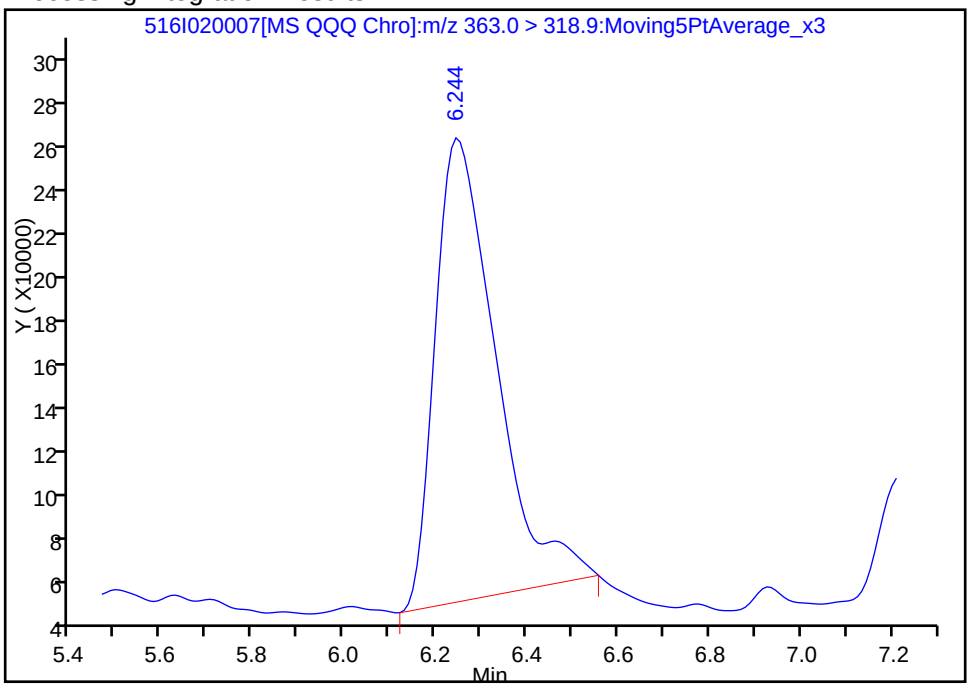
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020007.d
Injection Date: 20-Sep-2016 16:31:28 Instrument ID: LC_LCMS5
Lims ID: STD0005
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

8 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

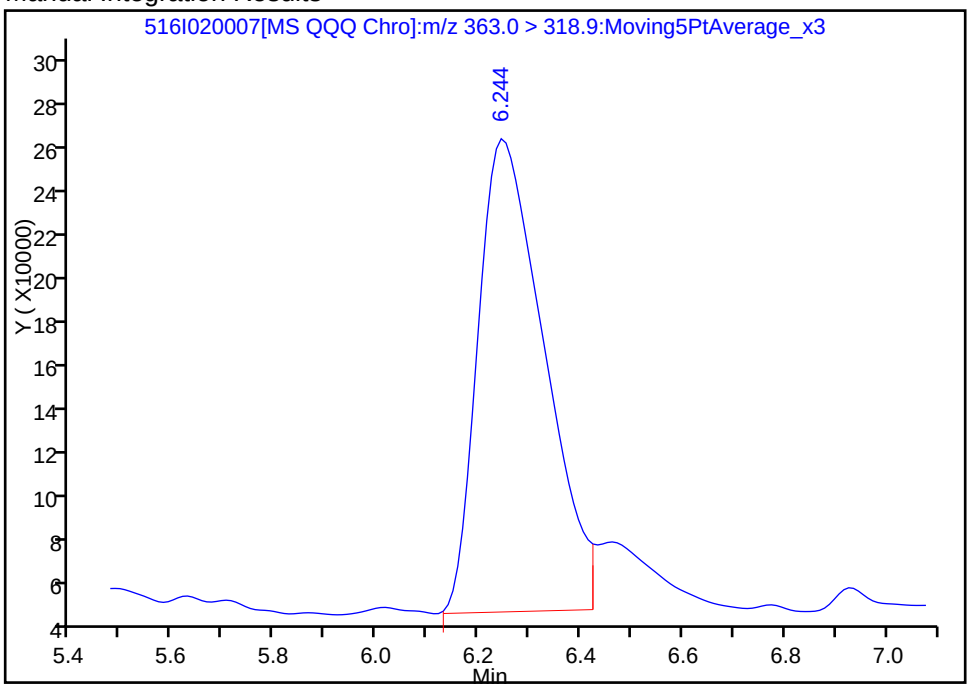
Processing Integration Results

RT: 6.24
Area: 1934318
Amount: 0.487562
Amount Units: ug/L



Manual Integration Results

RT: 6.24
Area: 1920865
Amount: 0.500967
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:25:27
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver

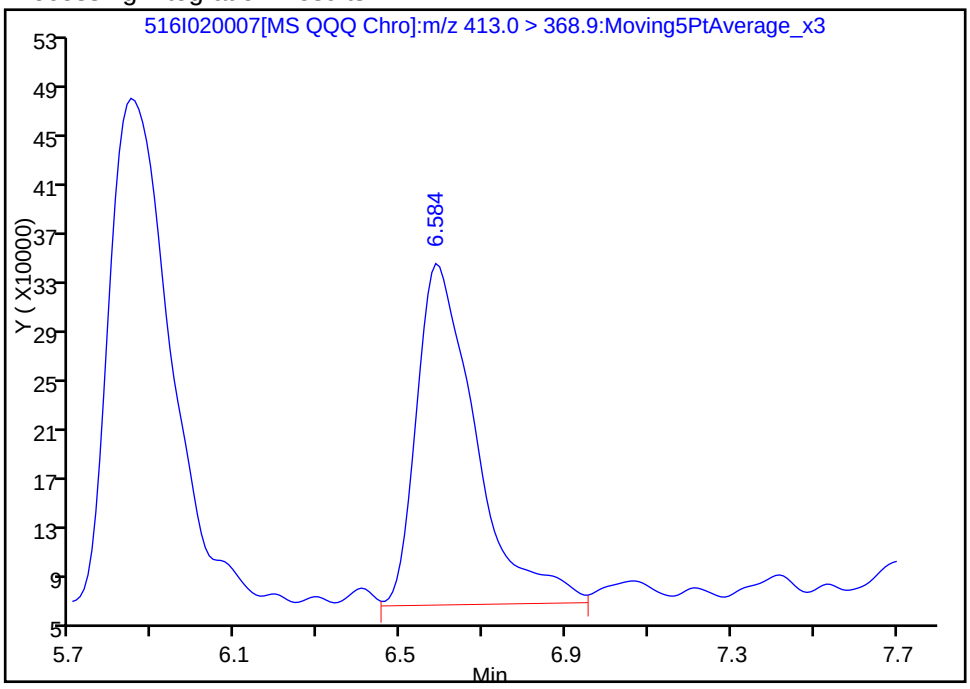
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020007.d				
Injection Date:	20-Sep-2016 16:31:28	Instrument ID:	LC_LCMS5		
Lims ID:	STD0005				
Client ID:					
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	4
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

16 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

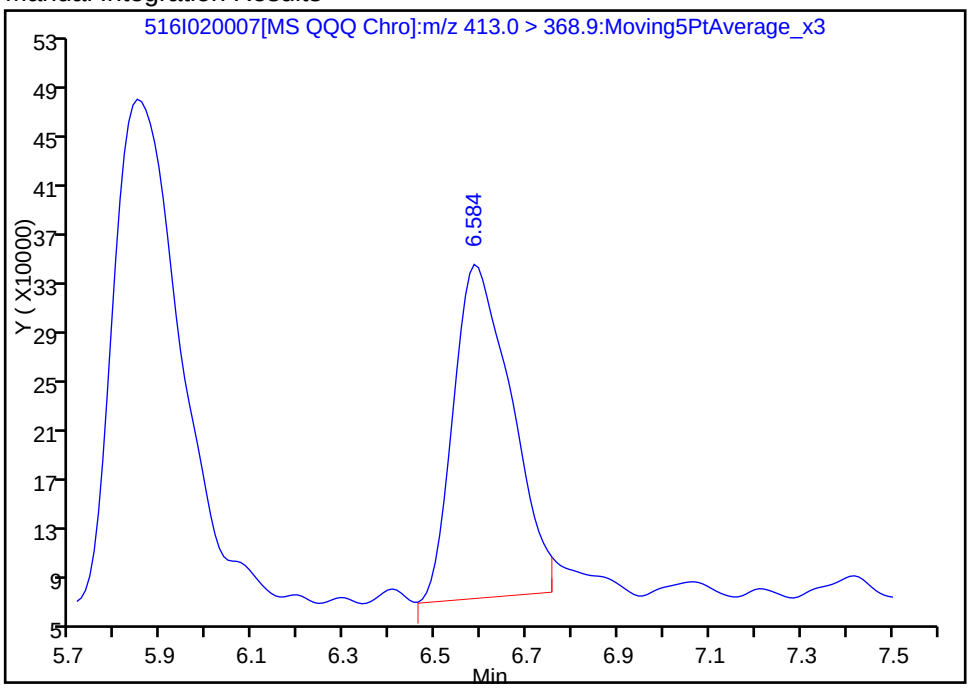
Processing Integration Results

RT: 6.58
Area: 2717547
Amount: 0.512989
Amount Units: ug/L



Manual Integration Results

RT: 6.58
Area: 2350756
Amount: 0.456619
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 08:23:18
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason:

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020008.d
Lims ID: STD0010
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 20-Sep-2016 16:43:48 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0010, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:09:52 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:24:33

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.257	4.295	-0.038		35686826	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.248	4.295	-0.047	0.998	3755353	0.9588			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.308	5.327	-0.019	0.903	2703740	0.9132			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.421	5.440	-0.019	0.860	1369586	0.8527			
298.9 > 98.9	5.402	5.440	-0.038	0.857	487313		2.81(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.421	5.440	-0.019	0.860	1369586	0.8527			
298.9 > 98.9	5.402	5.440	-0.038	0.857	487313		2.81(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.875	5.904	-0.029		27112866	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.866	5.904	-0.038	0.998	2349804	0.9037			
313.0 > 118.6	5.847	5.904	-0.057	0.995	33440		70.27(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.300	6.338	-0.038		3155487	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.291	6.339	-0.048	0.999	1140290	0.9067			R
398.9 > 98.9	6.301	6.339	-0.038	1.000	437557		2.61(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.291	6.339	-0.048	0.999	1140290	0.9067			
398.9 > 98.9	6.301	6.339	-0.038	1.000	437557		2.61(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.301	6.339	-0.038	0.949	4272752	1.06			
363.0 > 168.9	6.292	6.339	-0.047	0.947	1055600		4.05(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.621	6.678	-0.057	0.959	1325168	1.10			
449.0 > 98.9	6.621	6.678	-0.057	0.959	416907		3.18(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.621	6.678	-0.057	0.959	1325168	1.10			
449.0 > 98.9	6.621	6.678	-0.057	0.959	416907		3.18(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.650	6.688	-0.038	1.001	3668395	1.11			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.641	6.688	-0.047		41768826	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.651	6.688	-0.038	1.001	4850788	1.02			
413.0 > 169.0	6.632	6.688	-0.056	0.999	1370711		3.54(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.904	6.961	-0.057		10021733	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	6.913	6.970	-0.057	1.001	579880	1.03			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.914	6.970	-0.056	1.001	1310908	1.02			R
498.9 > 98.9	6.914	6.970	-0.056	1.001	522958		2.51(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.924	6.990	-0.066		30181776	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.933	6.990	-0.057	1.001	3242858	0.9734			R
463.0 > 218.9	6.943	6.990	-0.047	1.003	584888		5.54(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.158	7.234	-0.076		32795578	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.168	7.234	-0.066	1.001	3434684	1.02			
513.0 > 219.0	7.168	7.234	-0.066	1.001	227794		15.08(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.337	7.413	-0.076	1.063	1227412	0.9380			
598.9 > 99.0	7.328	7.413	-0.085	1.061	356441		3.44(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.337	7.413	-0.076	1.063	1227412	0.9380			
598.9 > 99.0	7.328	7.413	-0.085	1.061	356441		3.44(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.376	7.442	-0.066		22756357	10.0			
27 Perfluoroundecanoic acid									RM
563.0 > 518.9	7.385	7.452	-0.067	1.001	2911504	0.8656			RM
563.0 > 268.9	7.376	7.452	-0.076	1.000	398401		7.31(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.555	7.621	-0.067		47244425	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.555	7.621	-0.066	1.000	4921591	0.9773			
613.0 > 168.9	7.564	7.621	-0.057	1.001	634228		7.76(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.652	7.633	0.019		33152476	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.653	7.634	0.019	1.000	3336168	0.9541			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.715	7.782	-0.067	1.021	3884039	0.9095			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.838	7.904	-0.066	1.038	3477326	1.05			
712.9 > 169.0	7.838	7.904	-0.066	1.038	497727		6.99(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	50.00	Units: uL

Report Date: 21-Sep-2016 12:09:53 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020008.d

Injection Date: 20-Sep-2016 16:43:48 Instrument ID: LC_LCMS5

Lims ID: STD0010

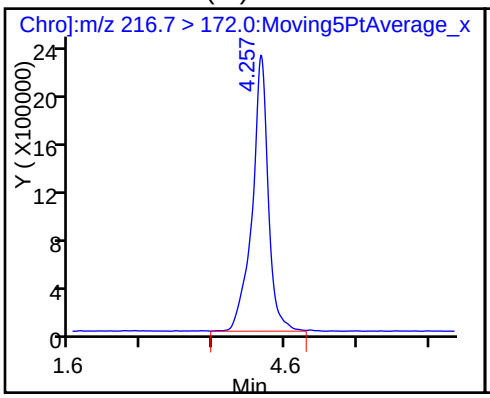
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

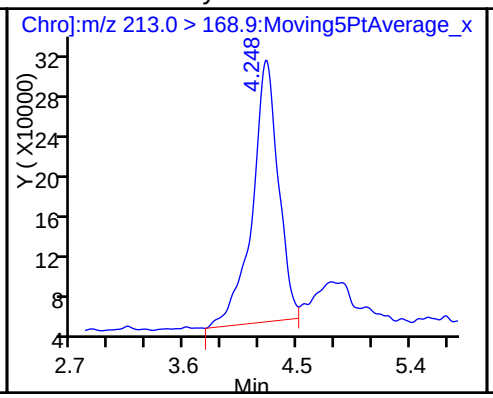
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

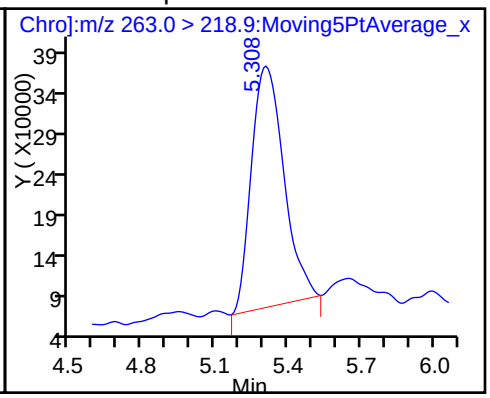
* 1 13C4 PFBA (IS)



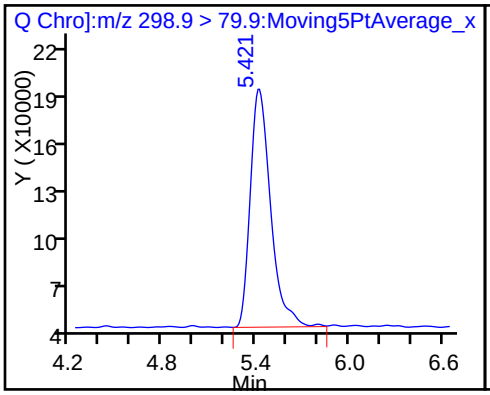
2 Perfluorobutyric acid



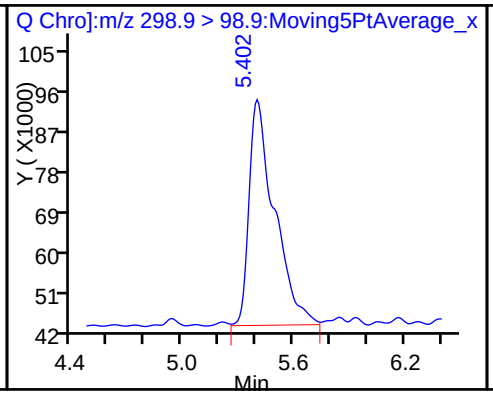
3 Perfluoropentanoic acid



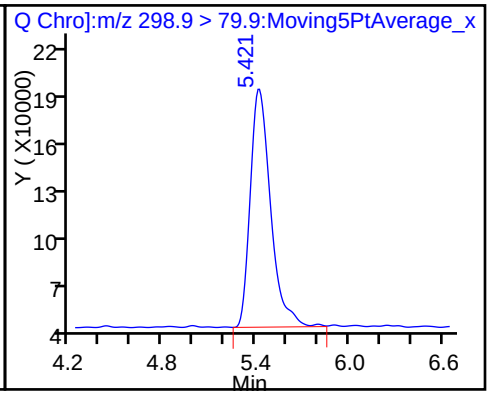
5 Perfluorobutanesulfonic acid



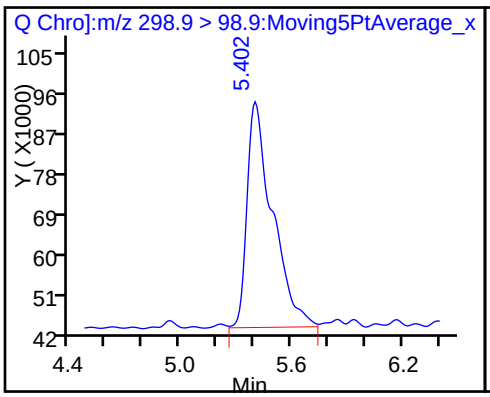
5 Perfluorobutanesulfonic acid



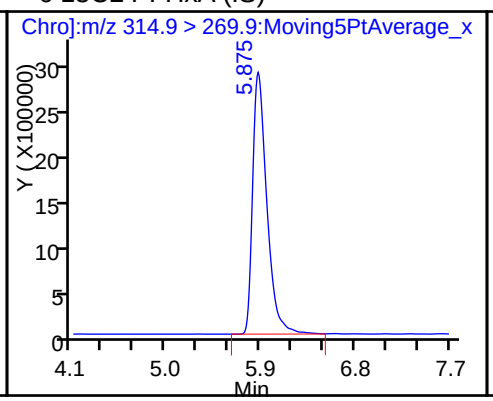
4 Perfluorobutane Sulfonate



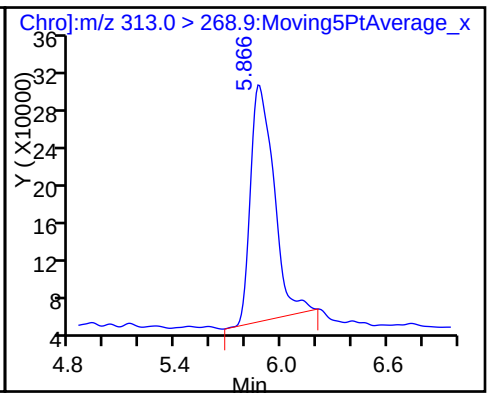
4 Perfluorobutane Sulfonate



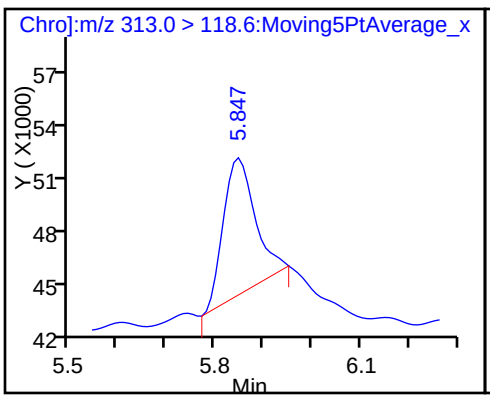
* 6 13C2 PFHxA (IS)



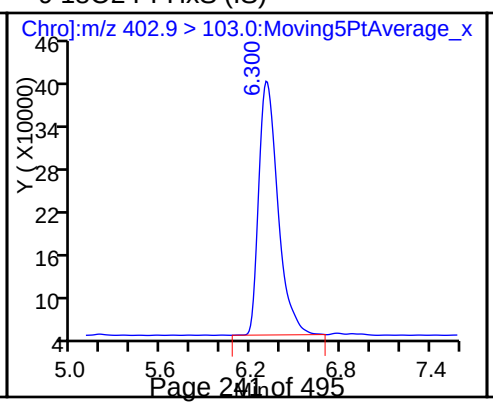
7 Perfluorohexanoic acid



7 Perfluorohexanoic acid



* 9 18O2 PFHxS (IS)



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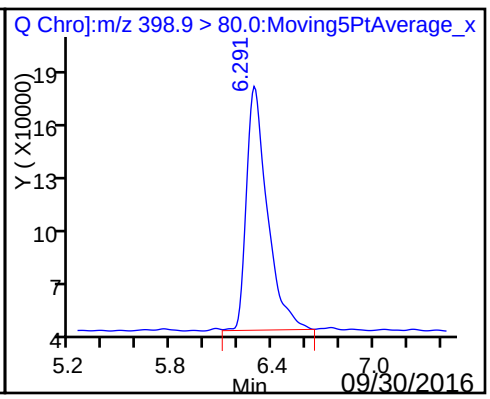

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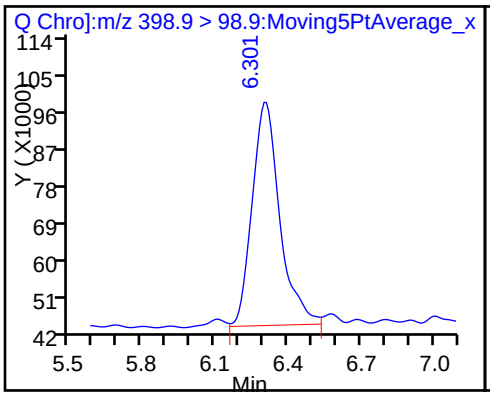
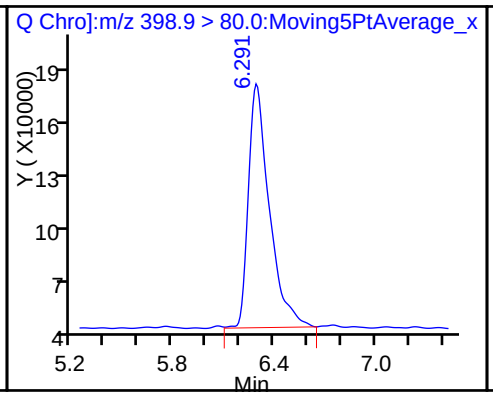
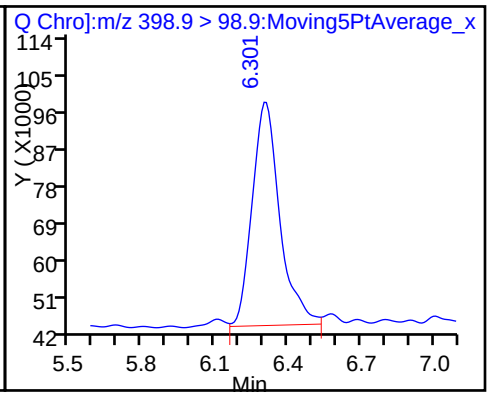


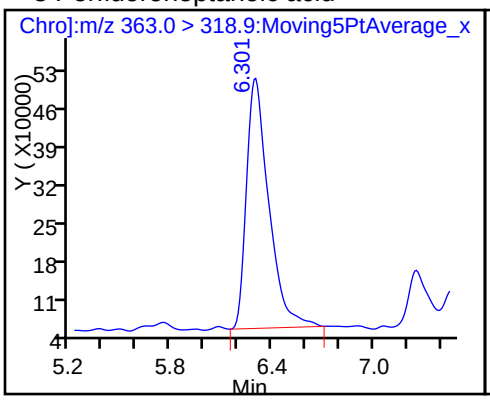
11 Perfluorohexanesulfonic acid



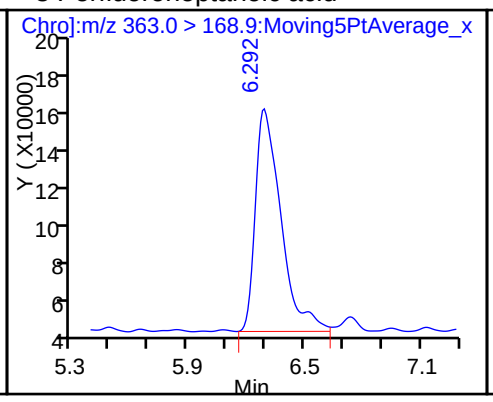
11 Perfluorohexanesulfonic acid



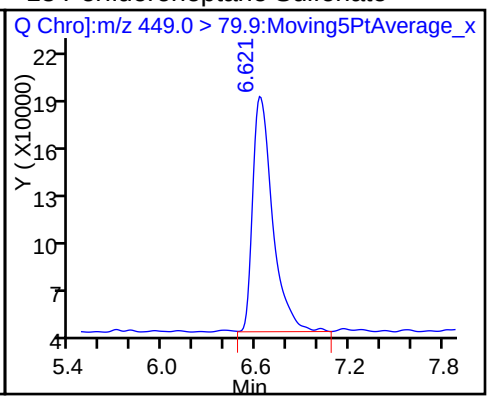
8 Perfluoroheptanoic acid



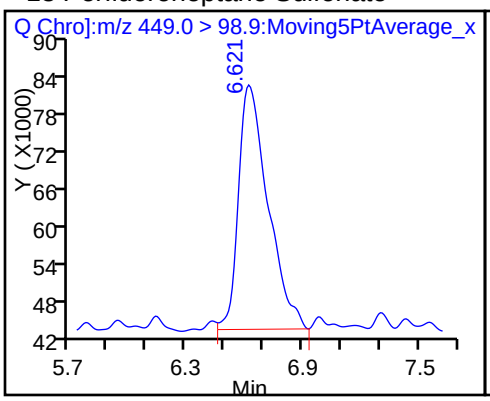
8 Perfluoroheptanoic acid



13 Perfluoroheptane Sulfonate



13 Perfluoroheptane Sulfonate



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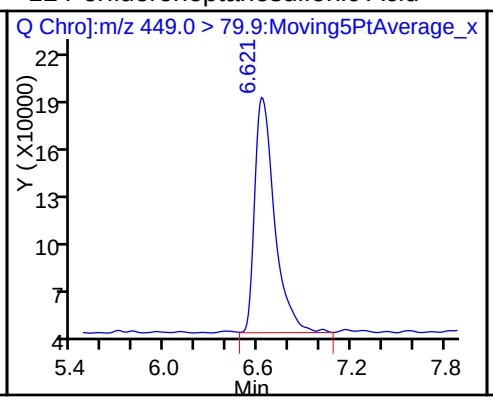

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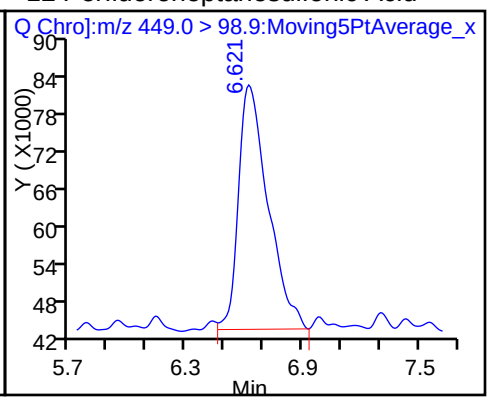
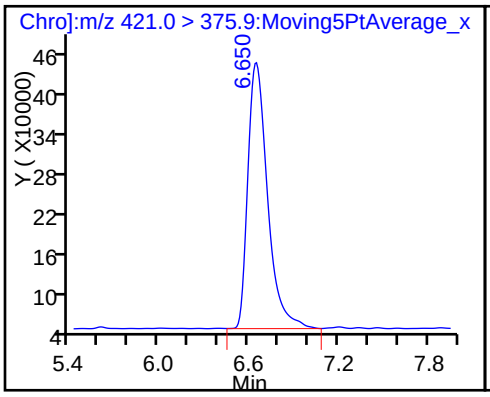
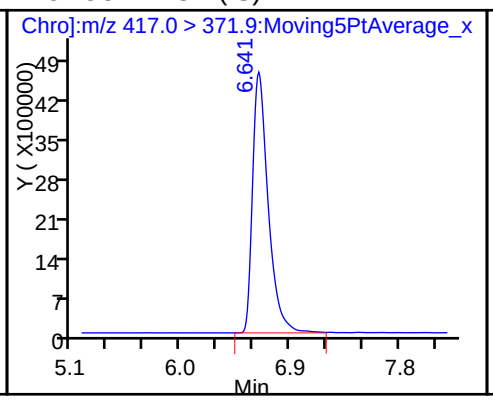


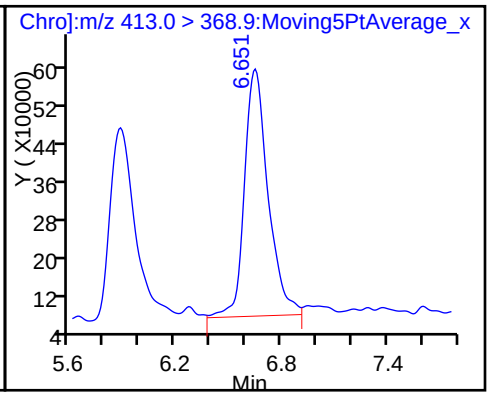
$ 14 13C8 PFOA



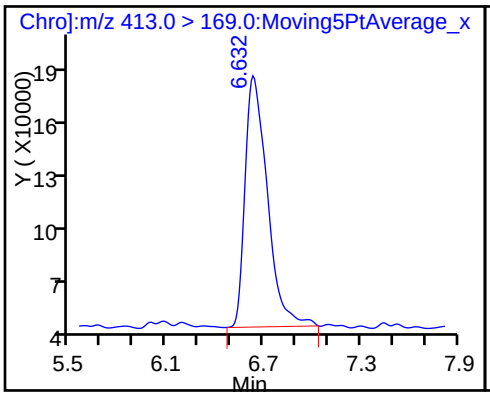
* 15 13C4 PFOA (IS)



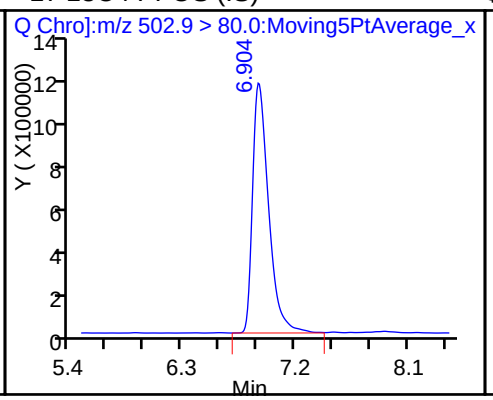
16 Perfluorooctanoic acid



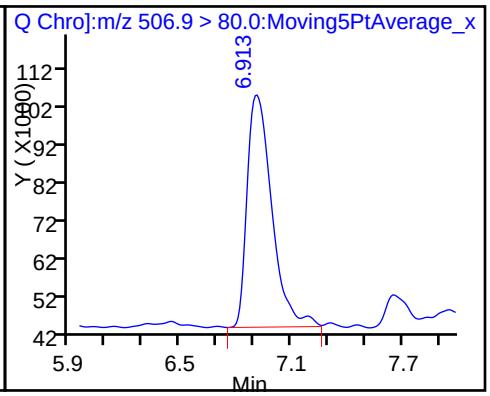
16 Perfluorooctanoic acid



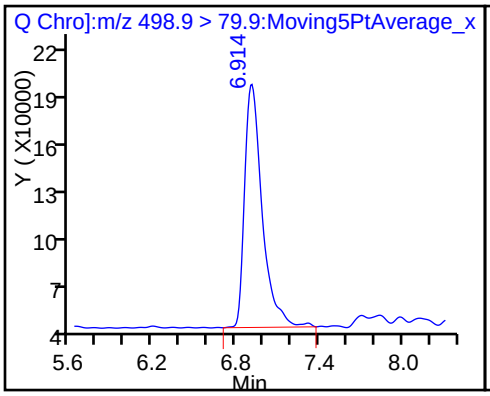
* 17 13C4 PFOS (IS)



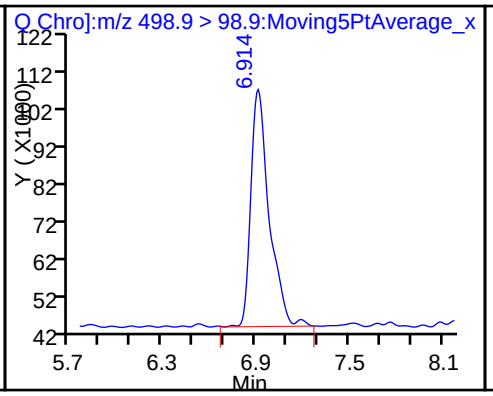
$ 18 13C8 PFOS



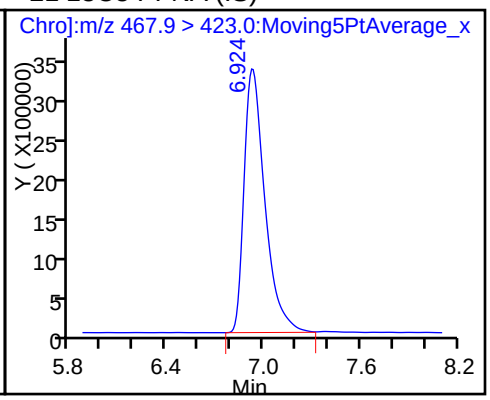
19 Perfluorooctane sulfonic acid



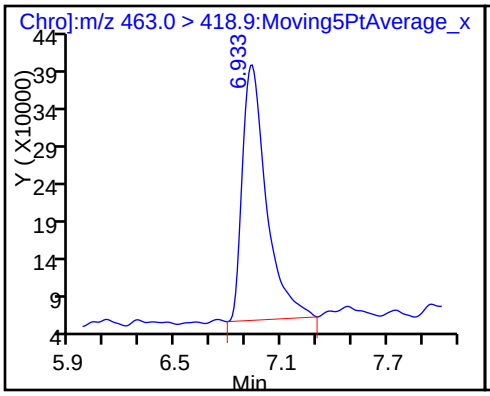
19 Perfluorooctane sulfonic acid



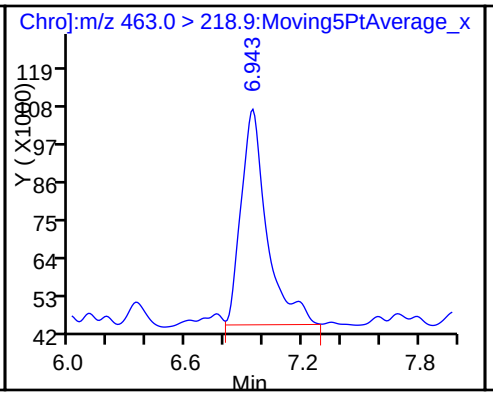
* 21 13C5 PFNA (IS)



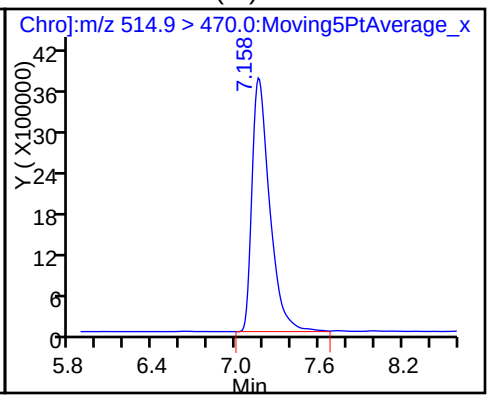
20 Perfluorononanoic acid



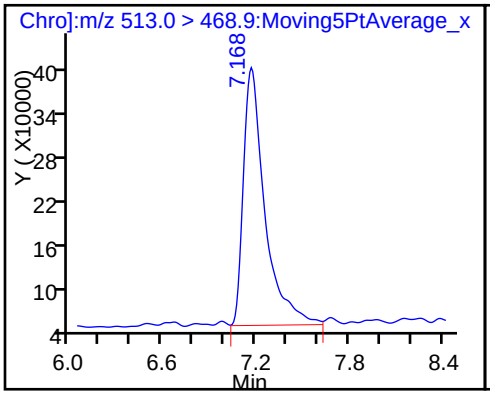
20 Perfluorononanoic acid



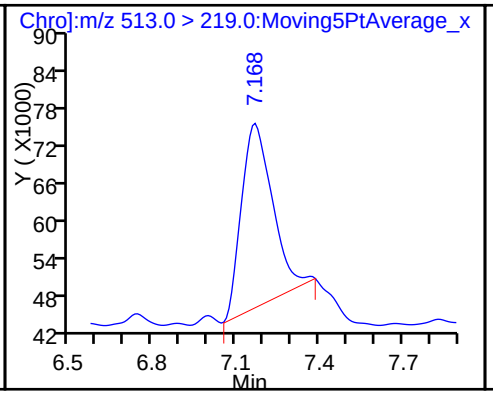
* 22 13C2 PFDA (IS)



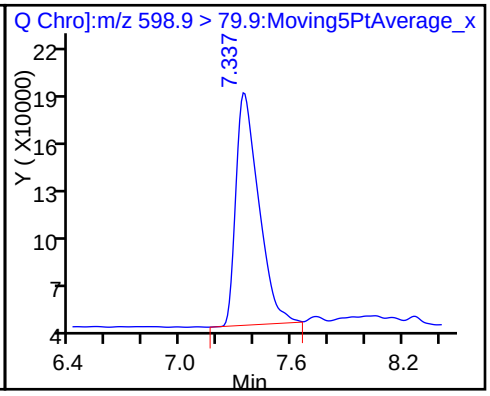
23 Perfluorodecanoic acid



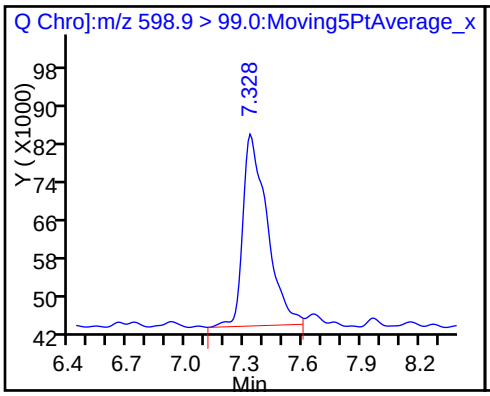
23 Perfluorodecanoic acid



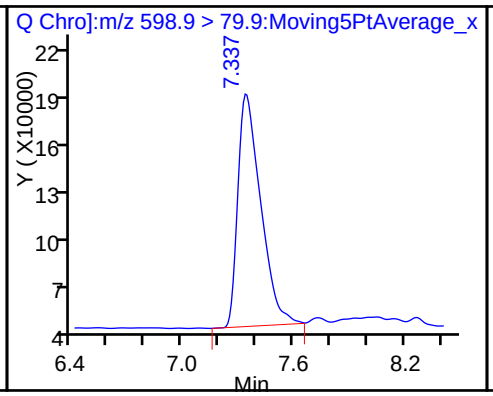
25 Perfluorodecane Sulfonate



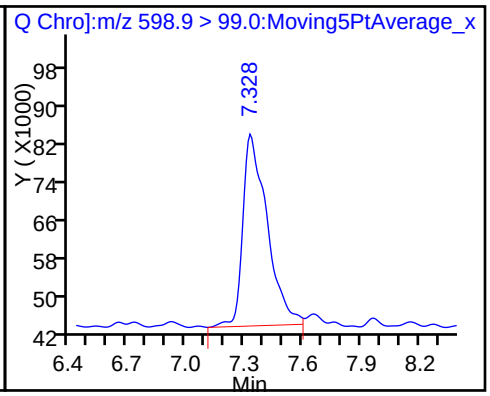
25 Perfluorodecane Sulfonate



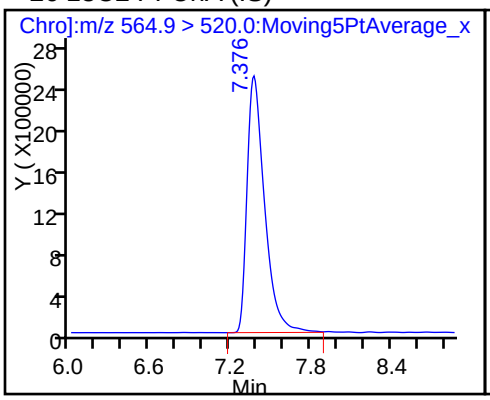
24 Perfluorodecane Sulfonic acid



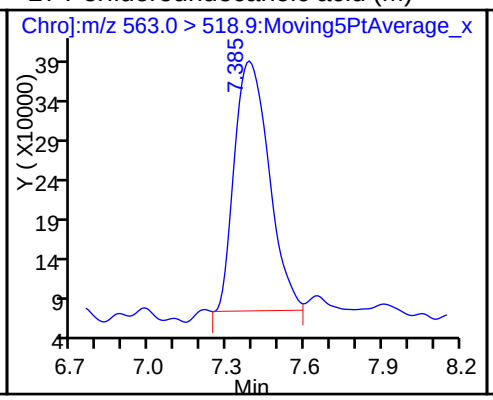
24 Perfluorodecane Sulfonic acid



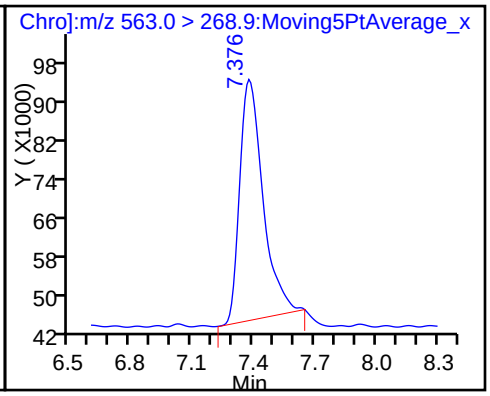
* 26 13C2 PFUnA (IS)



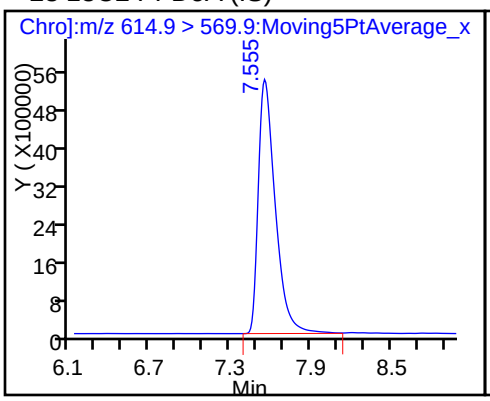
27 Perfluoroundecanoic acid (M)



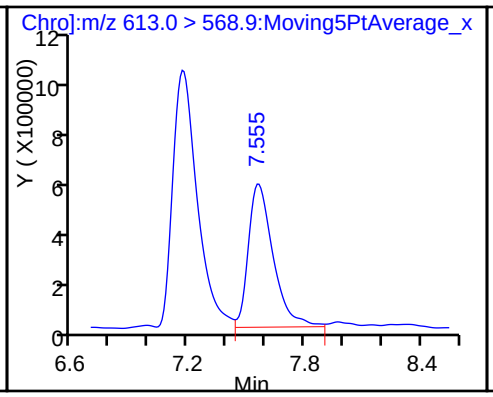
27 Perfluoroundecanoic acid



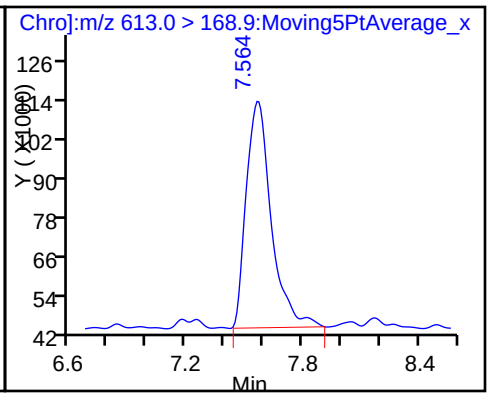
* 28 13C2 PFDoA (IS)



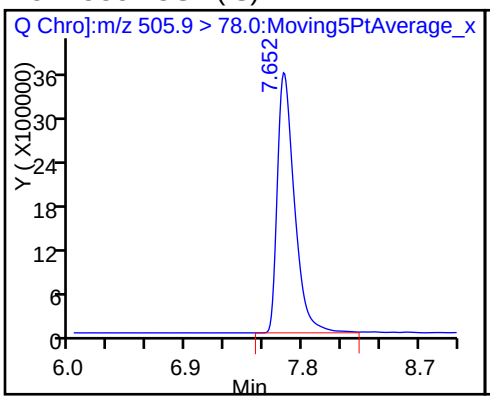
29 Perfluorododecanoic acid



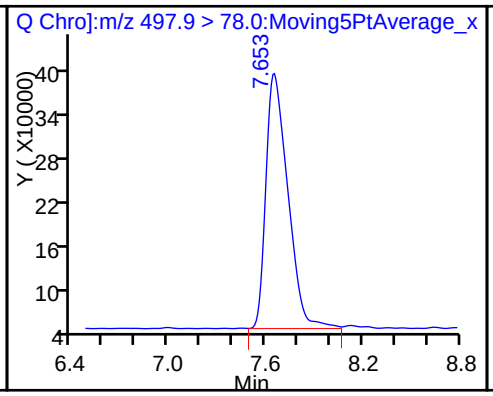
29 Perfluorododecanoic acid



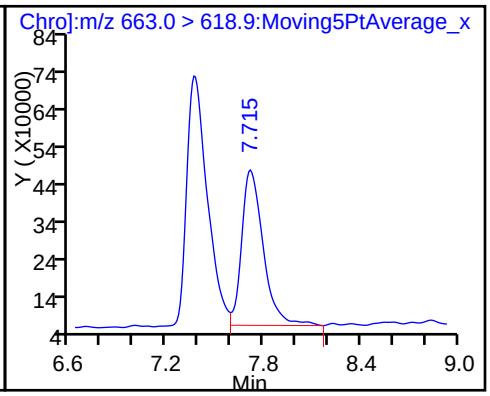
* 31 13C8 FOSA (IS)



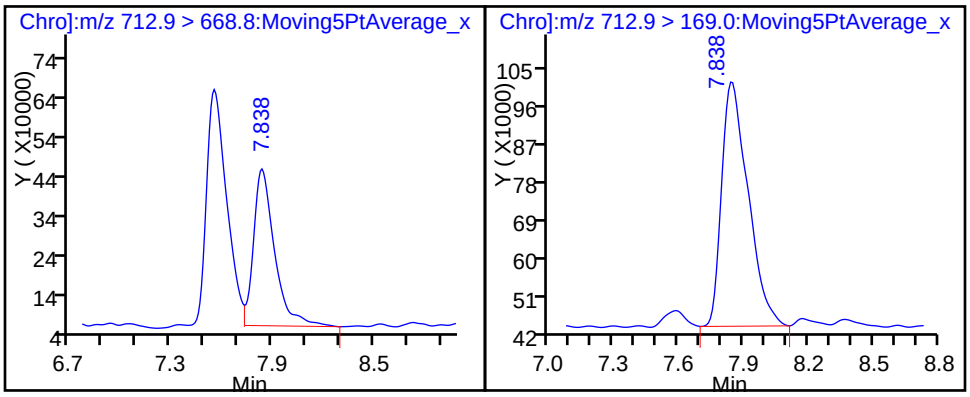
32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

Manual Integration/User Assign Peak Report

TestAmerica Denver

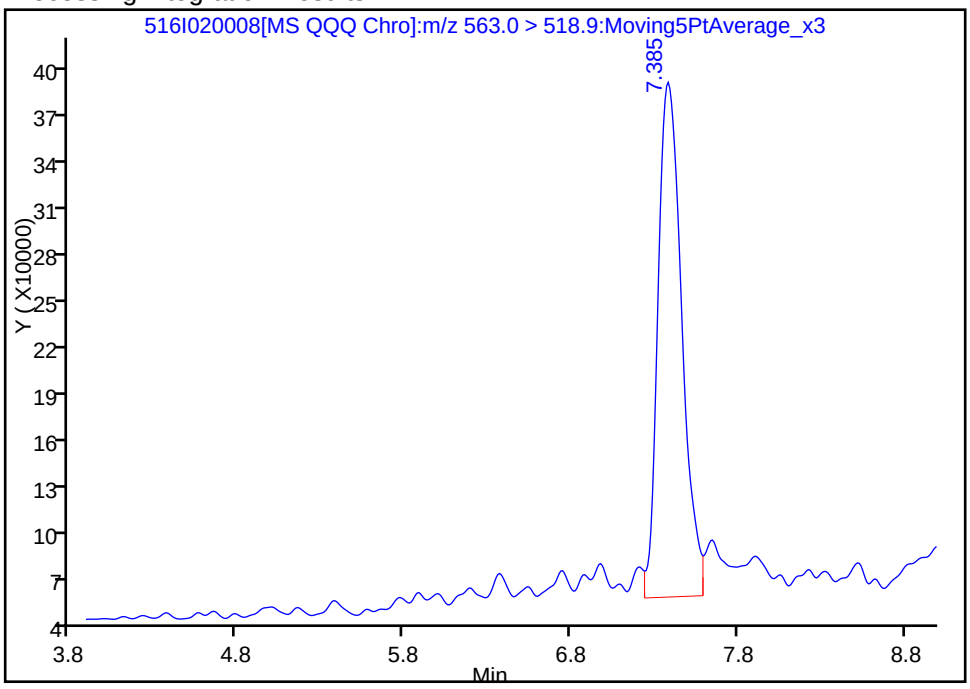
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020008.d
Injection Date: 20-Sep-2016 16:43:48 Instrument ID: LC_LCMS5
Lims ID: STD0010
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

27 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 1

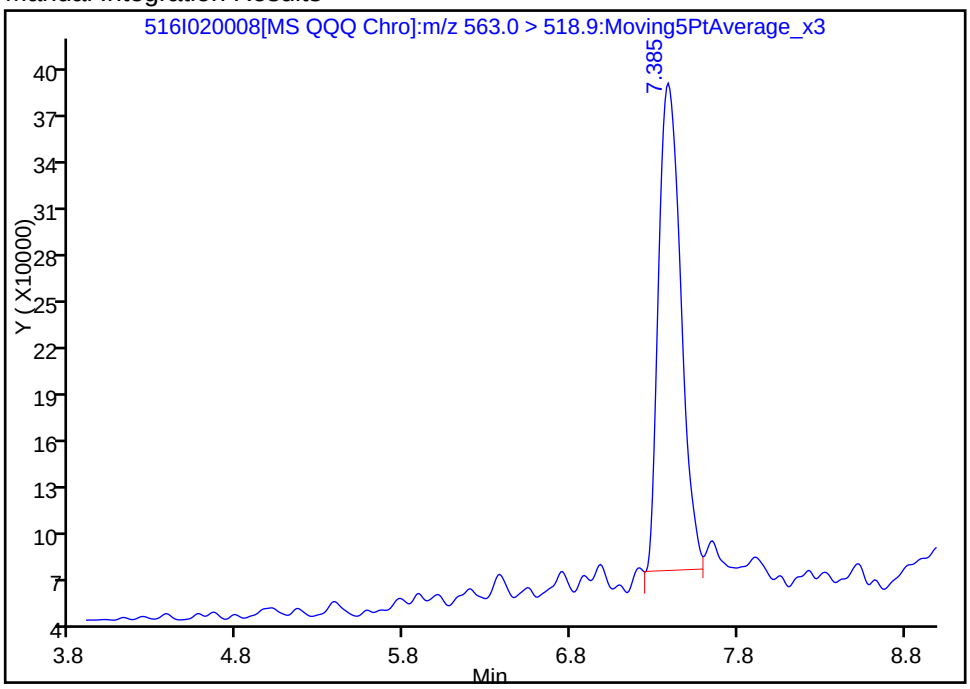
Processing Integration Results

RT: 7.39
Area: 3280559
Amount: 0.950981
Amount Units: ug/L



Manual Integration Results

RT: 7.39
Area: 2911504
Amount: 0.865602
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:24:33
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020009.d
Lims ID: STD0020
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 20-Sep-2016 16:56:08 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0020, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:09:56 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:23:58

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.219	4.219	0.0		34350371	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.219	4.219	0.0	1.000	7801285	2.04			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.318	5.318	0.0	0.901	5430816	1.94			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.431	5.431	0.0	0.857	2681679	1.79			
298.9 > 98.9	5.431	5.431	0.0	0.857	940426		2.85(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.431	5.431	0.0	0.857	2681679	1.79			
298.9 > 98.9	5.431	5.431	0.0	0.857	940426		2.85(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.904	5.904	0.0		25709796	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.913	5.913	0.0	1.002	4795970	1.97			
313.0 > 118.6	5.904	5.913	-0.009	1.000	121871		39.35(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.338	6.338	0.0		2890130	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.339	6.339	0.0	1.000	2242658	1.95			
398.9 > 98.9	6.339	6.339	0.0	1.000	989943		2.27(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.339	6.339	0.0	1.000	2242658	1.95			
398.9 > 98.9	6.339	6.339	0.0	1.000	989943		2.27(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.339	6.339	0.0	0.948	8487907	2.17			
363.0 > 168.9	6.339	6.339	0.0	0.948	2232982		3.80(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.678	6.678	0.0	0.954	2461873	2.03			
449.0 > 98.9	6.697	6.678	0.019	0.957	774210		3.18(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.678	6.678	0.0	0.954	2461873	2.03			
449.0 > 98.9	6.697	6.678	0.019	0.957	774210		3.18(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.688	6.688	0.0	1.000	6842668	2.22			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.688	6.688	0.0		39854089	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.698	6.698	0.0	1.001	9509302	2.22			
413.0 > 169.0	6.698	6.698	0.0	1.001	2718483		3.50(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.999	6.999	0.0		9883283	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	7.008	7.008	0.0	1.001	1142284	2.09			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.999	6.999	0.0	1.000	2573469	2.01			
498.9 > 98.9	6.999	6.999	0.0	1.000	1176208		2.19(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	7.018	7.018	0.0		28040986	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	7.019	7.019	0.0	1.000	6371593	2.00			
463.0 > 218.9	7.019	7.019	0.0	1.000	936529		6.80(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.282	7.282	0.0		31859902	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.291	7.291	0.0	1.001	6791915	2.06			
513.0 > 219.0	7.282	7.291	-0.009	1.000	614051		11.06(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.479	7.479	0.0	1.069	2502401	1.93			
598.9 > 99.0	7.470	7.479	-0.009	1.067	793056		3.16(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.479	7.479	0.0	1.069	2502401	1.93			
598.9 > 99.0	7.470	7.479	-0.009	1.067	793056		3.16(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.499	7.499	0.0		23574479	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.499	7.499	0.0	1.000	6958474	2.03			R
563.0 > 268.9	7.490	7.499	-0.009	0.999	801776		8.68(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.668	7.668	0.0		45983045	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.659	7.659	0.0	0.999	9779034	2.06			
613.0 > 168.9	7.659	7.659	0.0	0.999	1302427		7.51(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.756	7.756	0.0		33515118	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.757	7.757	0.0	1.000	7115039	2.00			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.801	7.801	0.0	1.017	8682233	2.16			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.923	7.923	0.0	1.033	6490819	2.03			
712.9 > 169.0	7.914	7.923	-0.009	1.032	931100		6.97(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_CAL_stock_00033	Amount Added: 100.00	Units: uL

Report Date: 21-Sep-2016 12:09:56 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020009.d

Injection Date: 20-Sep-2016 16:56:08 Instrument ID: LC_LCMS5

Lims ID: STD0020

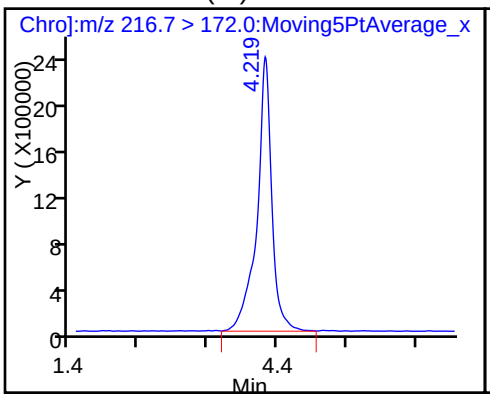
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6

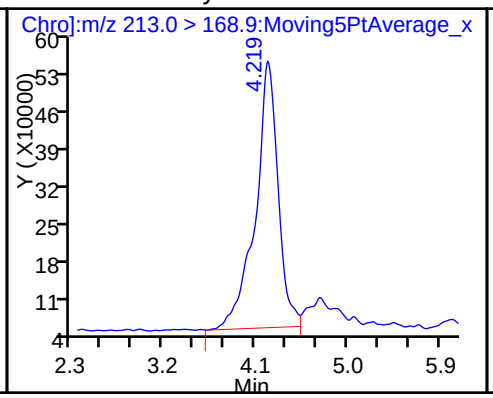
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

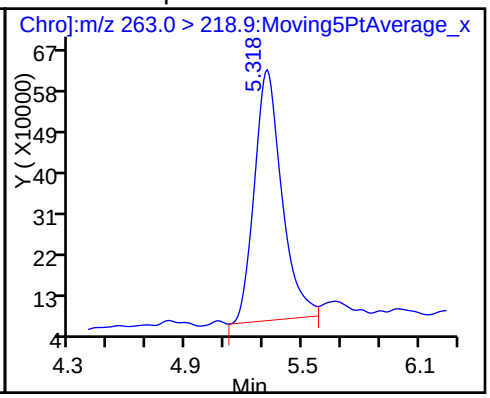
* 1 13C4 PFBA (IS)



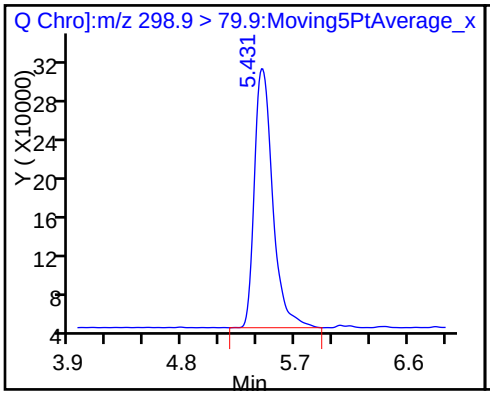
2 Perfluorobutyric acid



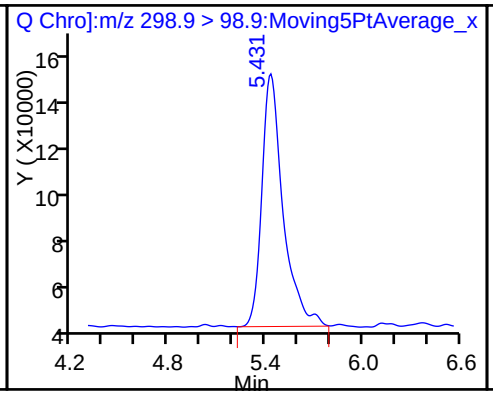
3 Perfluoropentanoic acid



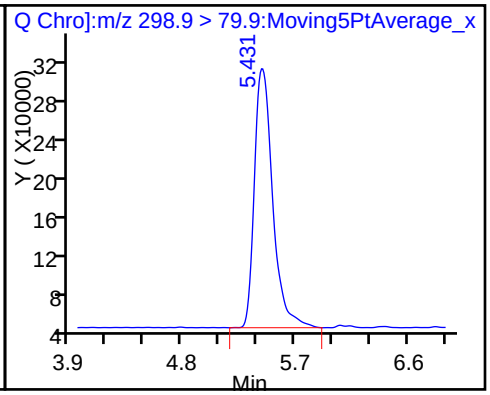
5 Perfluorobutanesulfonic acid



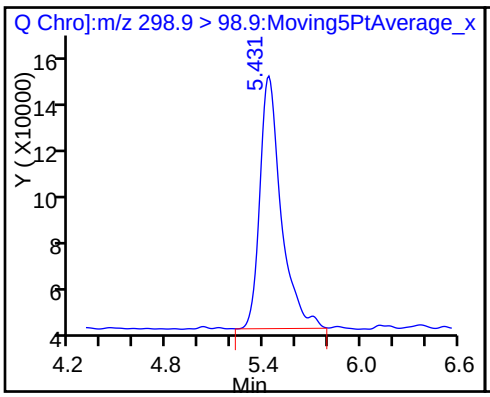
5 Perfluorobutanesulfonic acid



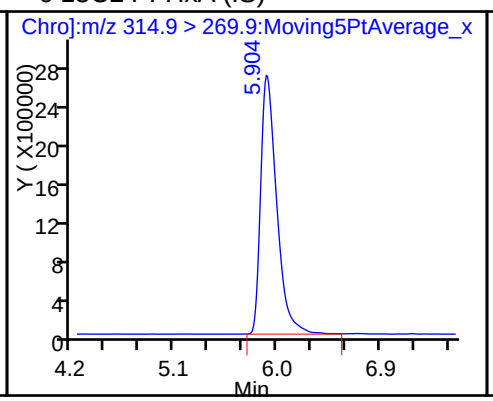
4 Perfluorobutane Sulfonate



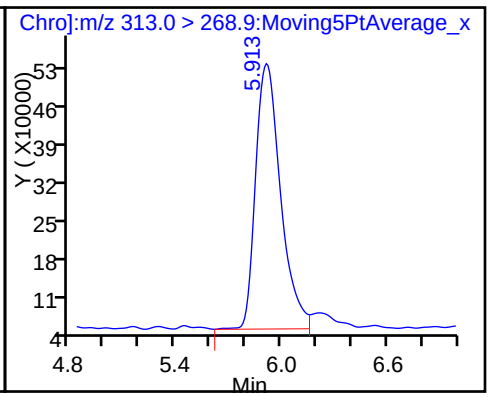
4 Perfluorobutane Sulfonate



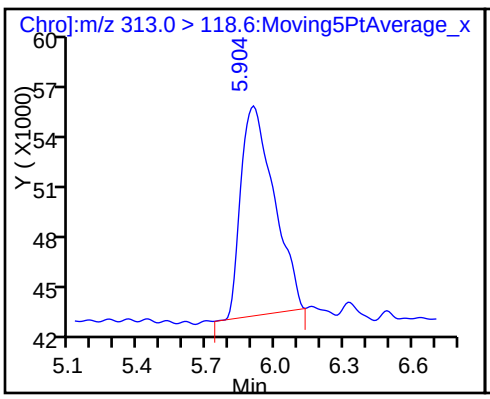
* 6 13C2 PFHxA (IS)



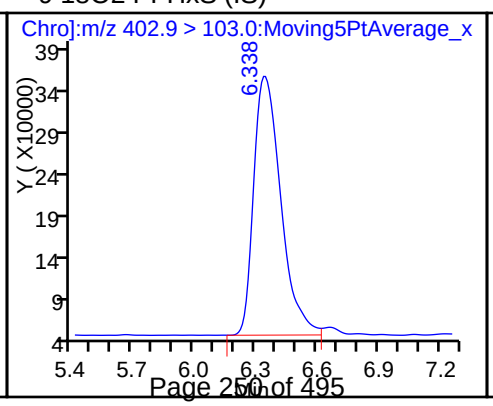
7 Perfluorohexanoic acid



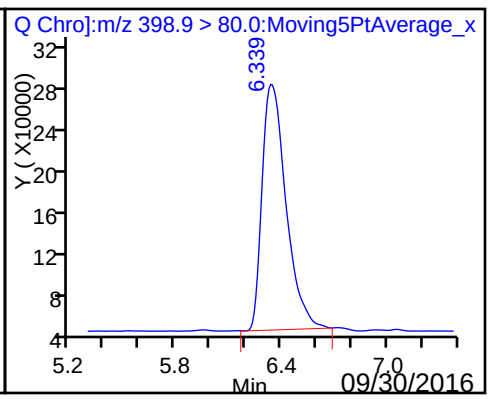
7 Perfluorohexanoic acid



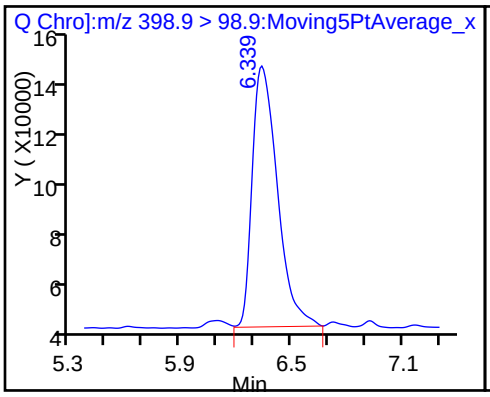
* 9 18O2 PFHxS (IS)



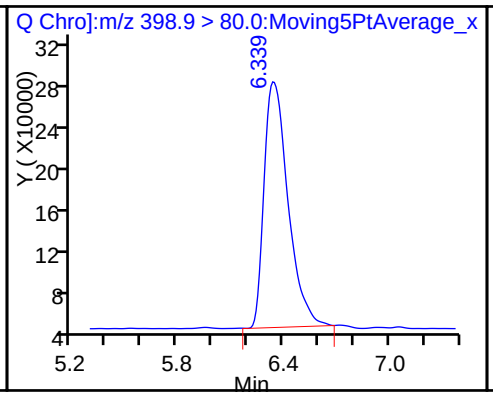
10 Perfluorohexane Sulfonate



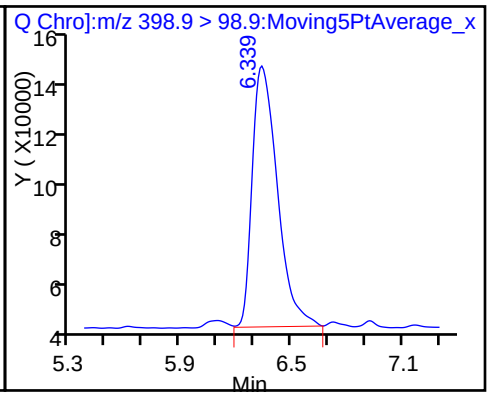
10 Perfluorohexane Sulfonate



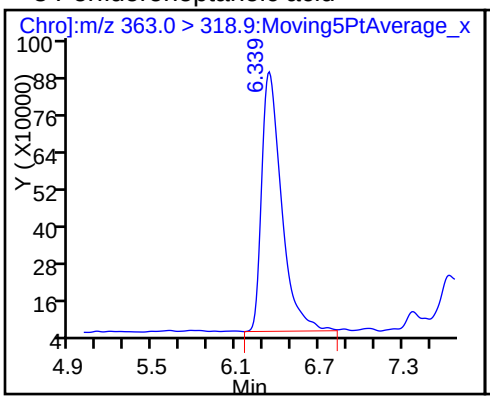
11 Perfluorohexanesulfonic acid



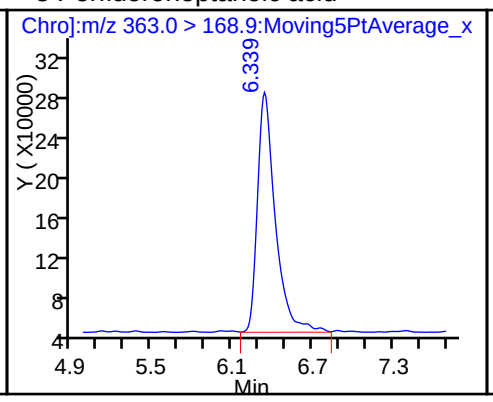
11 Perfluorohexanesulfonic acid



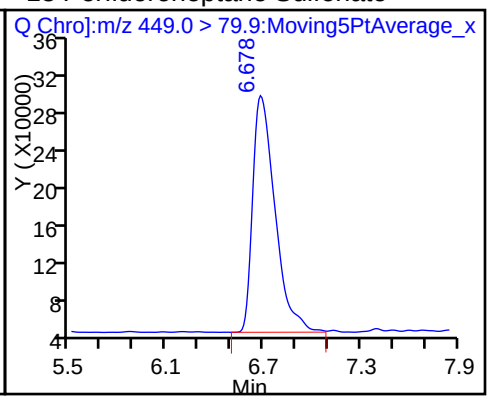
8 Perfluoroheptanoic acid



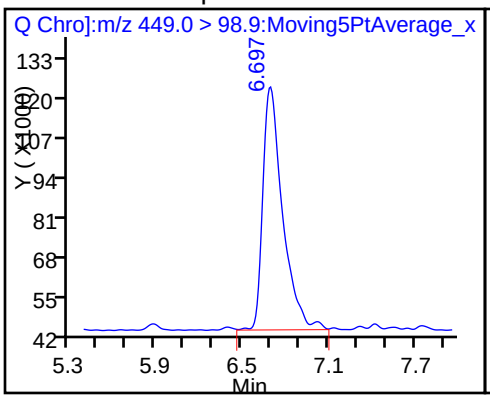
8 Perfluoroheptanoic acid



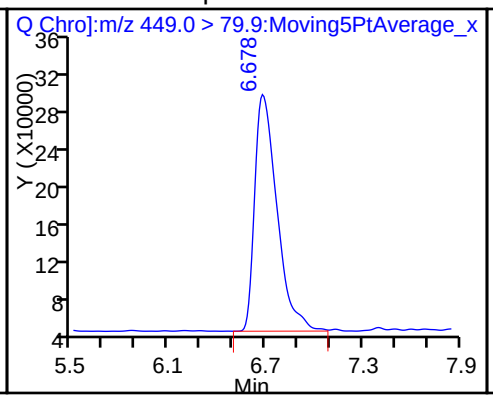
13 Perfluoroheptane Sulfonate



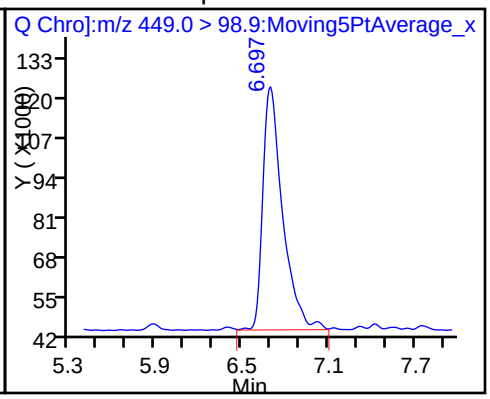
13 Perfluoroheptane Sulfonate



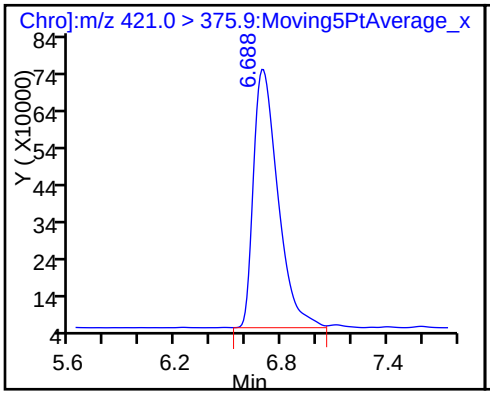
12 Perfluoroheptanesulfonic Acid



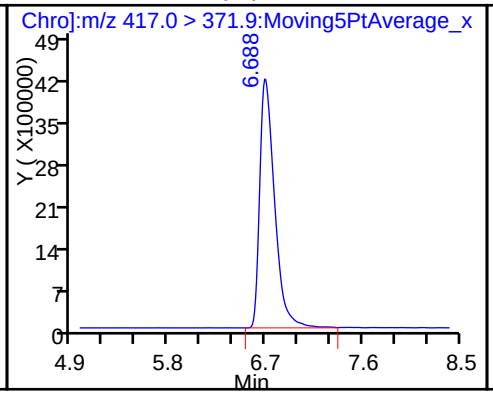
12 Perfluoroheptanesulfonic Acid



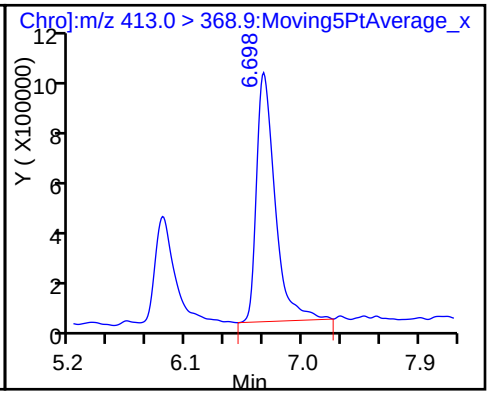
$ 14 13C8 PFOA



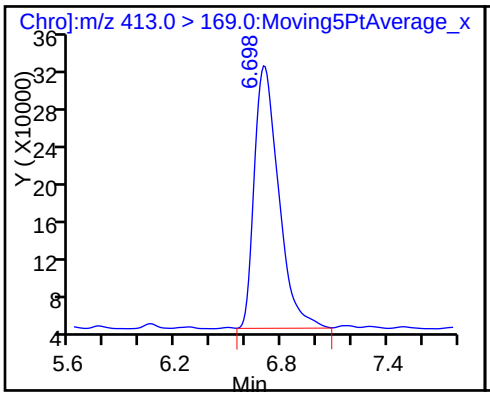
* 15 13C4 PFOA (IS)



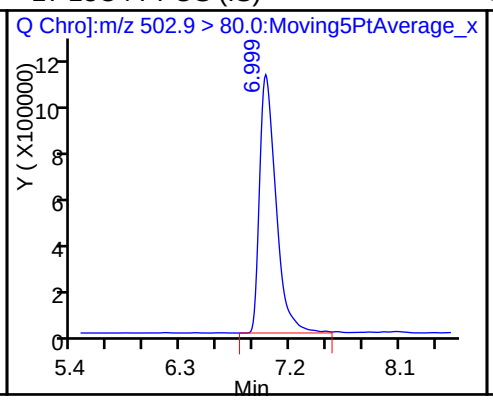
16 Perfluorooctanoic acid



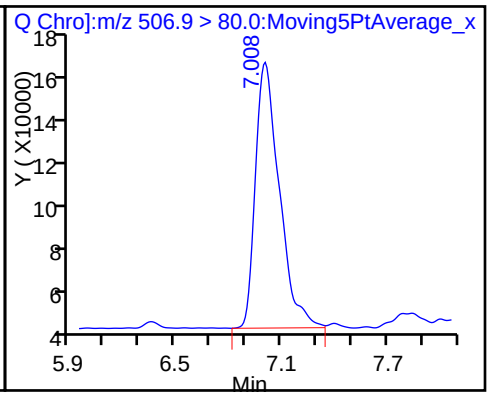
16 Perfluorooctanoic acid



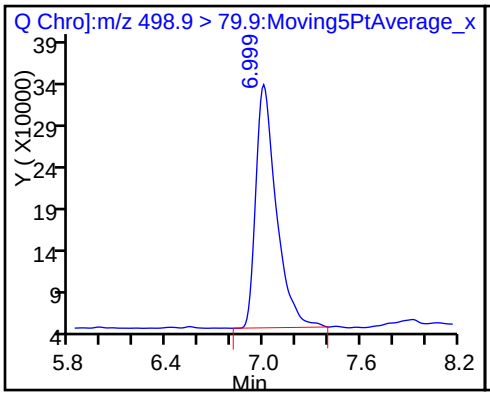
* 17 13C4 PFOS (IS)



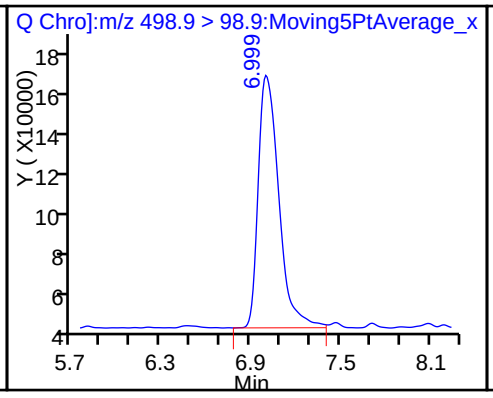
$ 18 13C8 PFOS



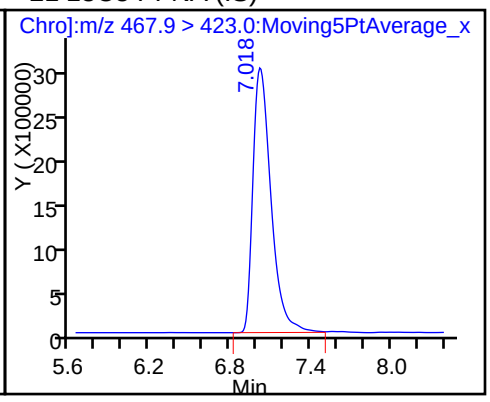
19 Perfluorooctane sulfonic acid



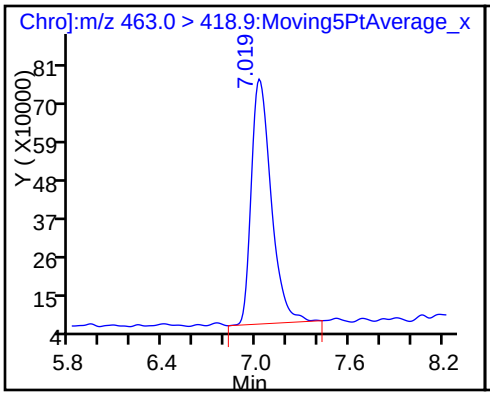
19 Perfluorooctane sulfonic acid



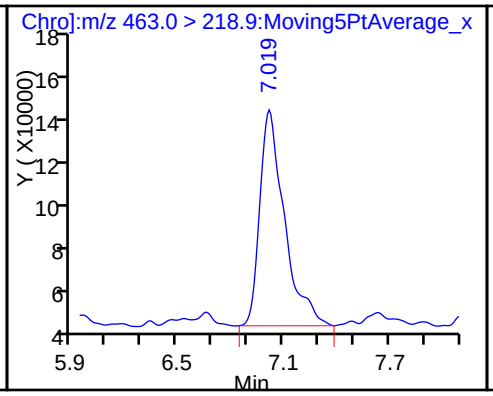
* 21 13C5 PFNA (IS)



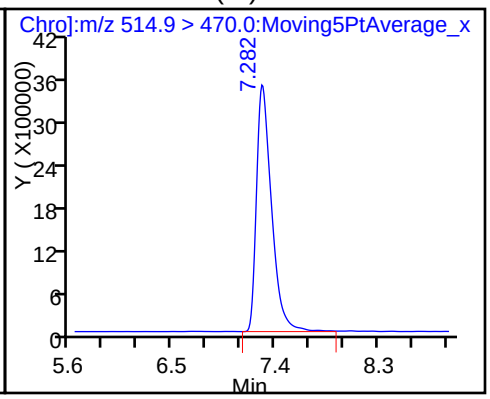
20 Perfluorononanoic acid



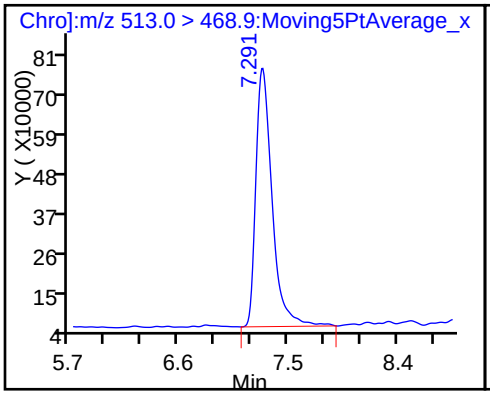
20 Perfluorononanoic acid



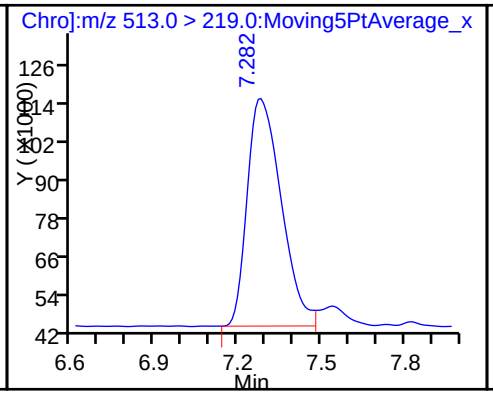
* 22 13C2 PFDA (IS)



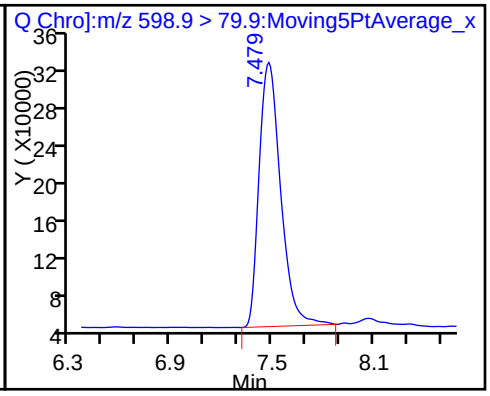
23 Perfluorodecanoic acid



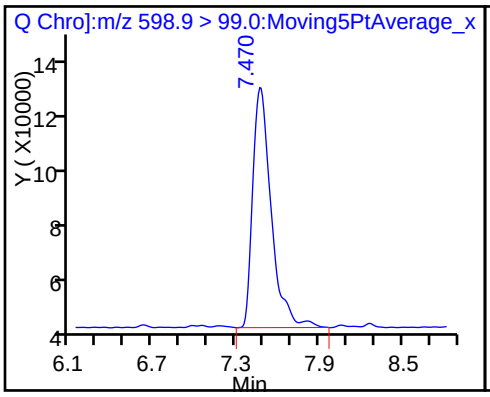
23 Perfluorodecanoic acid



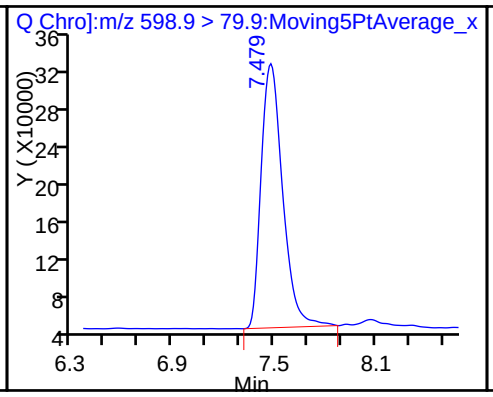
25 Perfluorodecane Sulfonate



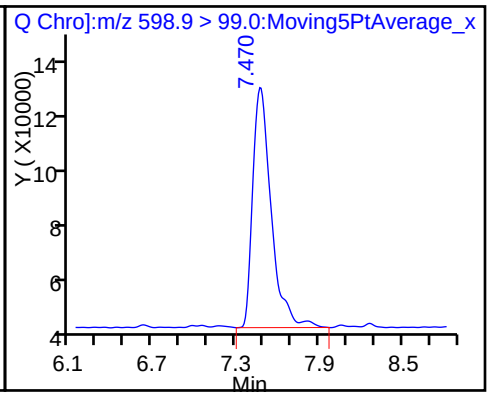
25 Perfluorodecane Sulfonate



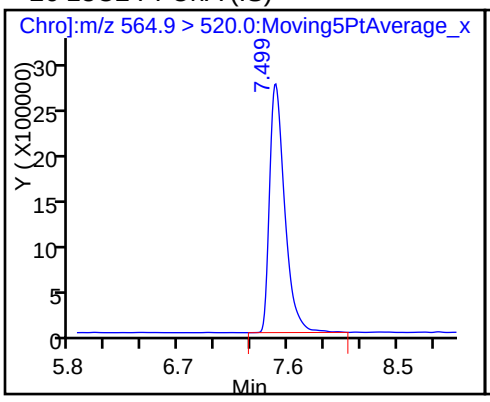
24 Perfluorodecane Sulfonic acid



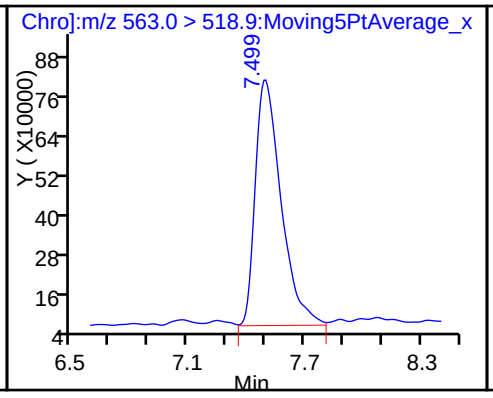
24 Perfluorodecane Sulfonic acid



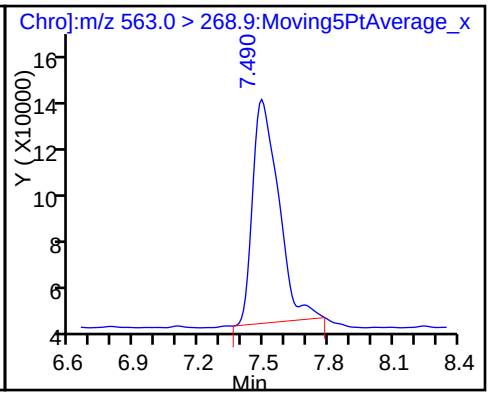
* 26 13C2 PFUnA (IS)



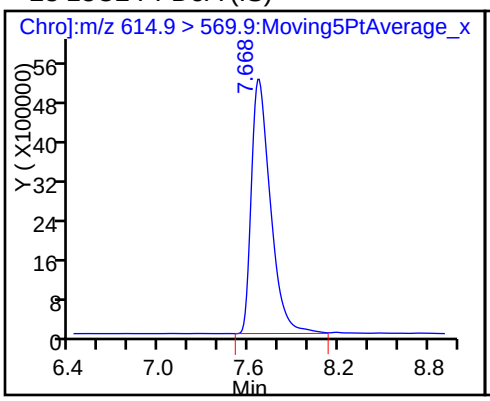
27 Perfluoroundecanoic acid



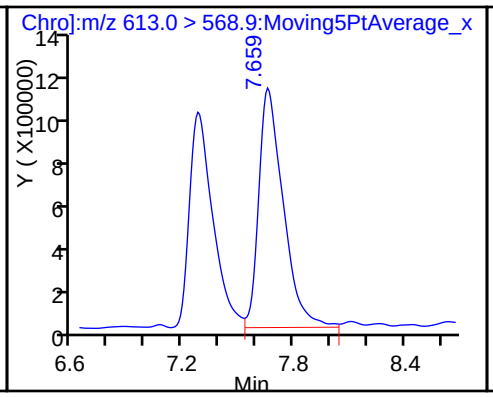
27 Perfluoroundecanoic acid



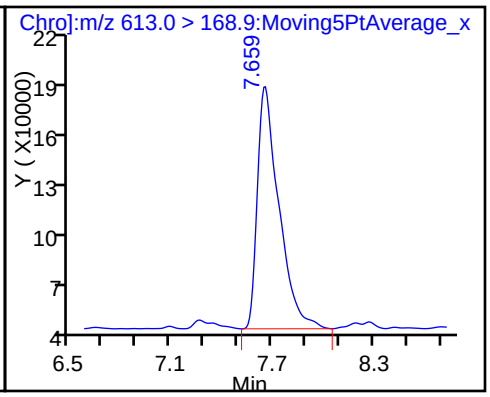
* 28 13C2 PFDoA (IS)



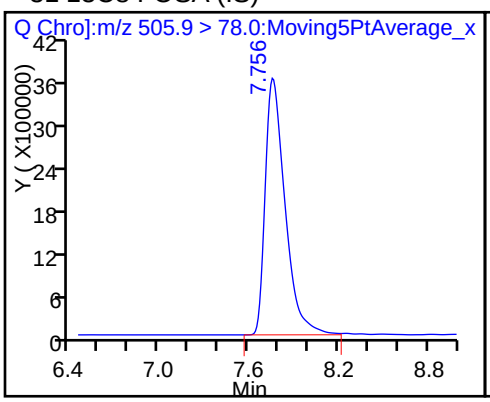
29 Perfluorododecanoic acid



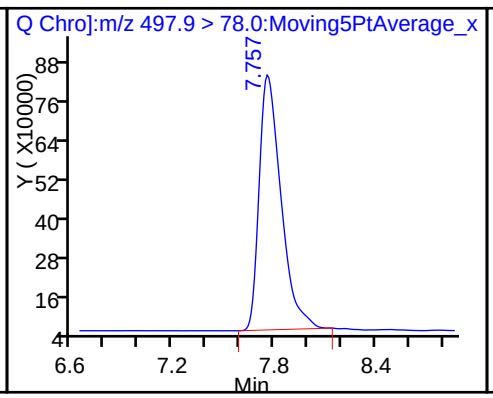
29 Perfluorododecanoic acid



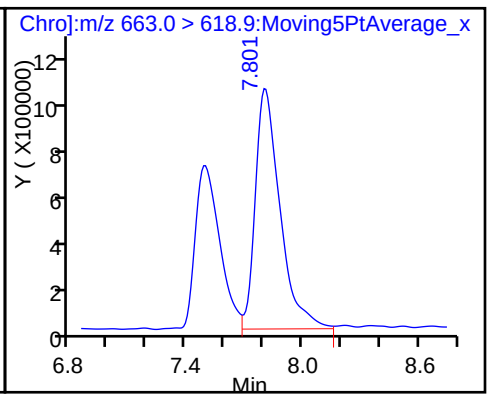
* 31 13C8 FOSA (IS)



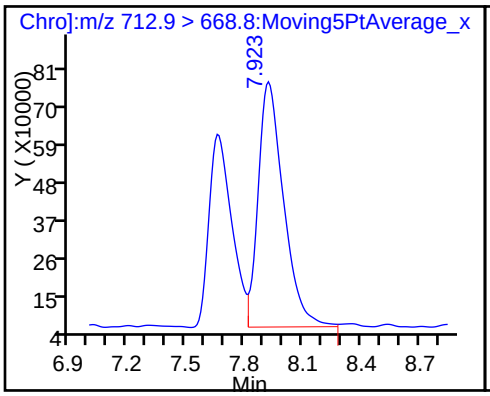
32 Perfluorooctane Sulfonamide



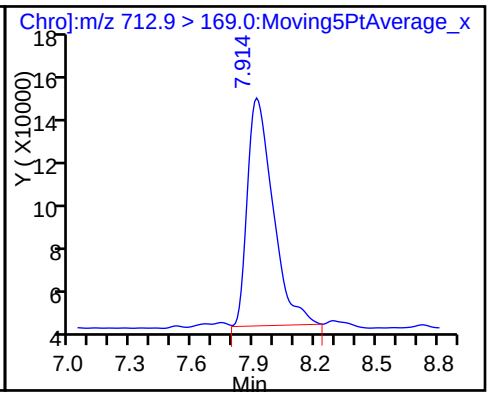
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020010.d
Lims ID: STD0050
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 20-Sep-2016 17:08:35 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0050, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:09:59 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:37:18

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.399	4.219	0.180		37256744	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.399	4.219	0.180	1.000	21508338	5.13			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.479	5.318	0.161	0.906	14788775	5.07			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.592	5.431	0.161	0.863	7803245	4.56			
298.9 > 98.9	5.601	5.431	0.170	0.864	2385570		3.27(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.592	5.431	0.161	0.863	7803245	4.56			
298.9 > 98.9	5.601	5.431	0.170	0.864	2385570		3.27(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	6.046	5.904	0.142		26710786	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	6.046	5.913	0.133	1.000	12937453	5.16			
313.0 > 118.6	6.074	5.913	0.161	1.005	319395		40.51(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.480	6.338	0.142		3280395	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.481	6.339	0.142	1.000	6110899	4.68			
398.9 > 98.9	6.481	6.339	0.142	1.000	2606957		2.34(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.481	6.339	0.142	1.000	6110899	4.68			
398.9 > 98.9	6.481	6.339	0.142	1.000	2606957		2.34(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.472	6.339	0.133	0.950	21193966	5.19			
363.0 > 168.9	6.472	6.339	0.133	0.950	5200964		4.08(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.801	6.678	0.123	0.963	6391370	4.82			
449.0 > 98.9	6.792	6.678	0.114	0.961	2082425		3.07(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.801	6.678	0.123	0.963	6391370	4.82			
449.0 > 98.9	6.792	6.678	0.114	0.961	2082425		3.07(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.802	6.688	0.114	0.999	14485859	4.57			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.811	6.688	0.123		41468202	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.812	6.698	0.114	1.000	23317286	5.37			
413.0 > 169.0	6.812	6.698	0.114	1.000	6819512		3.42(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	7.065	6.999	0.066		10698026	9.56			
$ 18 13C8 PFOS									
506.9 > 80.0	7.055	7.008	0.047	0.999	2543536	4.35			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	7.065	6.999	0.066	1.000	7101668	5.08			
498.9 > 98.9	7.056	6.999	0.057	0.999	3089989		2.30(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	7.075	7.018	0.057		29588160	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	7.075	7.019	0.056	1.000	17639095	5.15			
463.0 > 218.9	7.075	7.019	0.056	1.000	2750881		6.41(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.310	7.282	0.028		33524661	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.310	7.291	0.019	1.000	17812234	5.11			
513.0 > 219.0	7.310	7.291	0.019	1.000	1602616		11.11(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.479	7.479	0.0	1.059	7090518	5.05			
598.9 > 99.0	7.479	7.479	0.0	1.059	2108418		3.36(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.479	7.479	0.0	1.059	7090518	5.05			
598.9 > 99.0	7.479	7.479	0.0	1.059	2108418		3.36(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.499	7.499	0.0		24358282	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.499	7.499	0.0	1.000	17928204	5.11			R
563.0 > 268.9	7.508	7.499	0.009	1.001	1989776		9.01(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.678	7.668	0.010		49948805	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.668	7.659	0.009	0.999	25097670	4.95			
613.0 > 168.9	7.668	7.659	0.009	0.999	3347462		7.50(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.785	7.756	0.029		35321362	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.776	7.757	0.019	0.999	18875705	5.03			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.810	7.801	0.009	1.017	21337792	4.97			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.942	7.923	0.019	1.034	16157441	4.68			
712.9 > 169.0	7.933	7.923	0.010	1.033	2573250		6.28(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00085	Amount Added:	10.00	Units: uL

Report Date: 21-Sep-2016 12:10:00 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020010.d

Injection Date: 20-Sep-2016 17:08:35 Instrument ID: LC_LCMS5

Lims ID: STD0050

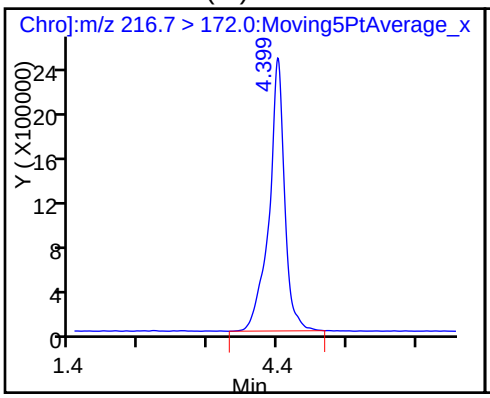
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 7

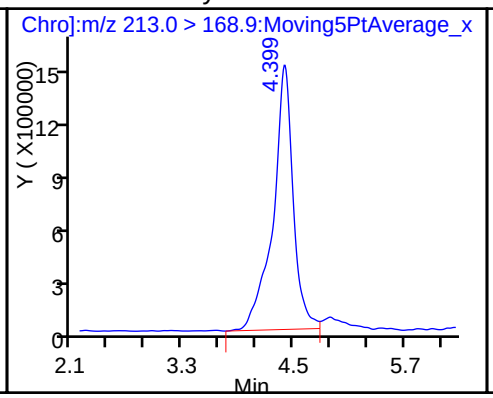
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

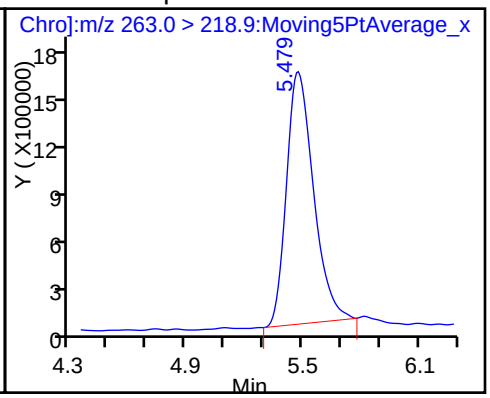
* 1 13C4 PFBA (IS)



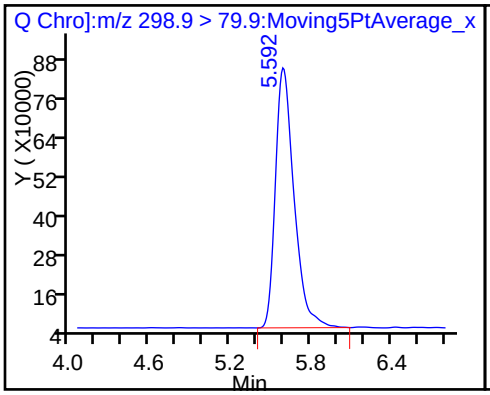
2 Perfluorobutyric acid



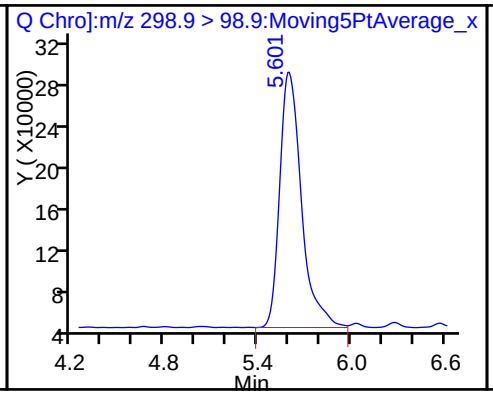
3 Perfluoropentanoic acid



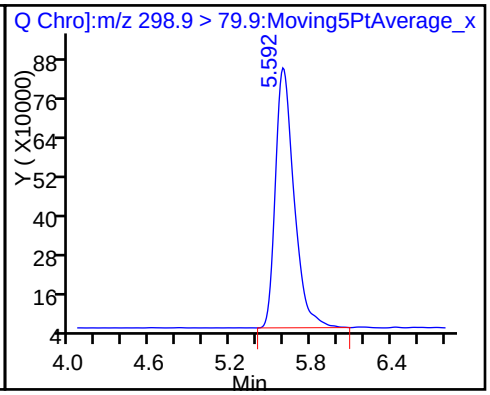
5 Perfluorobutanesulfonic acid



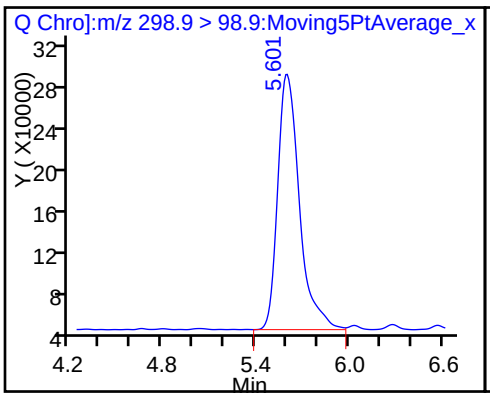
5 Perfluorobutanesulfonic acid



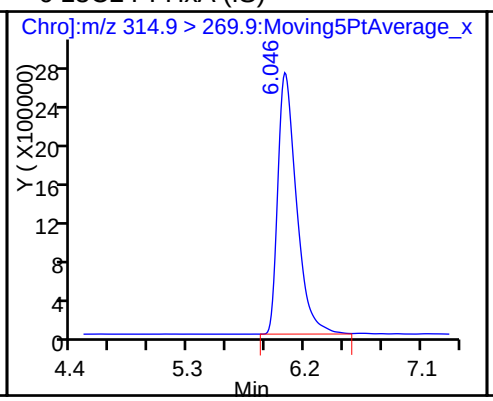
4 Perfluorobutane Sulfonate



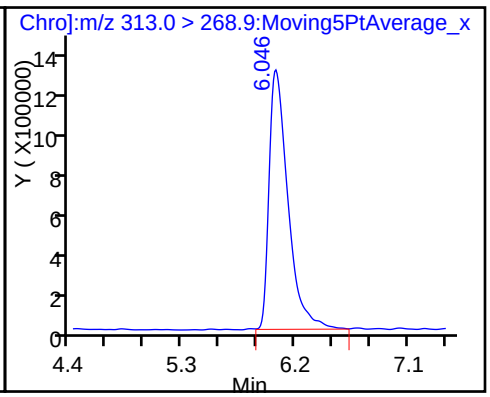
4 Perfluorobutane Sulfonate



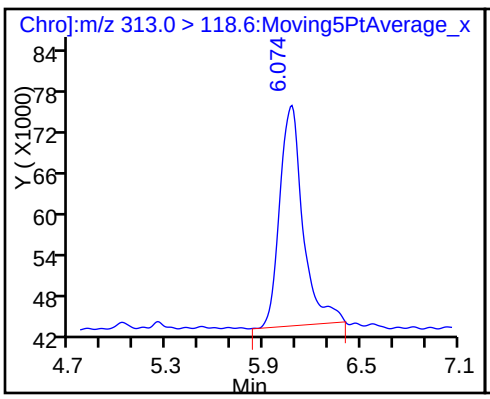
* 6 13C2 PFHxA (IS)



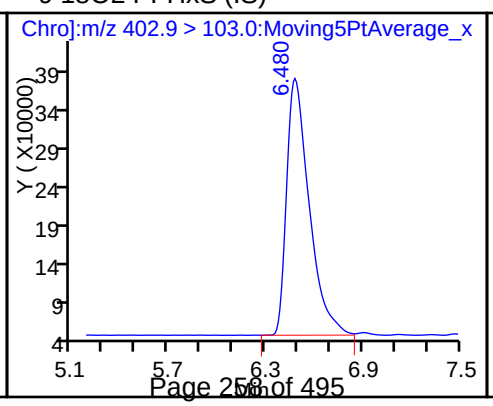
7 Perfluorohexanoic acid



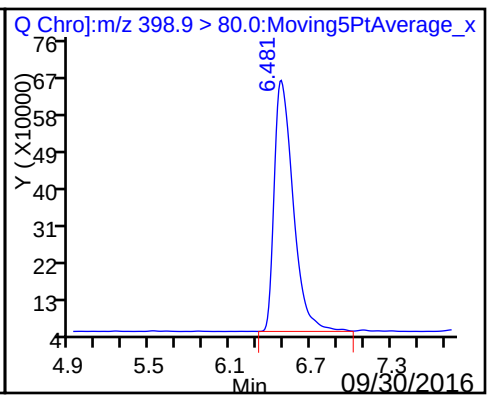
7 Perfluorohexanoic acid



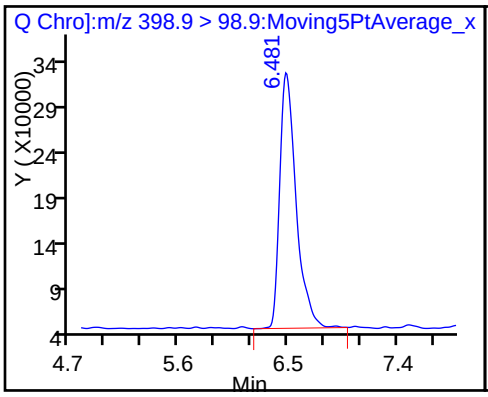
* 9 18O2 PFHxS (IS)



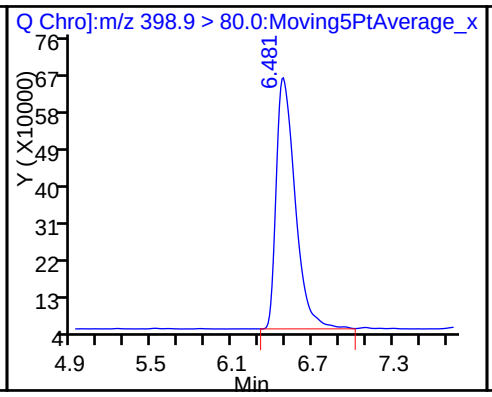
10 Perfluorohexane Sulfonate



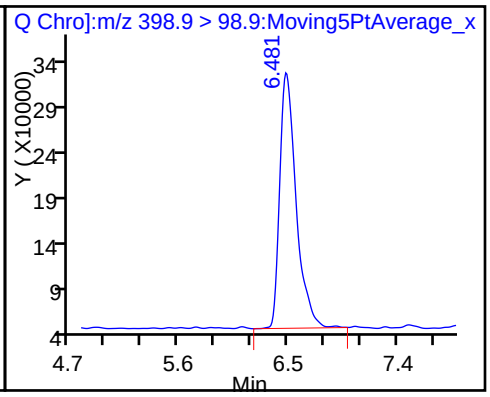
10 Perfluorohexane Sulfonate



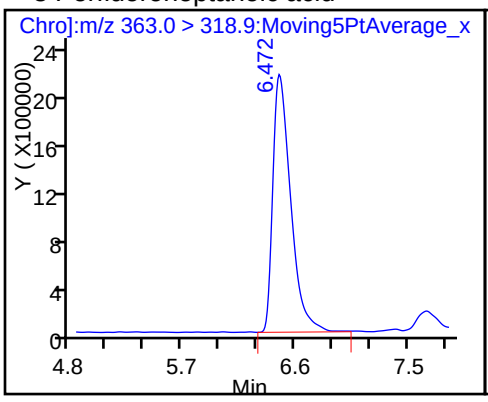
11 Perfluorohexanesulfonic acid



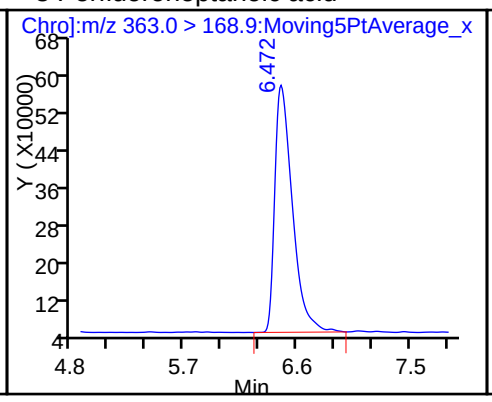
11 Perfluorohexanesulfonic acid



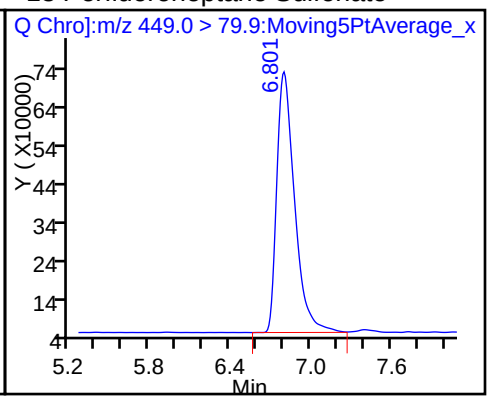
8 Perfluoroheptanoic acid



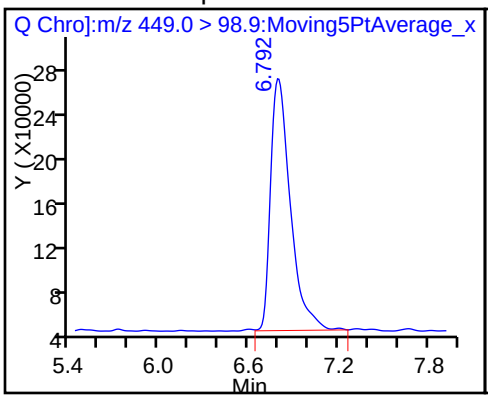
8 Perfluoroheptanoic acid



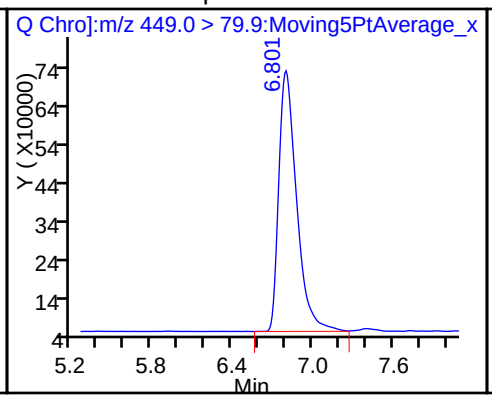
13 Perfluoroheptane Sulfonate



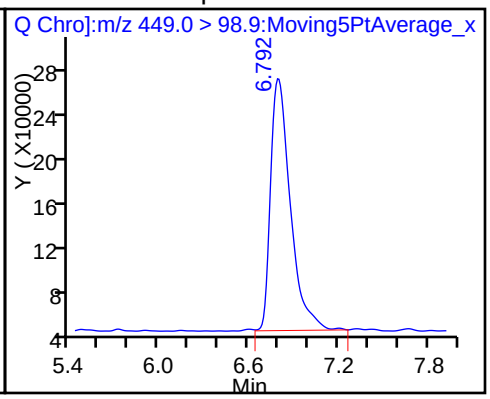
13 Perfluoroheptane Sulfonate



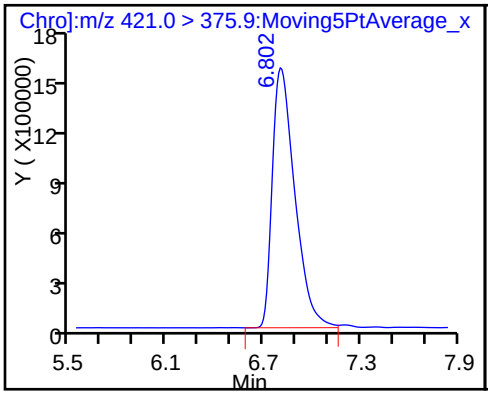
12 Perfluoroheptanesulfonic Acid



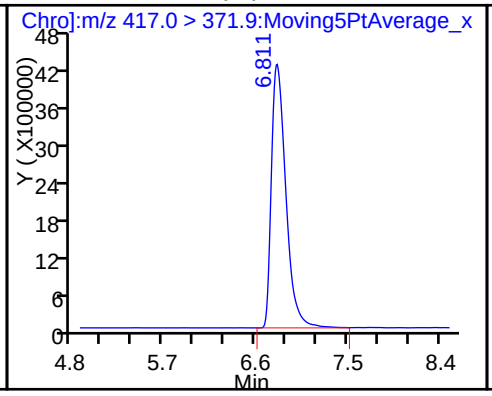
12 Perfluoroheptanesulfonic Acid



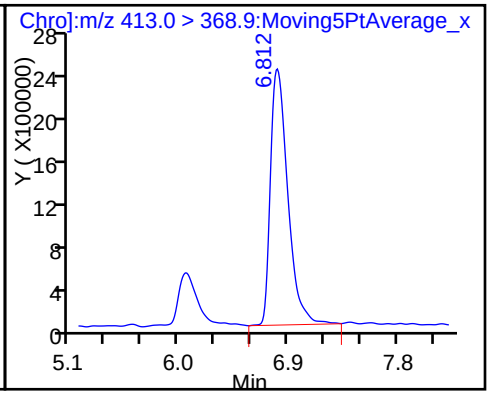
$ 14 13C8 PFOA



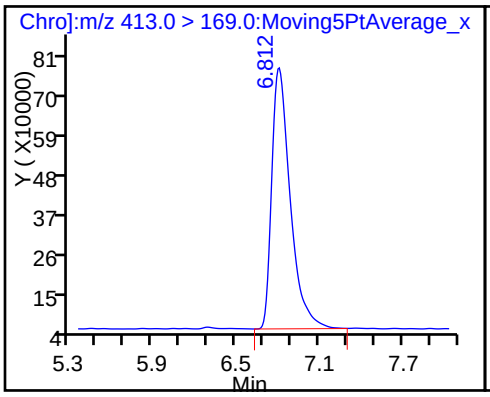
* 15 13C4 PFOA (IS)



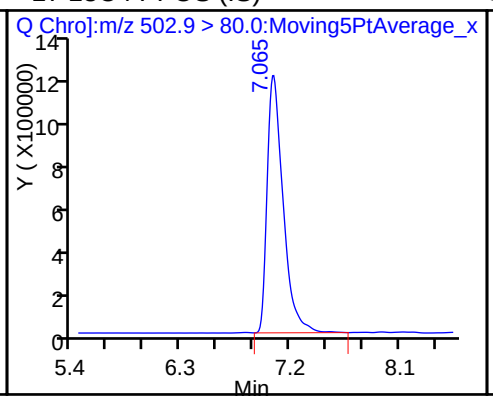
16 Perfluorooctanoic acid



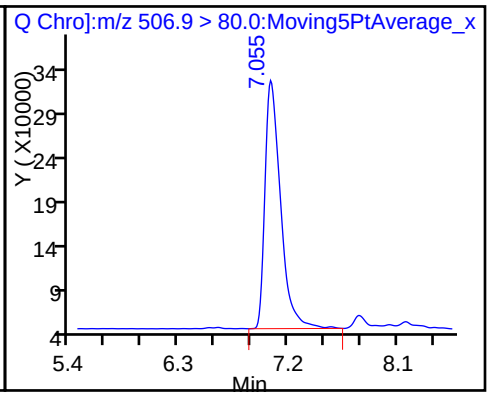
16 Perfluorooctanoic acid



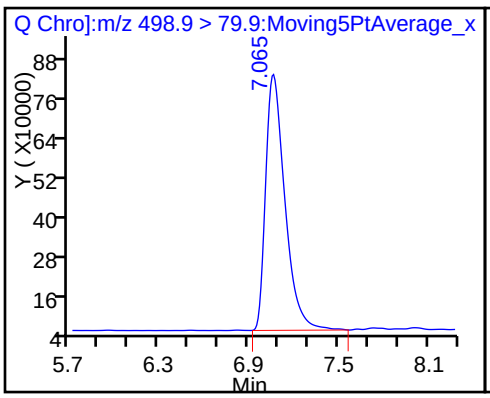
* 17 13C4 PFOS (IS)



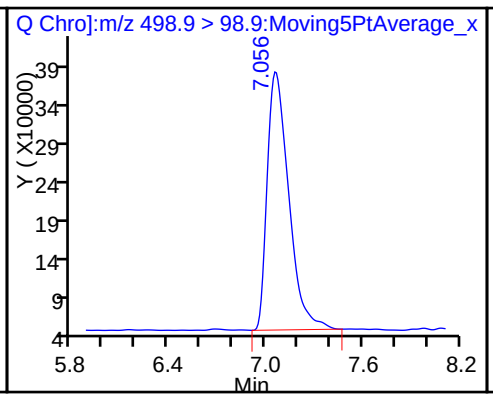
$ 18 13C8 PFOS



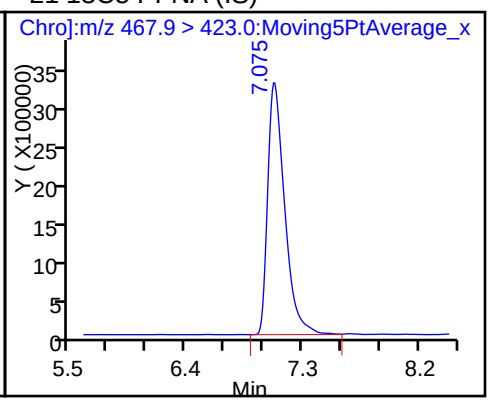
19 Perfluorooctane sulfonic acid



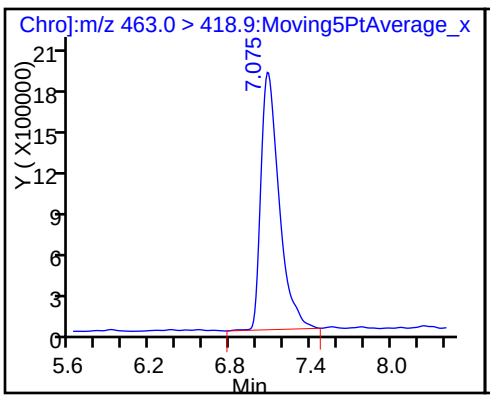
19 Perfluorooctane sulfonic acid



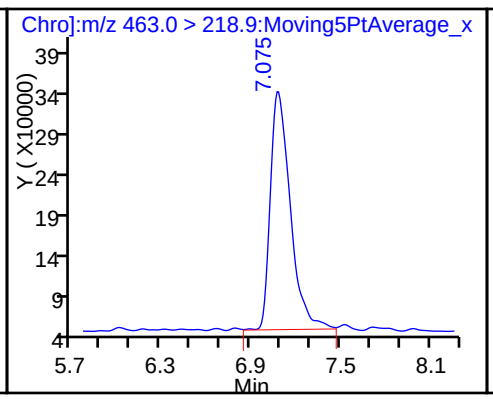
* 21 13C5 PFNA (IS)



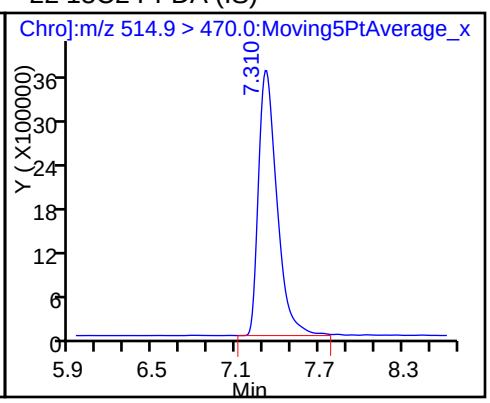
20 Perfluorononanoic acid



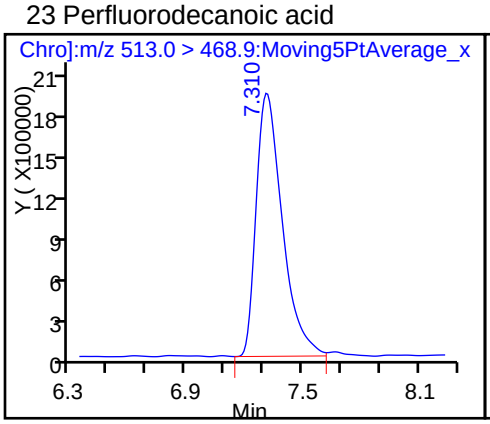
20 Perfluorononanoic acid



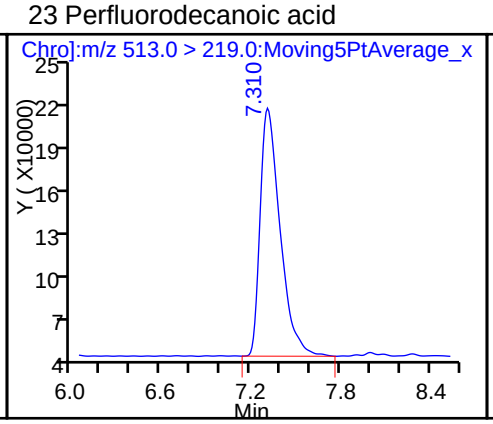
* 22 13C2 PFDA (IS)



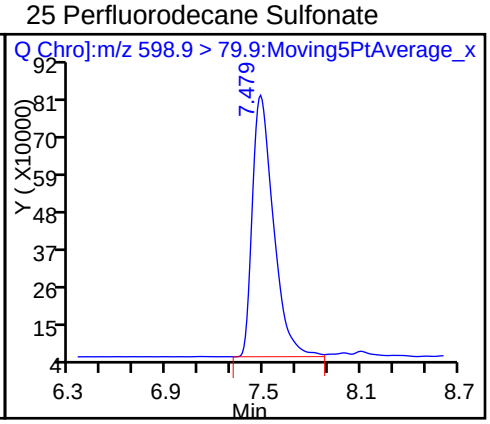
23 Perfluorodecanoic acid



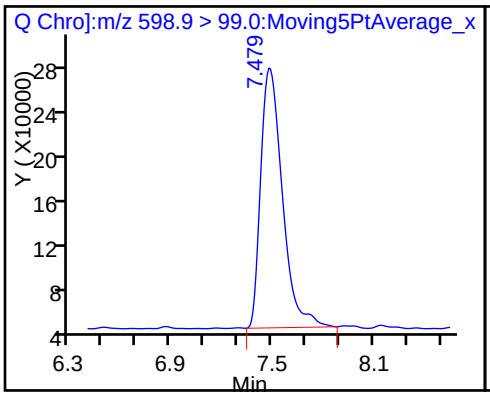
23 Perfluorodecanoic acid



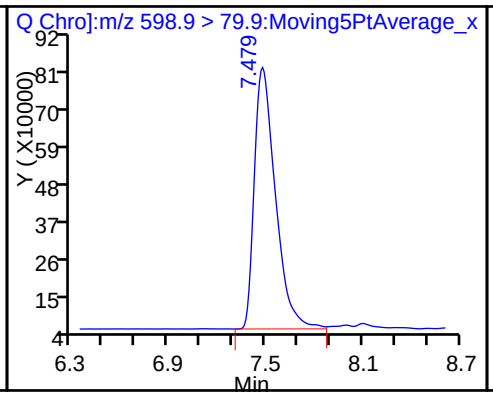
25 Perfluorodecane Sulfonate



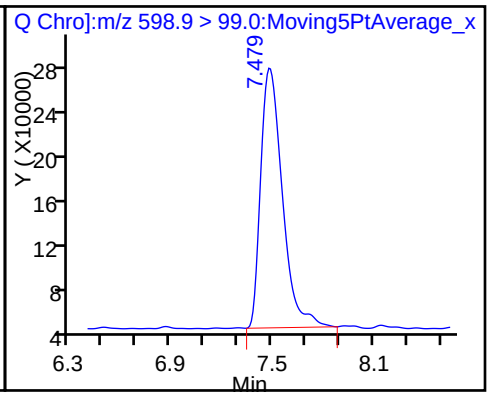
25 Perfluorodecane Sulfonate



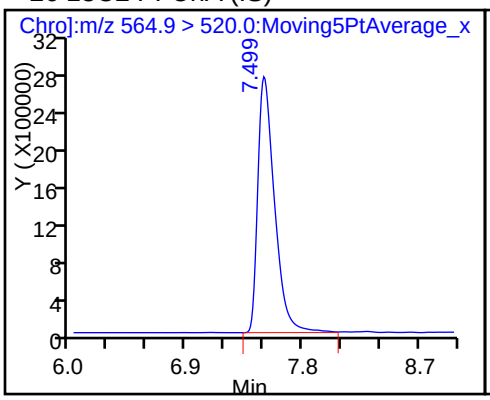
24 Perfluorodecane Sulfonic acid



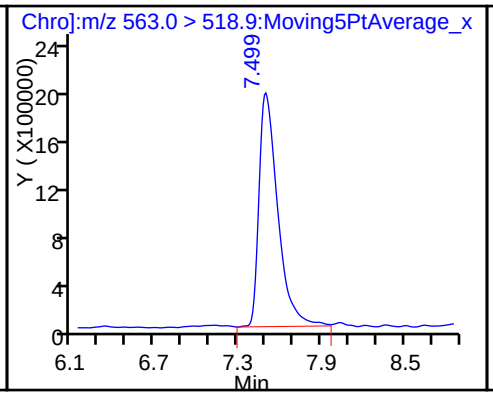
24 Perfluorodecane Sulfonic acid



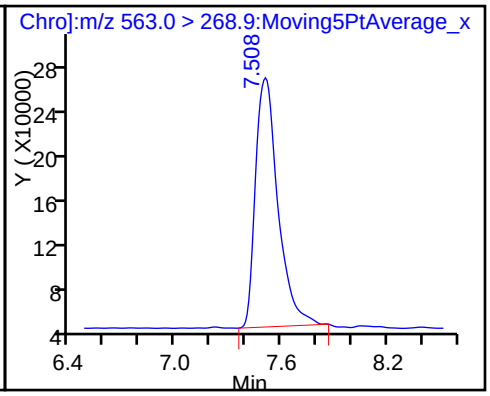
* 26 13C2 PFUnA (IS)



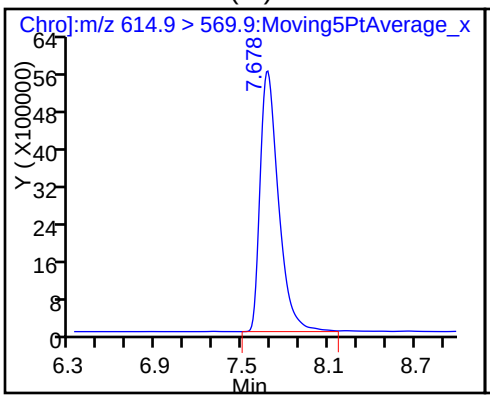
27 Perfluoroundecanoic acid



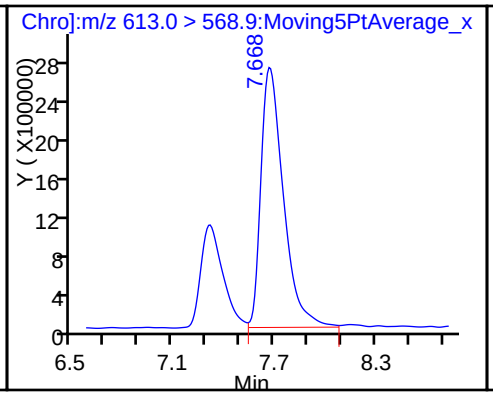
27 Perfluoroundecanoic acid



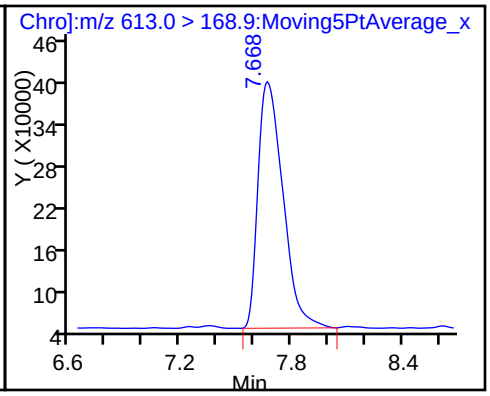
* 28 13C2 PFDoA (IS)



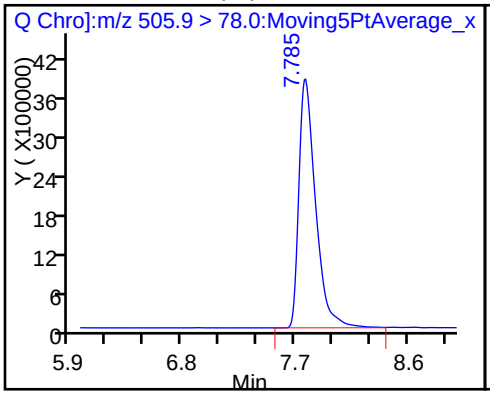
29 Perfluorododecanoic acid



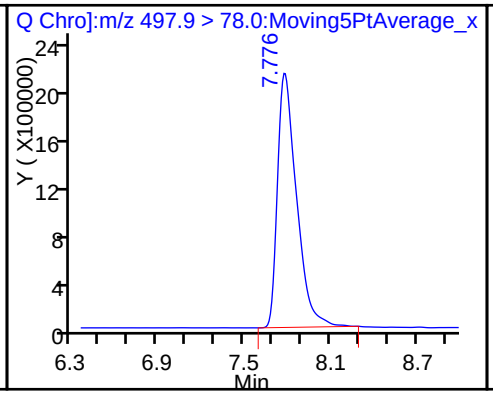
29 Perfluorododecanoic acid



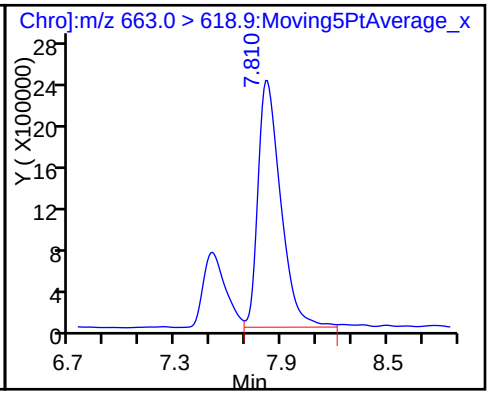
* 31 13C8 FOSA (IS)



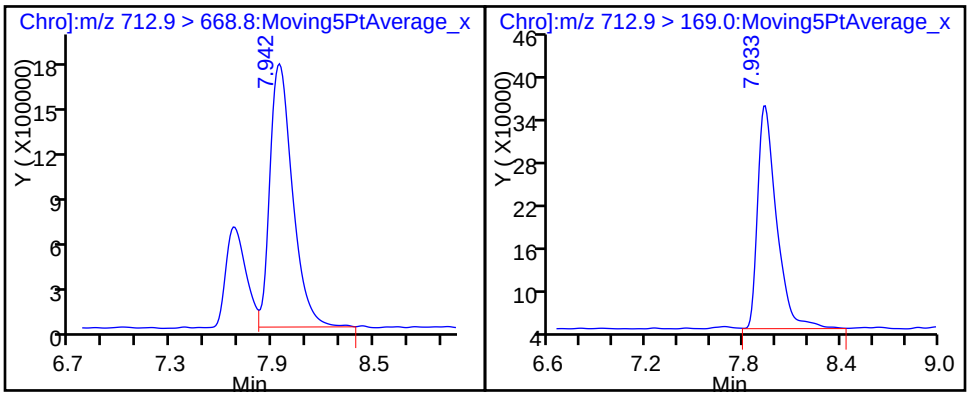
32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020011.d
Lims ID: STD0100
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 20-Sep-2016 17:20:56 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0100, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:10:02 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:38:34

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.380	4.219	0.161		36756899	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.380	4.219	0.161	1.000	39994617	9.64			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.422	5.318	0.104	0.910	30681331	10.7			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.535	5.431	0.104	0.869	14445668	9.20			
298.9 > 98.9	5.544	5.431	0.113	0.871	4228638		3.42(2.57-2.57)		
4 Perfluorobutane Sulfonate									M
298.9 > 79.9	5.535	5.431	0.104	0.869	14445668	9.20			M
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.961	5.904	0.057		26309381	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.961	5.913	0.048	1.000	24613489	9.98			
313.0 > 118.6	5.980	5.913	0.067	1.003	646937		38.05(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.367	6.338	0.029		3003025	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.367	6.339	0.028	1.000	12095469	10.1			R
398.9 > 98.9	6.367	6.339	0.028	1.000	4730022		2.56(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.367	6.339	0.028	1.000	12095469	10.1			
398.9 > 98.9	6.367	6.339	0.028	1.000	4730022		2.56(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.367	6.339	0.028	0.949	39162427	9.94			
363.0 > 168.9	6.358	6.339	0.019	0.948	9731402		4.02(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.697	6.678	0.019	0.961	12243357	9.15			
449.0 > 98.9	6.697	6.678	0.019	0.961	3734676		3.28(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.697	6.678	0.019	0.961	12243357	9.15			
449.0 > 98.9	6.697	6.678	0.019	0.961	3734676		3.28(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.707	6.688	0.019	1.000	32297239	10.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.707	6.688	0.019		39923051	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.707	6.698	0.009	1.000	41421645	10.0			
413.0 > 169.0	6.698	6.698	0.0	0.999	12387906		3.34(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.970	6.999	-0.029		10744972	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.970	6.999	-0.029	1.000	13276185	9.44			
498.9 > 98.9	6.970	6.999	-0.029	1.000	5799280		2.29(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.979	7.008	-0.029	1.001	5917562	10.1			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.990	7.018	-0.028		27904116	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.990	7.019	-0.029	1.000	31489647	9.69			
463.0 > 218.9	6.990	7.019	-0.029	1.000	4909767		6.41(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.244	7.282	-0.038		31397466	10.0			
23 Perfluorodecanoic acid									RM
513.0 > 468.9	7.244	7.291	-0.047	1.000	32237127	9.86			R
513.0 > 219.0	7.234	7.291	-0.057	0.999	1151830		27.99(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.423	7.479	-0.056	1.065	13377201	9.48			
598.9 > 99.0	7.423	7.479	-0.056	1.065	3856938		3.47(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.423	7.479	-0.056	1.065	13377201	9.48			
598.9 > 99.0	7.423	7.479	-0.056	1.065	3856938		3.47(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.451	7.499	-0.048		22681622	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.452	7.499	-0.047	1.000	31416385	9.64			R
563.0 > 268.9	7.452	7.499	-0.047	1.000	3805171		8.26(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.640	7.659	-0.019	1.000	44288615	9.49			
613.0 > 168.9	7.640	7.659	-0.019	1.000	6375070		6.95(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.640	7.668	-0.028		46232056	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.737	7.756	-0.019		33801204	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.738	7.757	-0.019	1.000	36029063	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.801	7.801	0.0	1.021	37469820	9.48			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.933	7.923	0.010	1.038	30675115	9.61			
712.9 > 169.0	7.933	7.923	0.010	1.038	4751182		6.46(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC-LCS_00085	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL

Report Date: 21-Sep-2016 12:10:03 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020011.d

Injection Date: 20-Sep-2016 17:20:56 Instrument ID: LC_LCMS5

Lims ID: STD0100

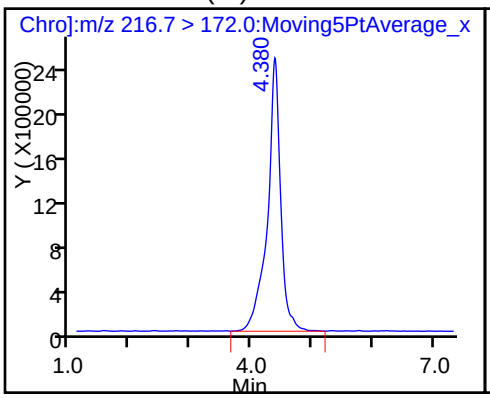
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8

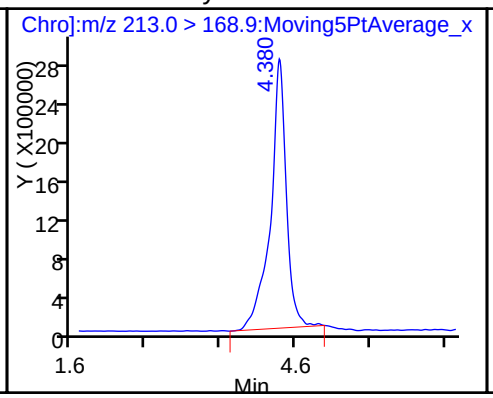
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

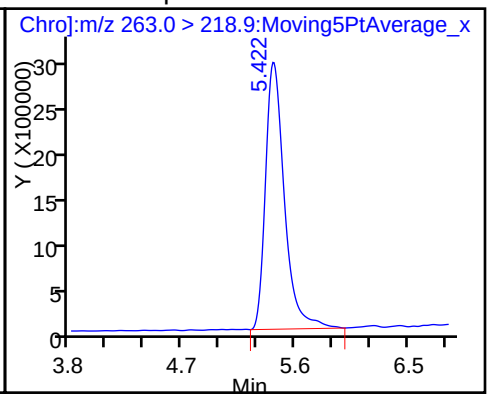
* 1 13C4 PFBA (IS)



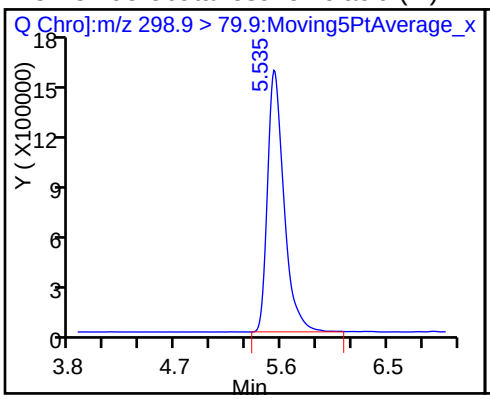
2 Perfluorobutyric acid



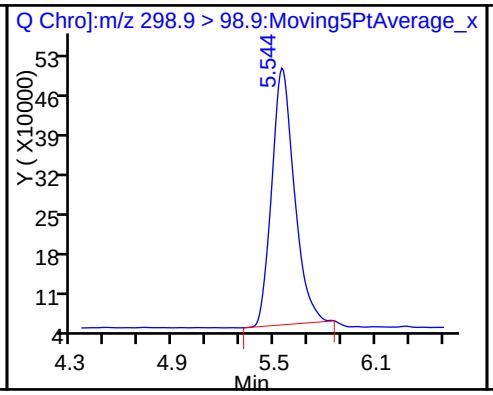
3 Perfluoropentanoic acid



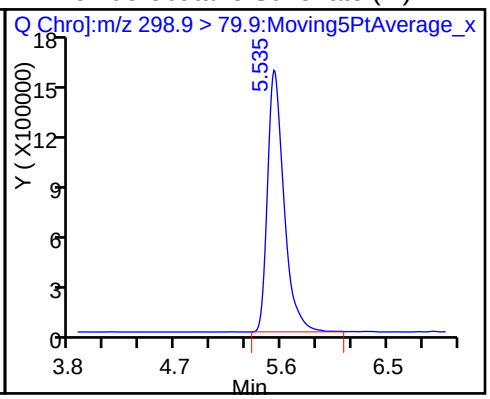
5 Perfluorobutanesulfonic acid (M)



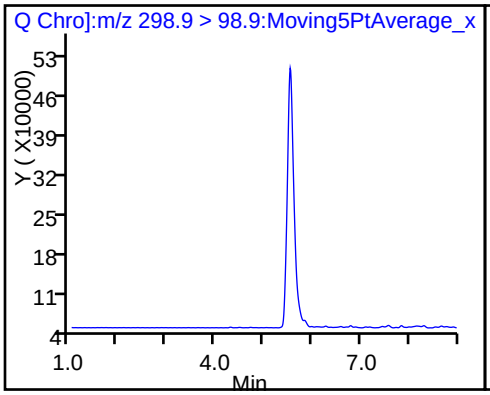
5 Perfluorobutanesulfonic acid



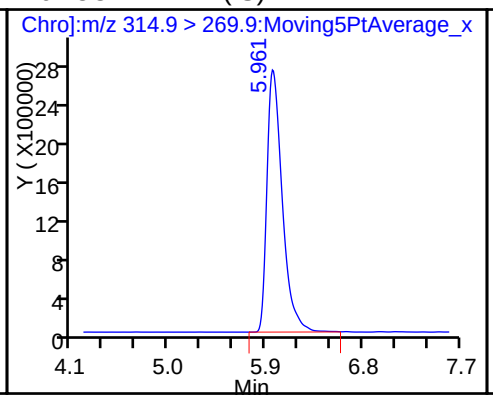
4 Perfluorobutane Sulfonate (M)



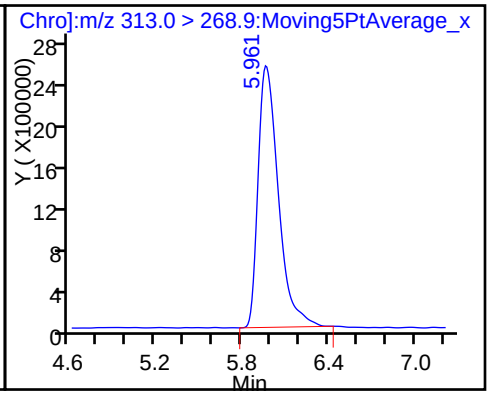
4 Perfluorobutane Sulfonate



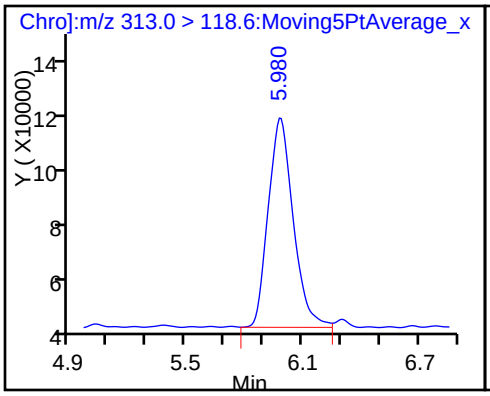
* 6 13C2 PFHxA (IS)



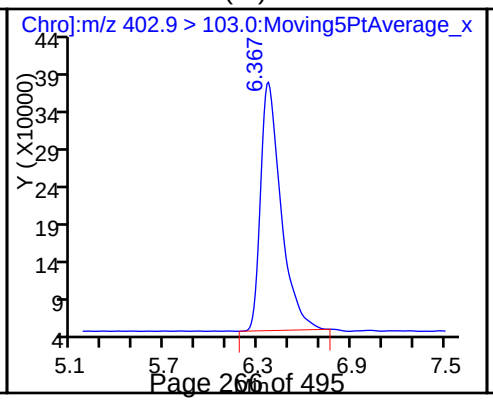
7 Perfluorohexanoic acid



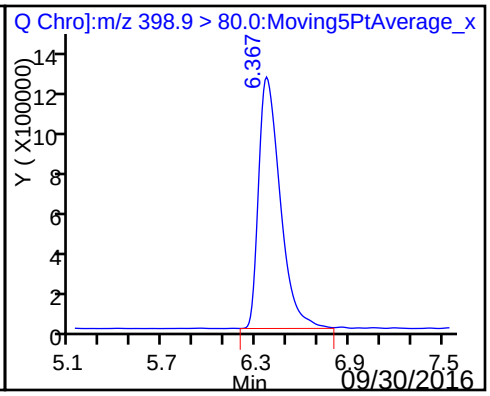
7 Perfluorohexanoic acid



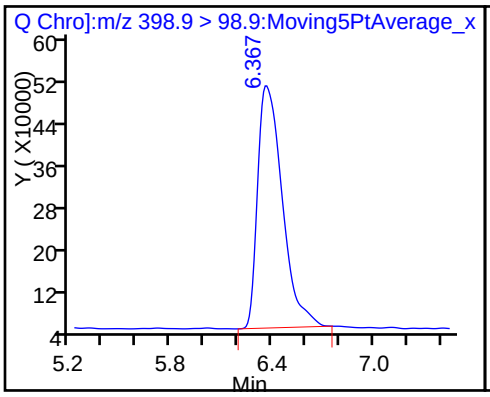
* 9 18O2 PFHxS (IS)



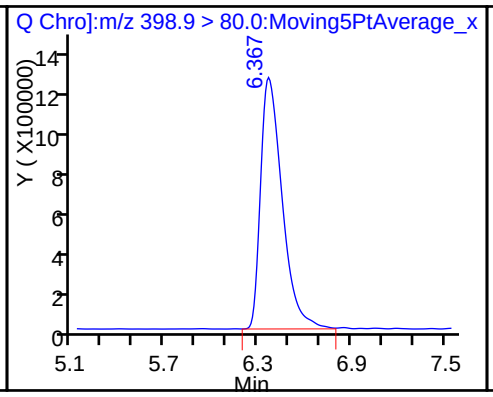
10 Perfluorohexane Sulfonate



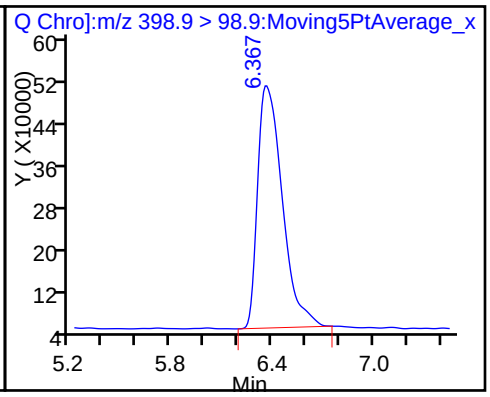
10 Perfluorohexane Sulfonate



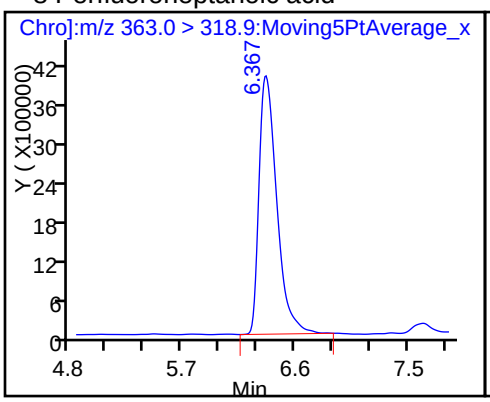
11 Perfluorohexanesulfonic acid



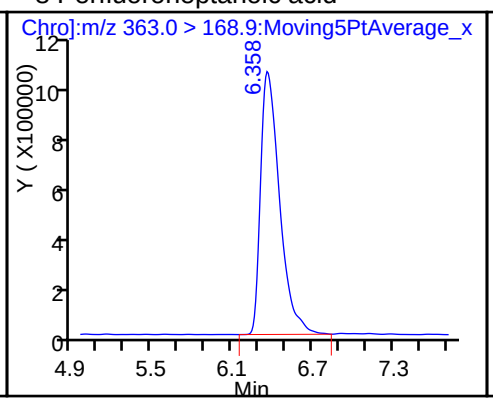
11 Perfluorohexanesulfonic acid



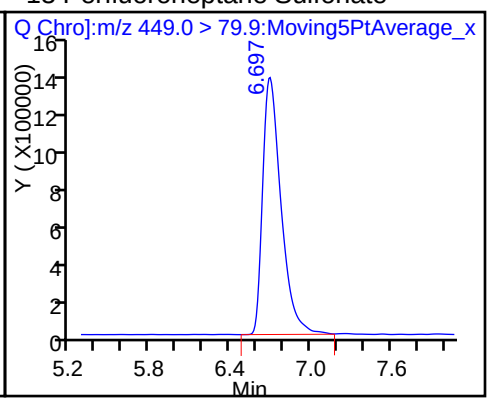
8 Perfluoroheptanoic acid



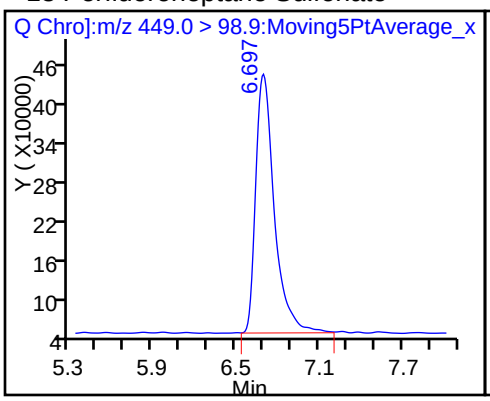
8 Perfluoroheptanoic acid



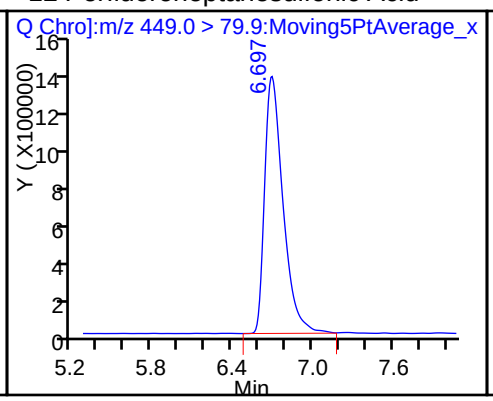
13 Perfluoroheptane Sulfonate



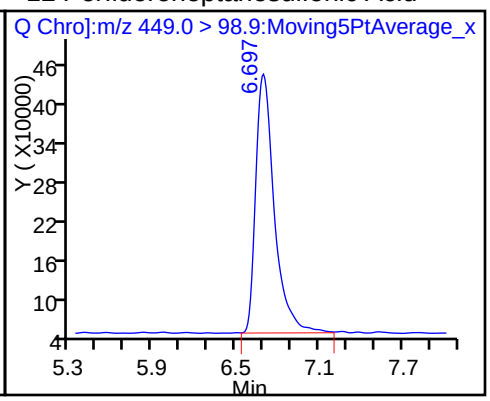
13 Perfluoroheptane Sulfonate



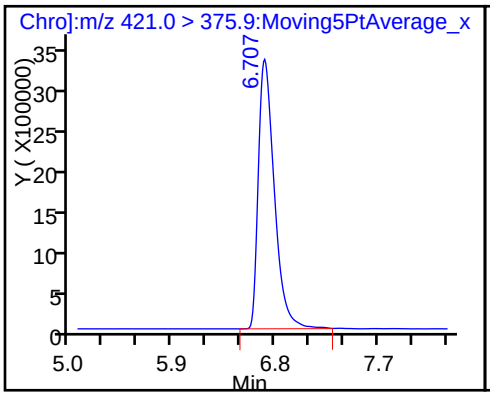
12 Perfluoroheptanesulfonic Acid



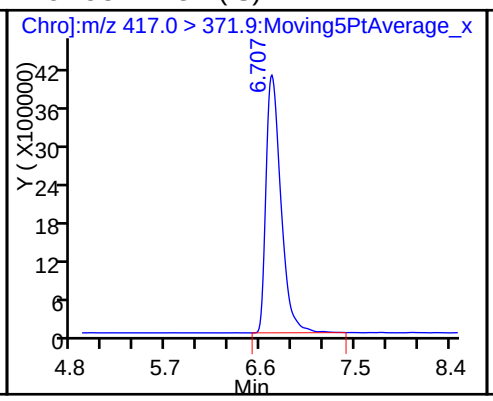
12 Perfluoroheptanesulfonic Acid



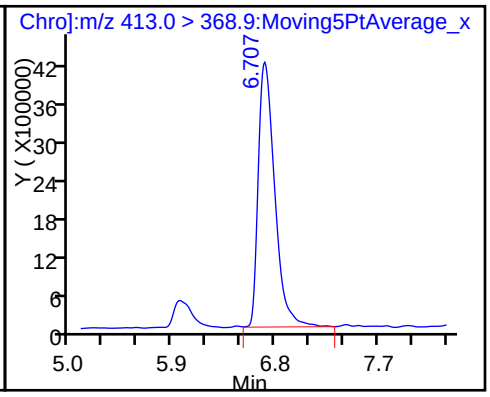
$ 14 13C8 PFOA



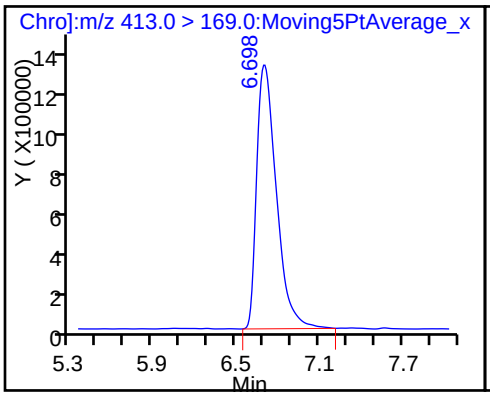
* 15 13C4 PFOA (IS)



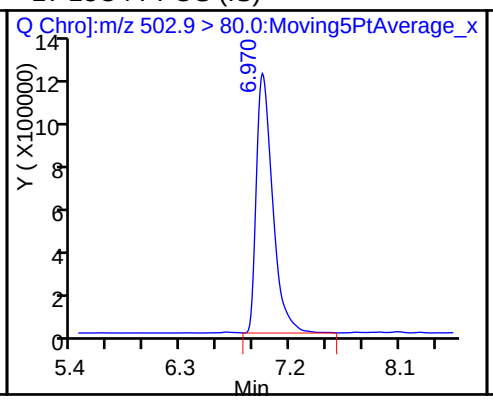
16 Perfluorooctanoic acid



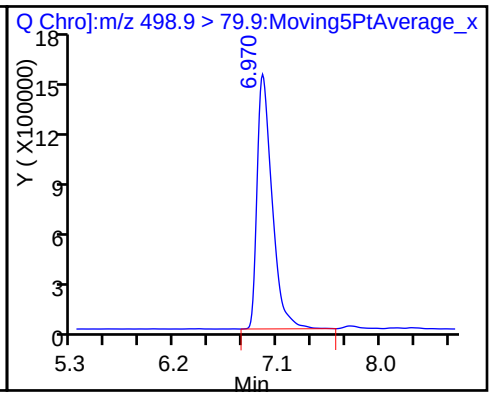
16 Perfluorooctanoic acid



* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid



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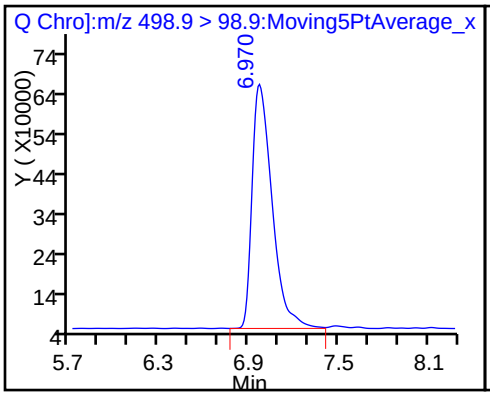
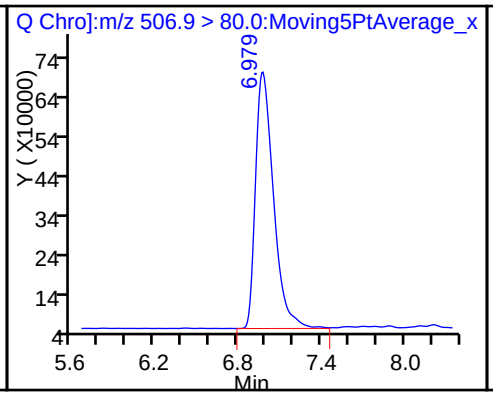
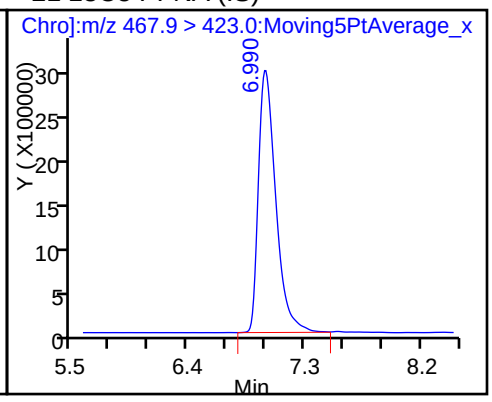


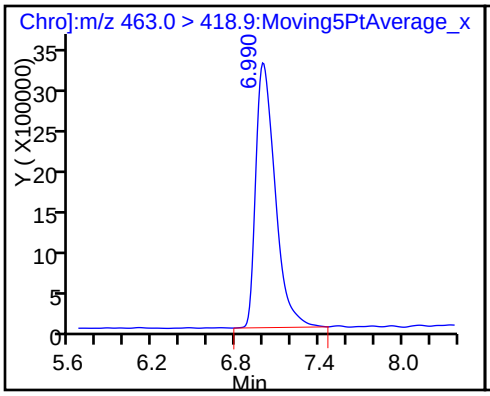
$ 18 13C8 PFOS



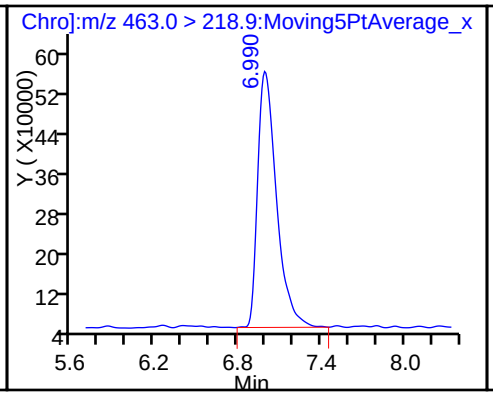
* 21 13C5 PFNA (IS)



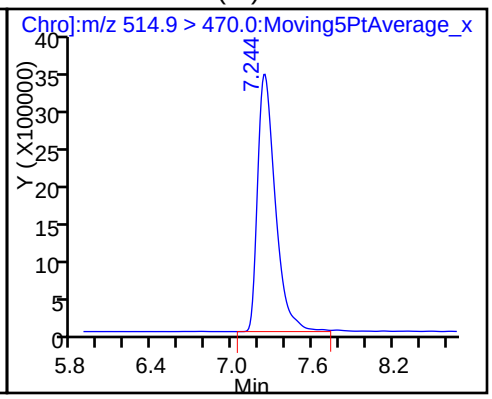
20 Perfluorononanoic acid



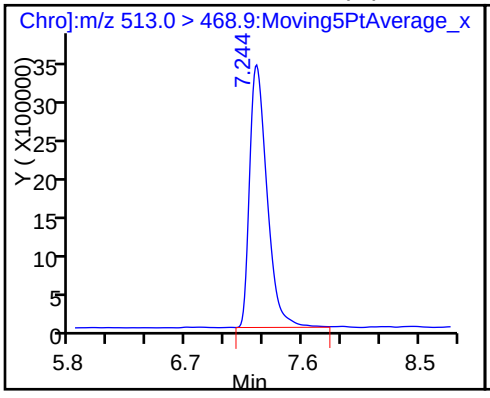
20 Perfluorononanoic acid



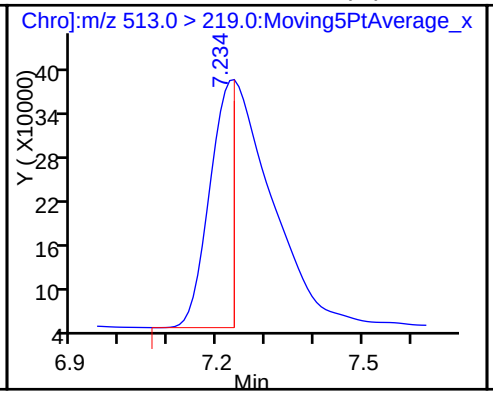
* 22 13C2 PFDA (IS)



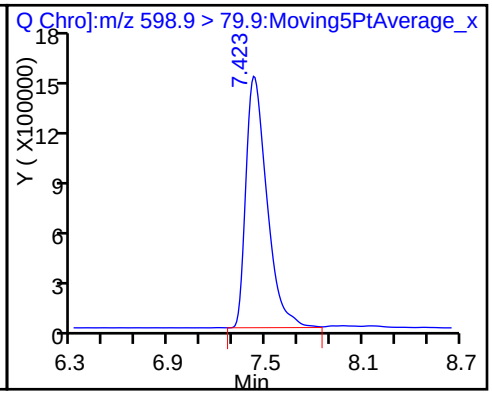
23 Perfluorodecanoic acid (M)



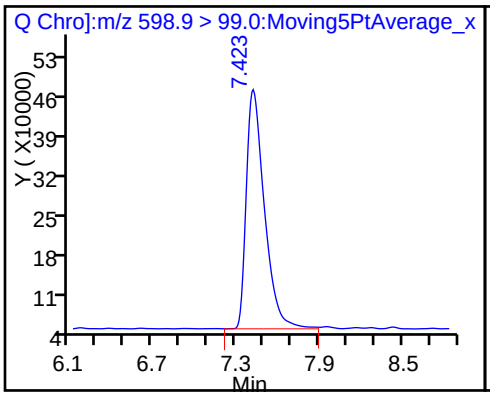
23 Perfluorodecanoic acid (M)



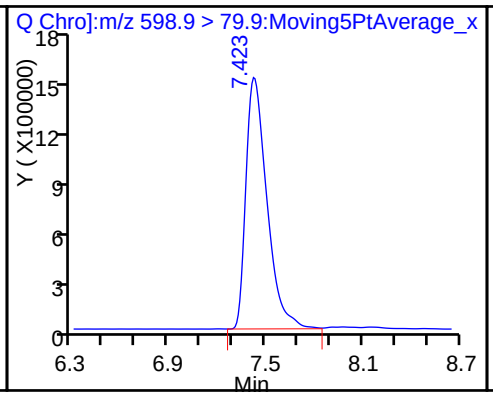
25 Perfluorodecane Sulfonate



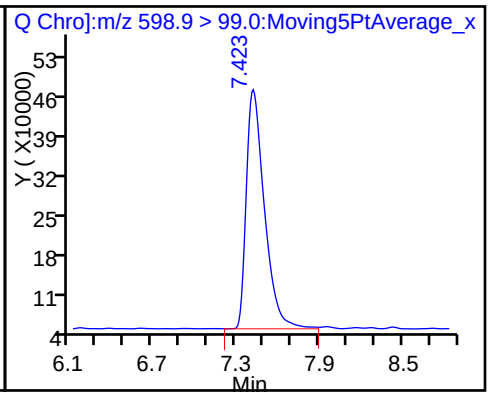
25 Perfluorodecane Sulfonate



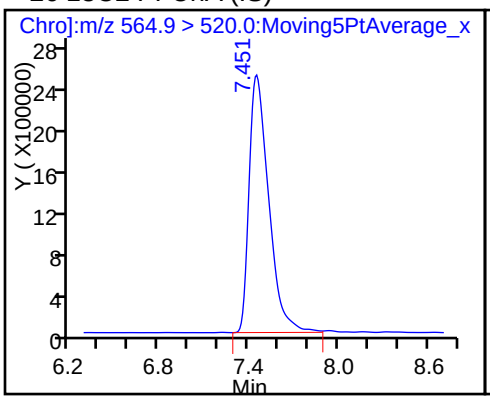
24 Perfluorodecane Sulfonic acid



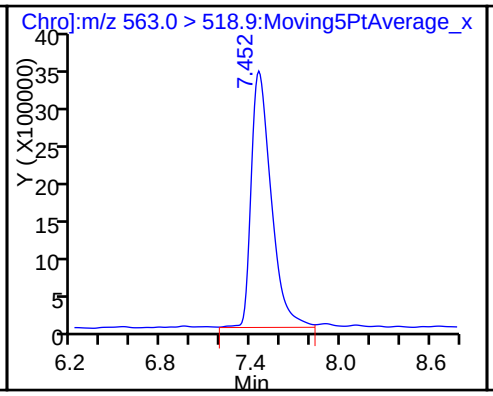
24 Perfluorodecane Sulfonic acid



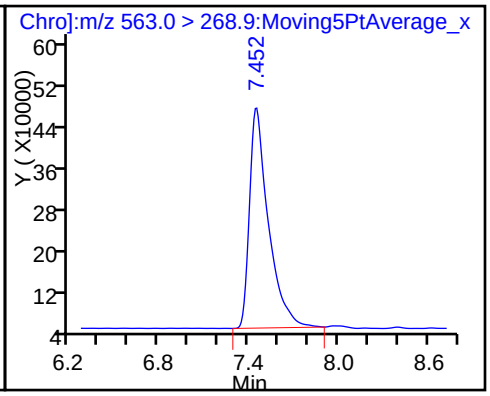
* 26 13C2 PFUnA (IS)



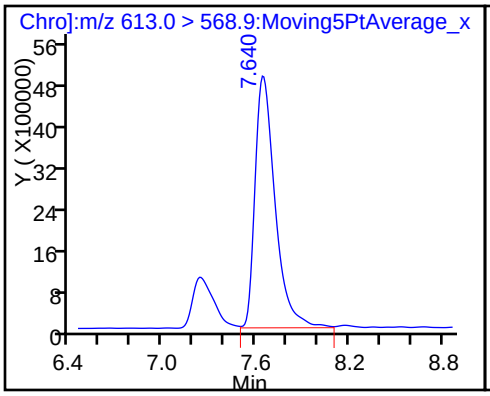
27 Perfluoroundecanoic acid



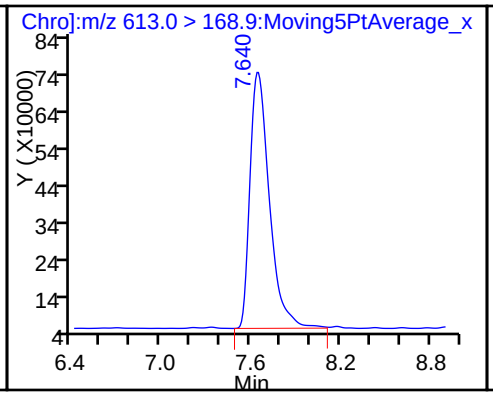
27 Perfluoroundecanoic acid



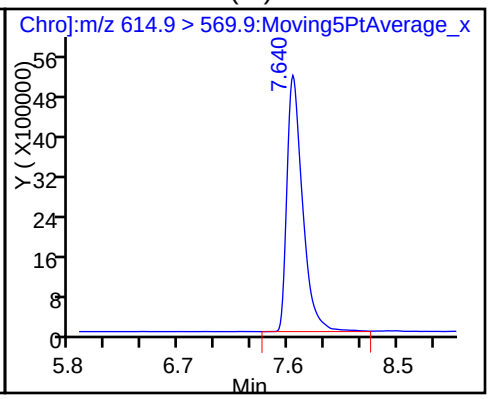
29 Perfluorododecanoic acid



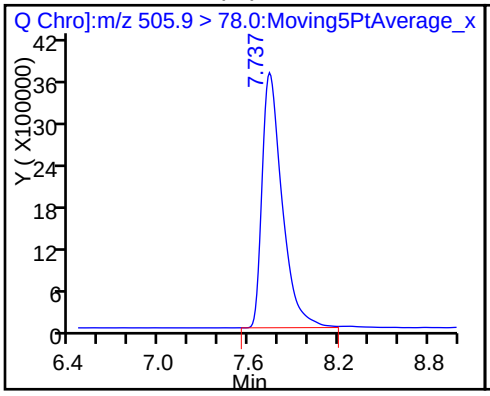
29 Perfluorododecanoic acid



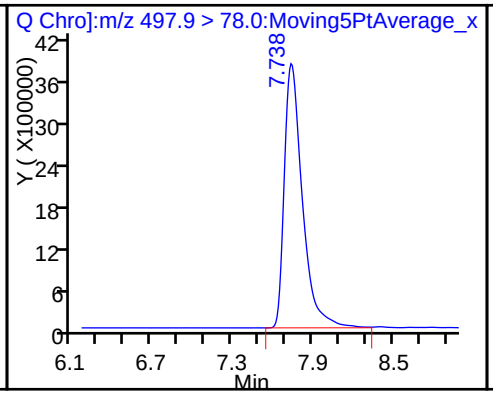
* 28 13C2 PFDoA (IS)



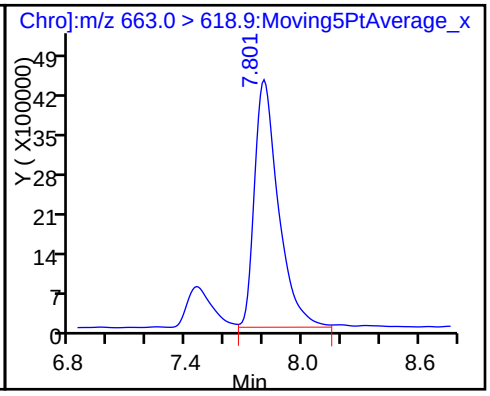
* 31 13C8 FOSA (IS)



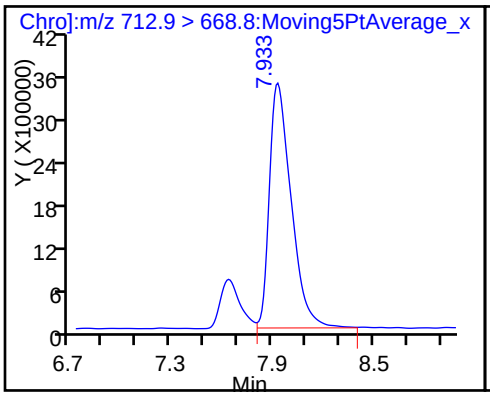
32 Perfluorooctane Sulfonamide



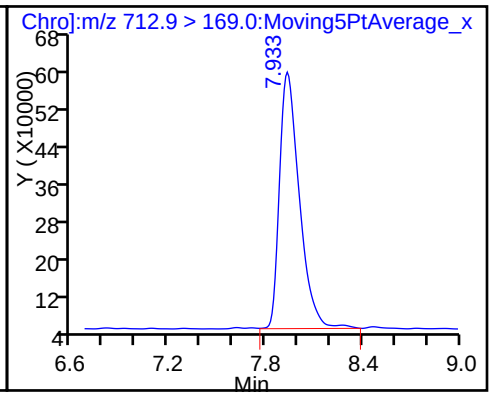
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver

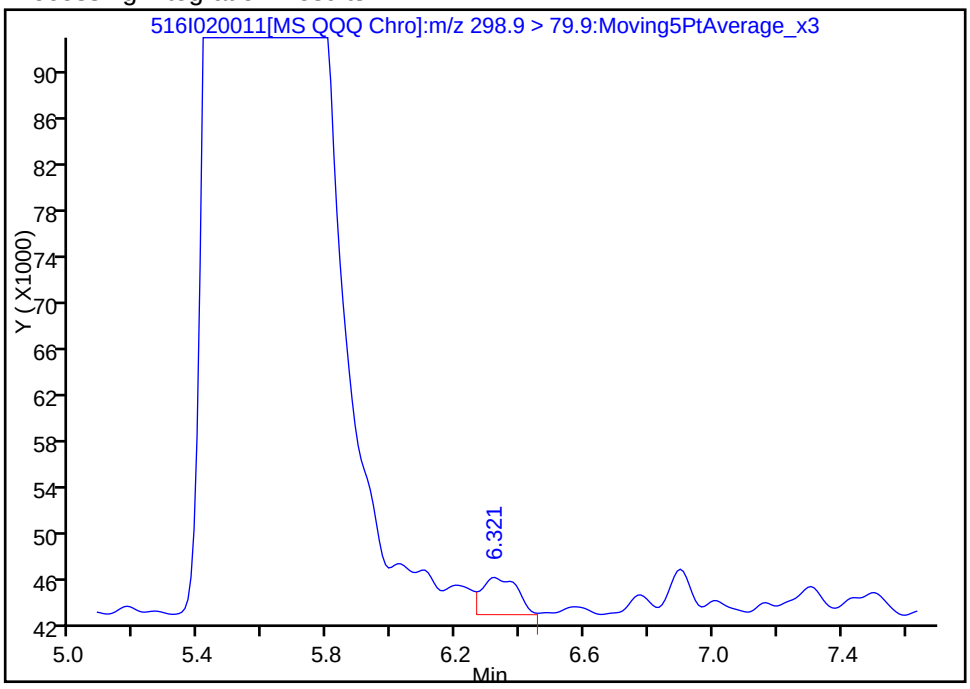
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020011.d
Injection Date: 20-Sep-2016 17:20:56 Instrument ID: LC_LCMS5
Lims ID: STD0100
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

4 Perfluorobutane Sulfonate, CAS: 29420-43-3

Signal: 1

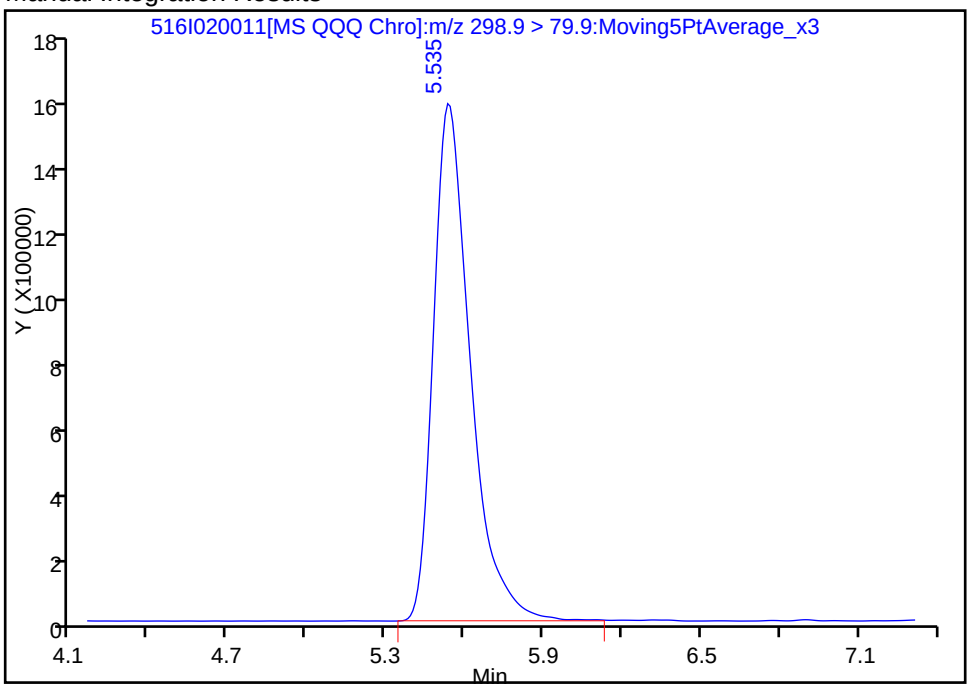
Processing Integration Results

RT: 6.32
Area: 24036
Amount: -0.036557
Amount Units: ug/L



Manual Integration Results

RT: 5.53
Area: 14445668
Amount: 9.202326
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:38:34
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

TestAmerica Denver

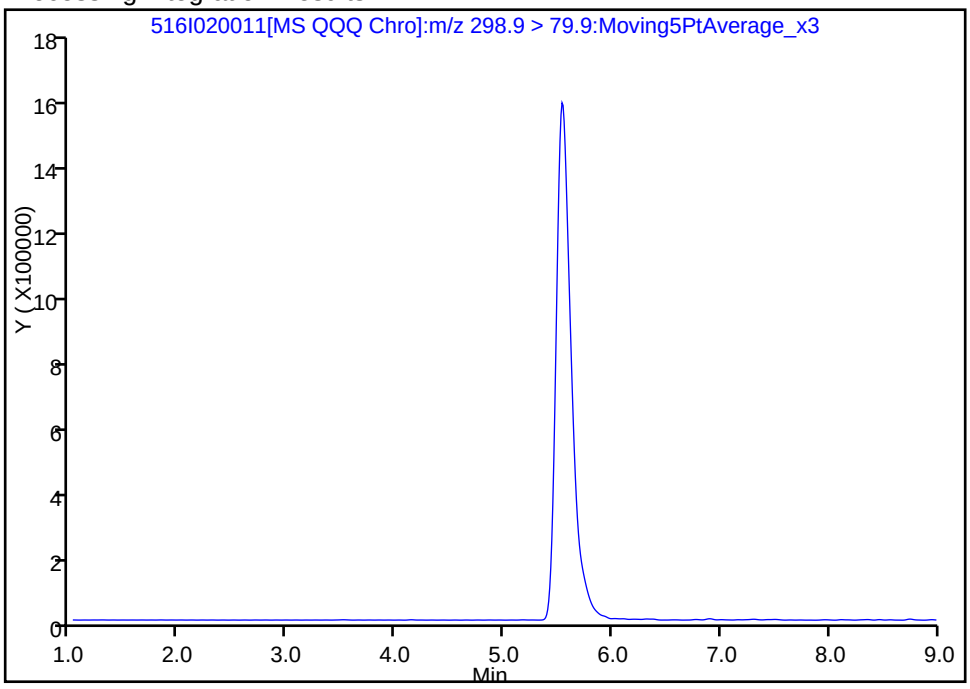
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020011.d
Injection Date: 20-Sep-2016 17:20:56 Instrument ID: LC_LCMS5
Lims ID: STD0100
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

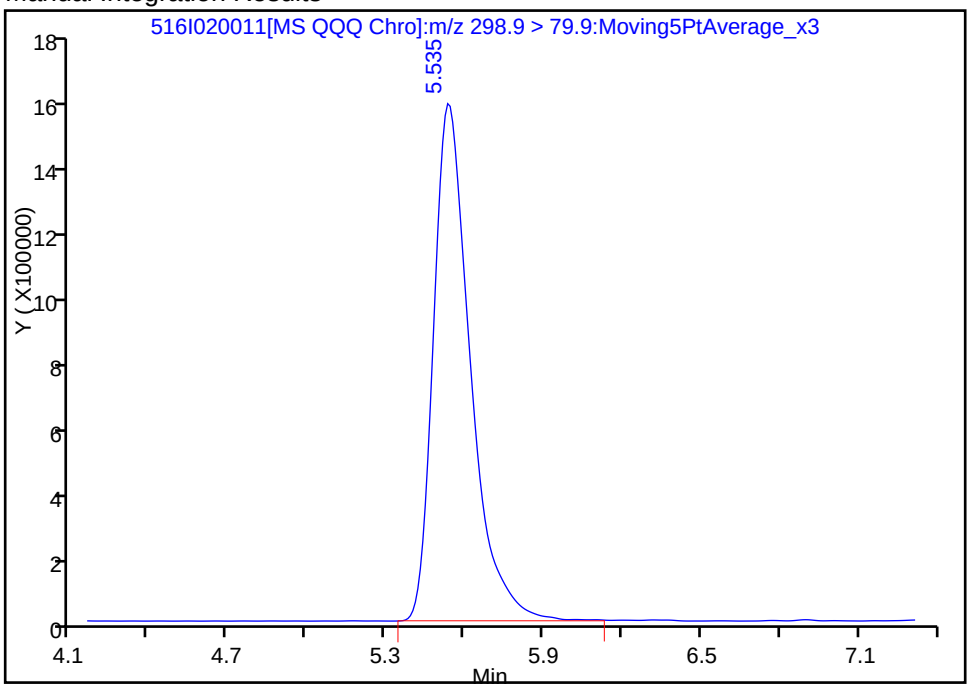
Not Detected
Expected RT: 5.43

Processing Integration Results



Manual Integration Results

RT: 5.53
Area: 14445668
Amount: 9.202326
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:38:34
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

TestAmerica Denver

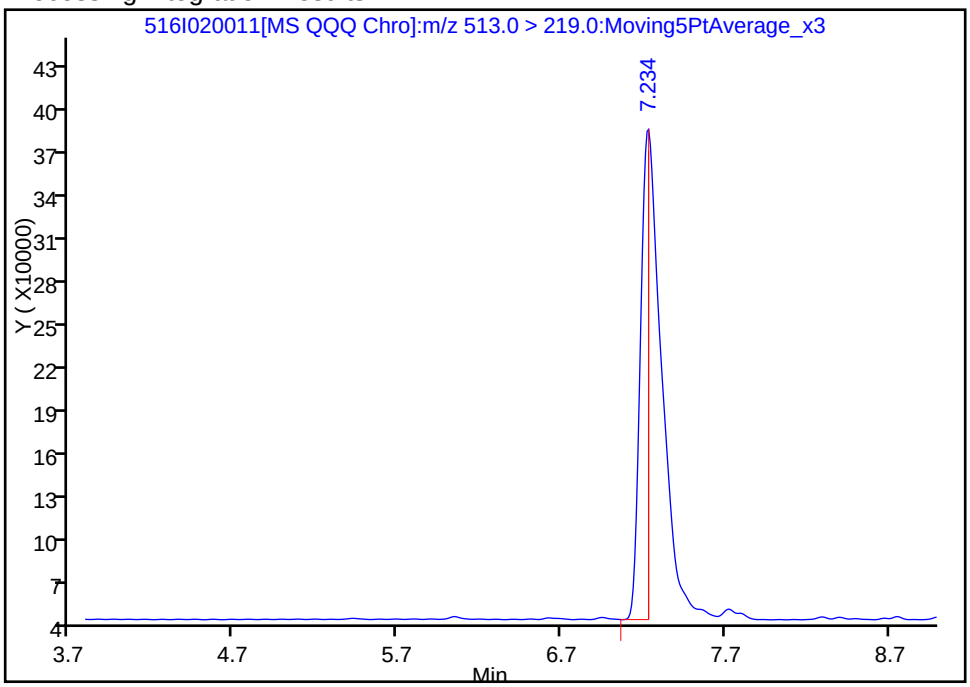
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020011.d
Injection Date: 20-Sep-2016 17:20:56 Instrument ID: LC_LCMS5
Lims ID: STD0100
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

23 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 2

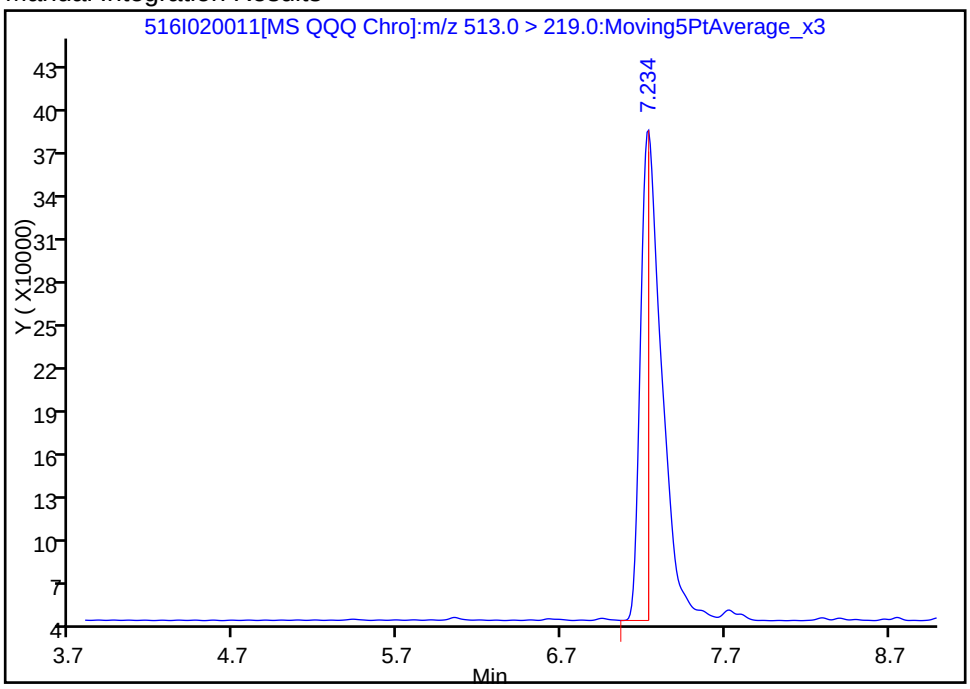
Processing Integration Results

RT: 7.23
Area: 1151830
Amount: 9.723723
Amount Units: ug/L



Manual Integration Results

RT: 7.23
Area: 1151830
Amount: 9.864353
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:38:34
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Denver

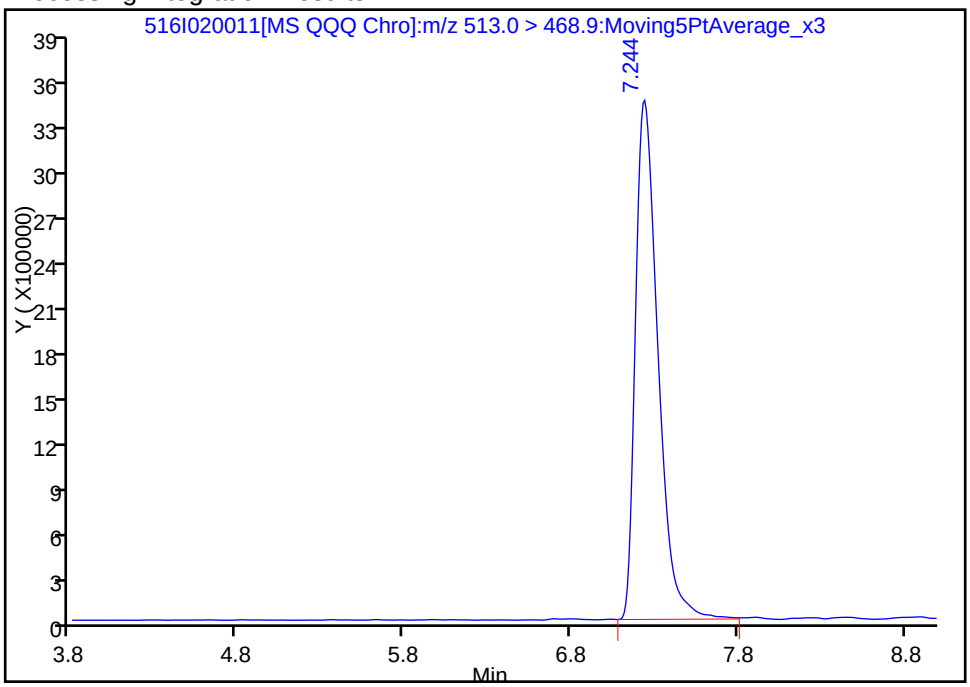
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020011.d
Injection Date: 20-Sep-2016 17:20:56 Instrument ID: LC_LCMS5
Lims ID: STD0100
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

23 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 1

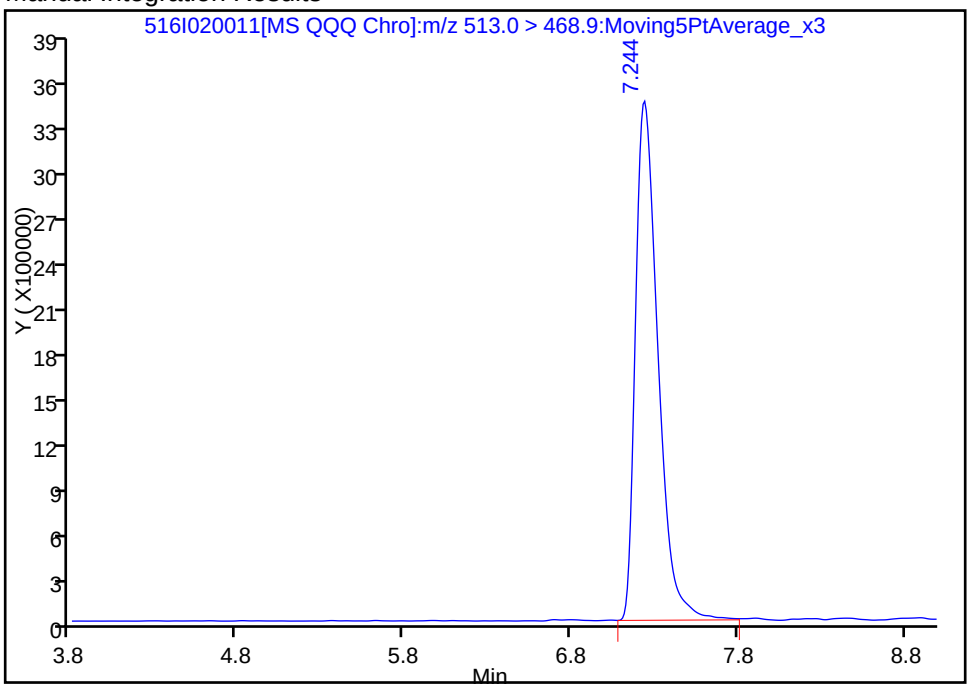
Processing Integration Results

RT: 7.24
Area: 32237127
Amount: 9.723723
Amount Units: ug/L



Manual Integration Results

RT: 7.24
Area: 32237127
Amount: 9.864353
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 07:38:34
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020012.d
Lims ID: STD0200
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 20-Sep-2016 17:33:14 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0200, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:10:06 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:53:43

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.389	4.219	0.170		36219735	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.390	4.219	0.171	1.000	82029519	20.0			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.374	5.318	0.056	0.910	57267566	21.2			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.478	5.431	0.047	0.868	28027091	17.0			
298.9 > 98.9	5.488	5.431	0.057	0.870	8738765		3.21(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.478	5.431	0.047	0.868	28027091	17.0			
298.9 > 98.9	5.488	5.431	0.057	0.870	8738765		3.21(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.904	5.904	0.0		24719653	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.904	5.913	-0.009	1.000	47519775	20.5			
313.0 > 118.6	5.894	5.913	-0.019	0.998	1146109		41.46(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.310	6.338	-0.028		3149679	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.320	6.339	-0.019	1.002	22714973	18.1			R
398.9 > 98.9	6.320	6.339	-0.019	1.002	9258209		2.45(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.320	6.339	-0.019	1.002	22714973	18.1			
398.9 > 98.9	6.320	6.339	-0.019	1.002	9258209		2.45(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.311	6.339	-0.028	0.949	72349928	19.8			
363.0 > 168.9	6.320	6.339	-0.019	0.950	18560751		3.90(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.640	6.678	-0.038	0.959	24270254	18.5			
449.0 > 98.9	6.640	6.678	-0.038	0.959	7724625		3.14(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.640	6.678	-0.038	0.959	24270254	18.5			
449.0 > 98.9	6.640	6.678	-0.038	0.959	7724625		3.14(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.641	6.688	-0.047	0.999	56135935	20.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.650	6.688	-0.038		36976735	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.651	6.698	-0.048	1.000	79074145	20.7			
413.0 > 169.0	6.651	6.698	-0.048	1.000	23542091		3.36(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.923	6.999	-0.076		10494870	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.923	6.999	-0.076	1.000	25808939	18.8			
498.9 > 98.9	6.923	6.999	-0.076	1.000	11304698		2.28(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.922	7.008	-0.086	1.000	10938686	19.2			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.943	7.018	-0.075		25508822	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.943	7.019	-0.076	1.000	57540613	19.3			
463.0 > 218.9	6.943	7.019	-0.076	1.000	9348931		6.15(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.196	7.282	-0.086		30687891	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.187	7.291	-0.104	0.999	62256405	19.5			R
513.0 > 219.0	7.197	7.291	-0.094	1.000	6024088		10.33(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.375	7.479	-0.104	1.065	26494674	19.2			
598.9 > 99.0	7.375	7.479	-0.104	1.065	7643939		3.47(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.375	7.479	-0.104	1.065	26494674	19.2			
598.9 > 99.0	7.375	7.479	-0.104	1.065	7643939		3.47(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.404	7.499	-0.095		19679508	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.404	7.499	-0.095	1.000	59064684	20.9			R
563.0 > 268.9	7.404	7.499	-0.095	1.000	7636303		7.73(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.574	7.659	-0.085	1.000	87737859	20.7			
613.0 > 168.9	7.574	7.659	-0.085	1.000	11667796		7.52(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.573	7.668	-0.095		42154607	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.671	7.756	-0.085		33186298	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.672	7.757	-0.085	1.000	69694265	19.7			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.734	7.801	-0.067	1.021	77014763	21.4			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.866	7.923	-0.057	1.039	58324850	20.1			
712.9 > 169.0	7.857	7.923	-0.066	1.037	9246854		6.31(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	40.00	Units: uL
PFC-LCS_00085	Amount Added:	40.00	Units: uL

Report Date: 21-Sep-2016 12:10:07 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020012.d

Injection Date: 20-Sep-2016 17:33:14 Instrument ID: LC_LCMS5

Lims ID: STD0200

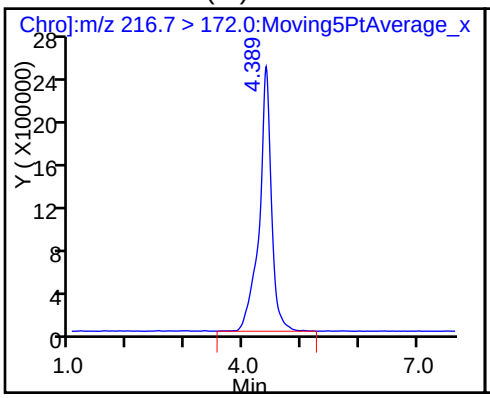
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 9

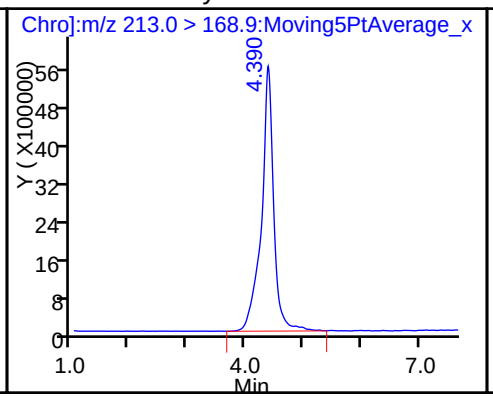
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

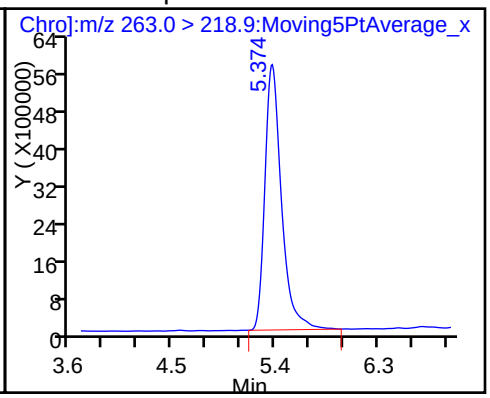
* 1 13C4 PFBA (IS)



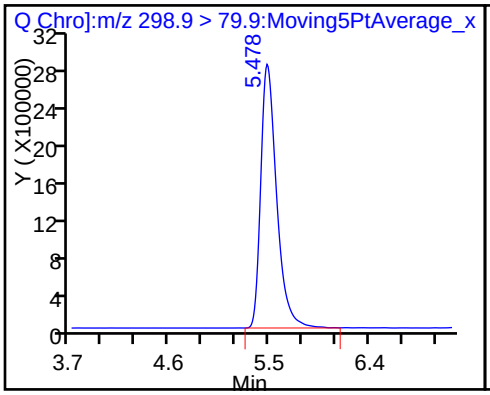
2 Perfluorobutyric acid



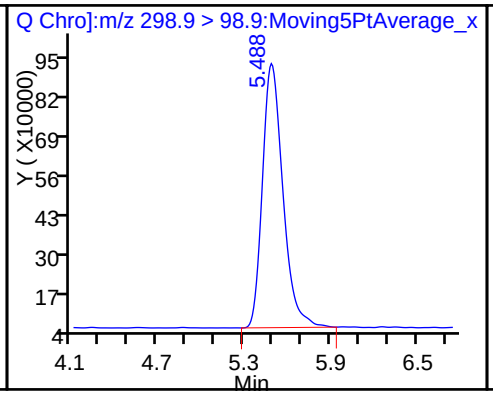
3 Perfluoropentanoic acid



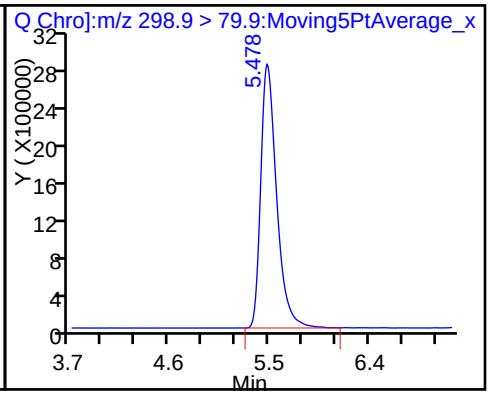
5 Perfluorobutanesulfonic acid



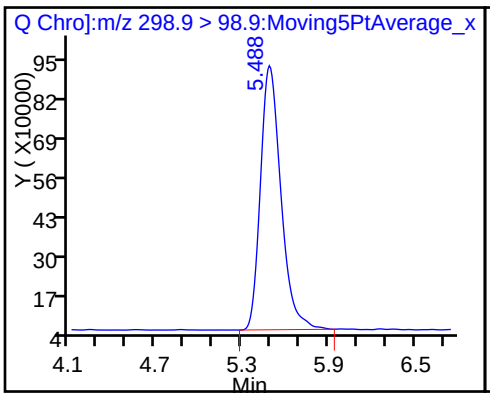
5 Perfluorobutanesulfonic acid



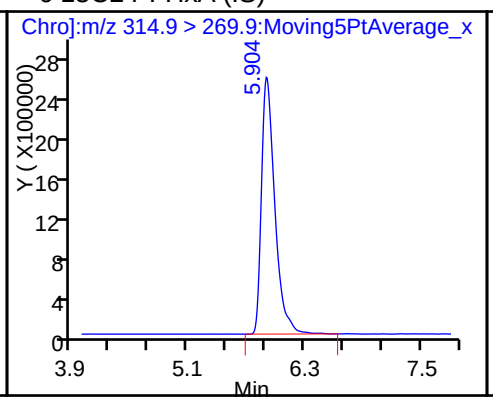
4 Perfluorobutane Sulfonate



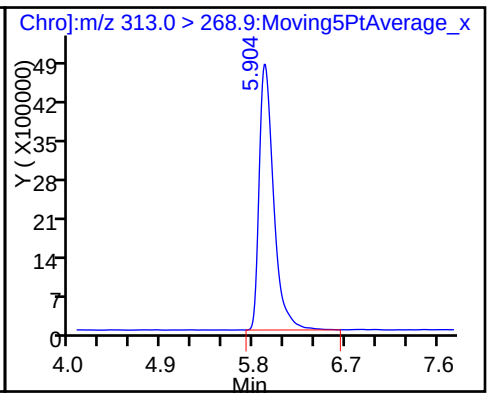
4 Perfluorobutane Sulfonate



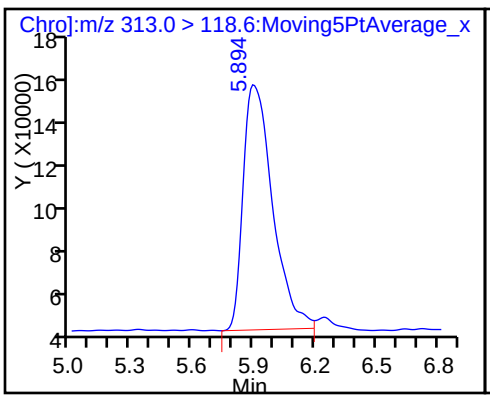
* 6 13C2 PFHxA (IS)



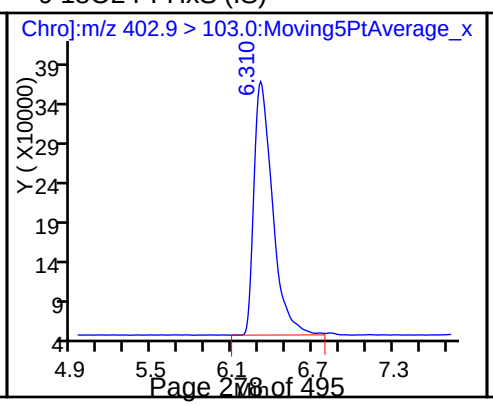
7 Perfluorohexanoic acid



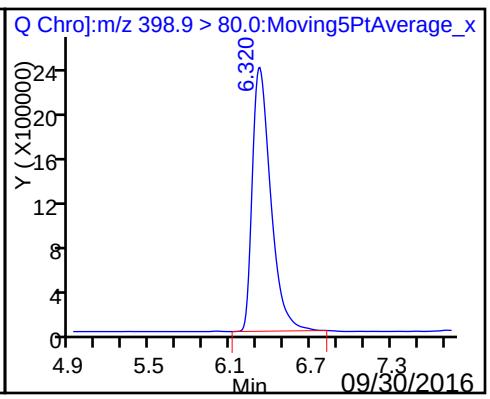
7 Perfluorohexanoic acid



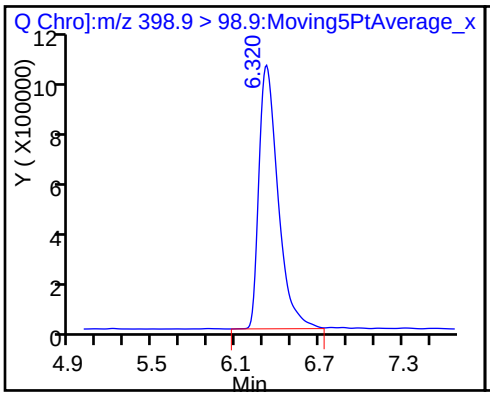
* 9 18O2 PFHxS (IS)



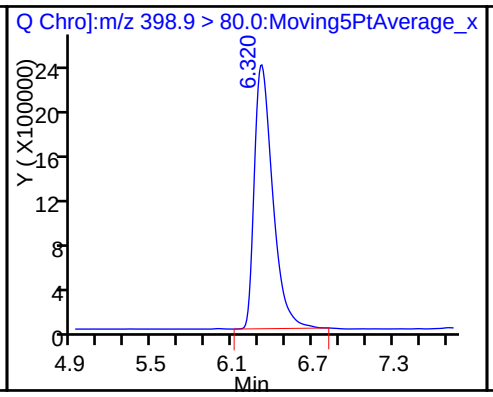
10 Perfluorohexane Sulfonate



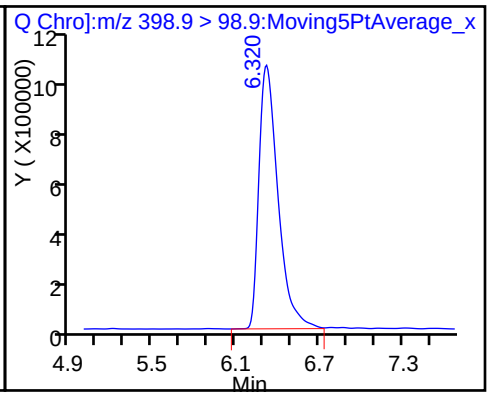
10 Perfluorohexane Sulfonate



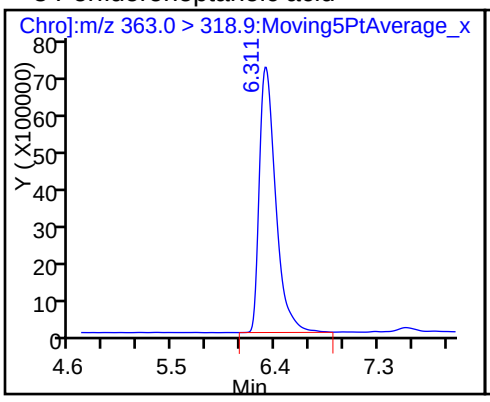
11 Perfluorohexanesulfonic acid



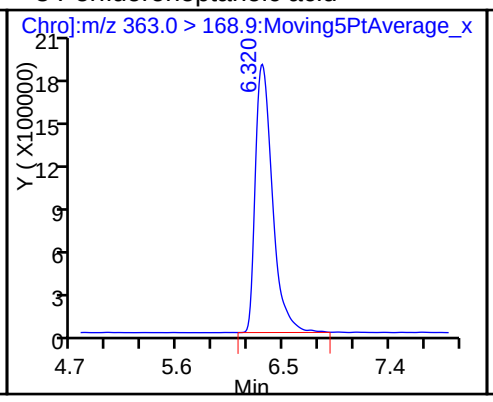
11 Perfluorohexanesulfonic acid



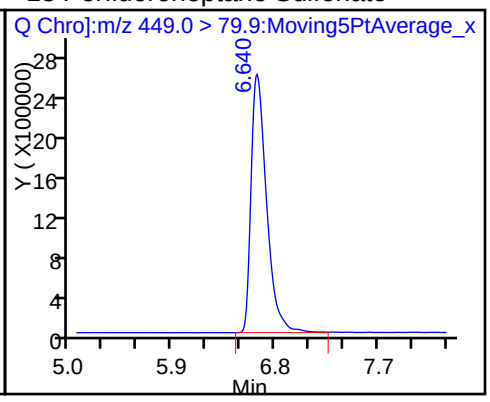
8 Perfluoroheptanoic acid



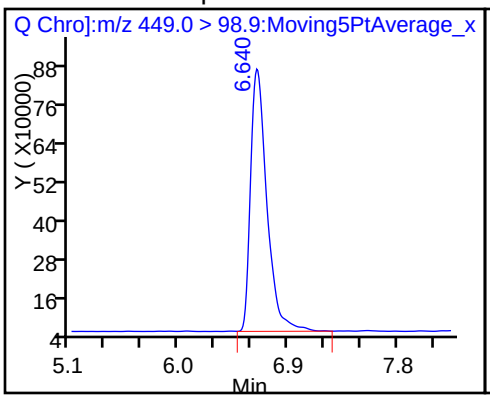
8 Perfluoroheptanoic acid



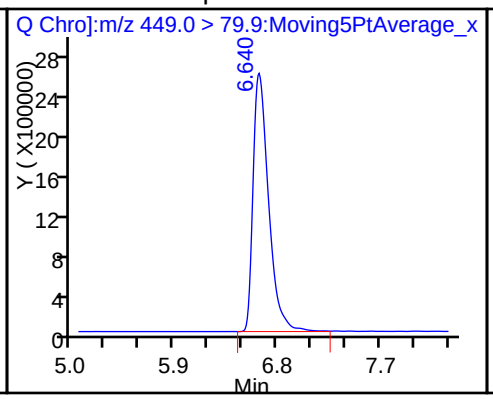
13 Perfluoroheptane Sulfonate



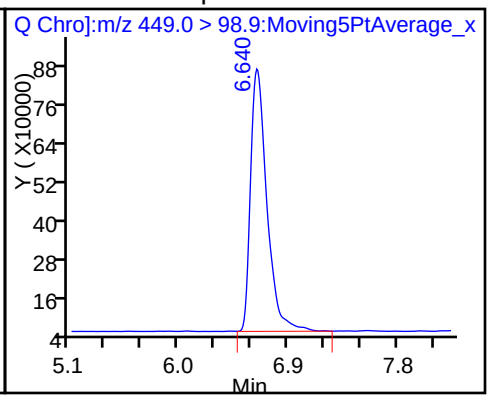
13 Perfluoroheptane Sulfonate



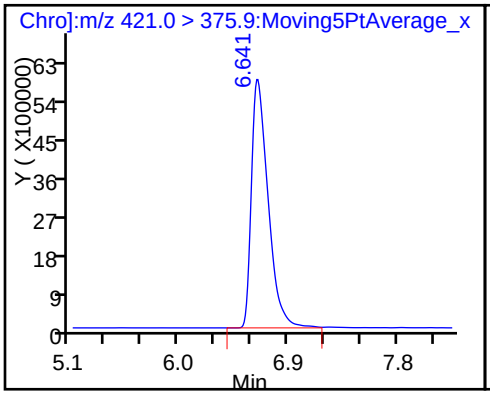
12 Perfluoroheptanesulfonic Acid



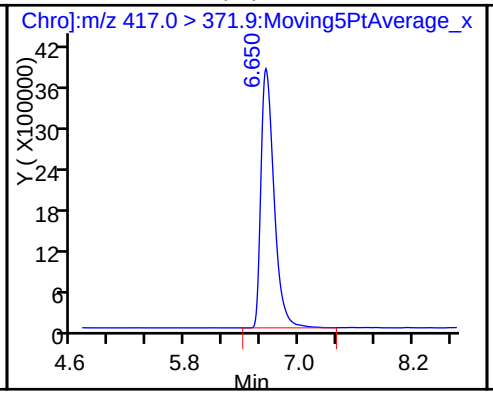
12 Perfluoroheptanesulfonic Acid



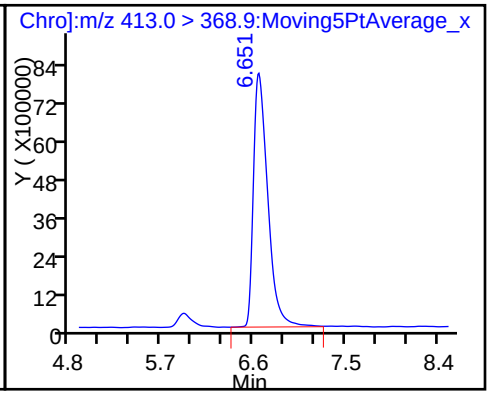
$ 14 13C8 PFOA



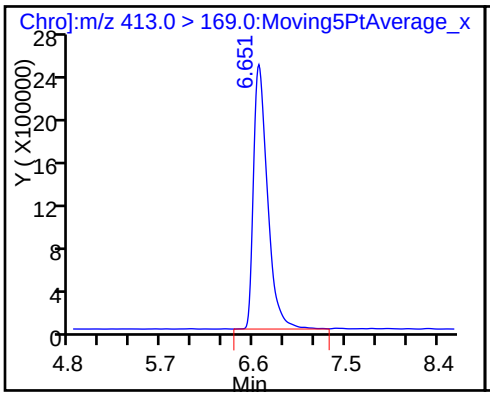
* 15 13C4 PFOA (IS)



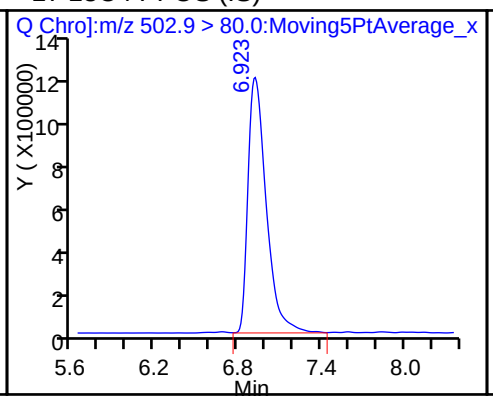
16 Perfluorooctanoic acid



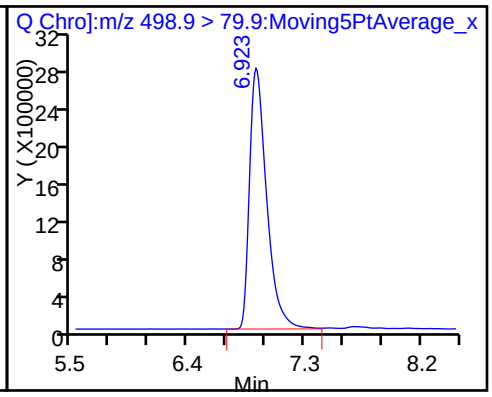
16 Perfluorooctanoic acid



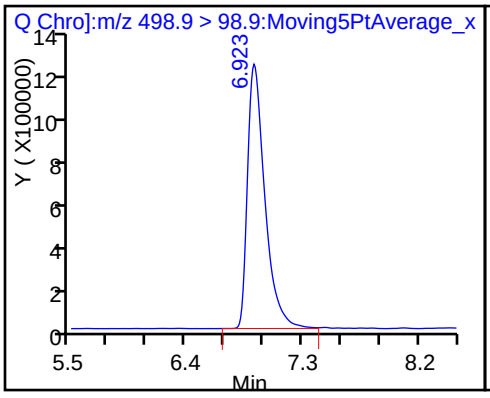
* 17 13C4 PFOS (IS)



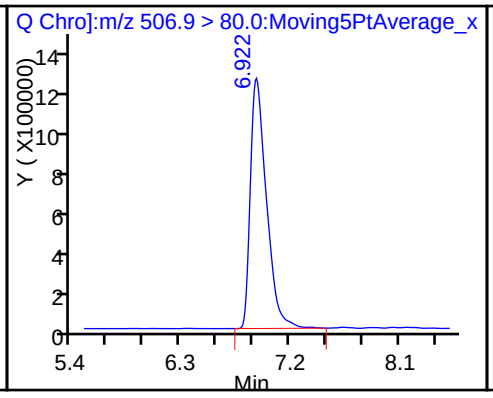
19 Perfluorooctane sulfonic acid



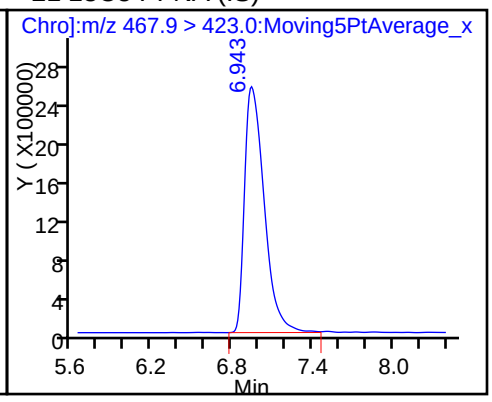
19 Perfluorooctane sulfonic acid



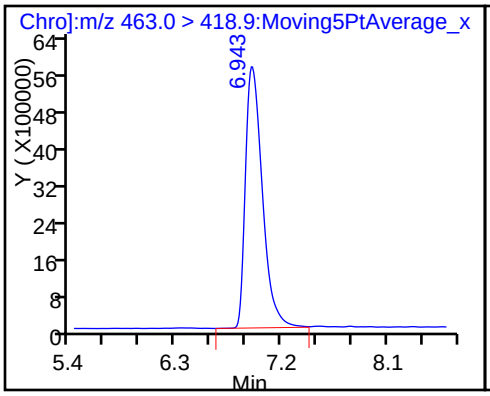
$ 18 13C8 PFOS



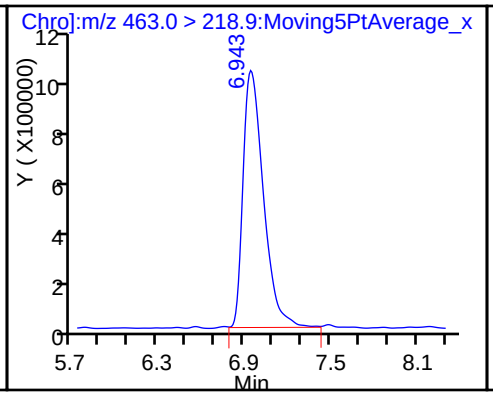
* 21 13C5 PFNA (IS)



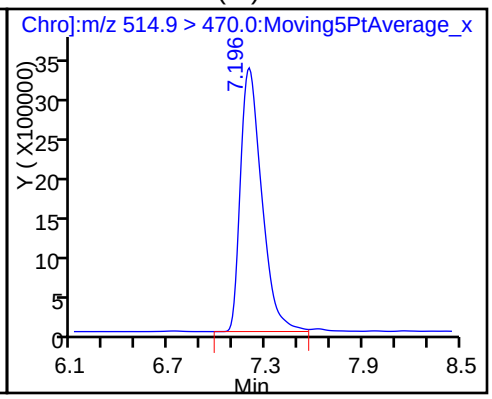
20 Perfluorononanoic acid



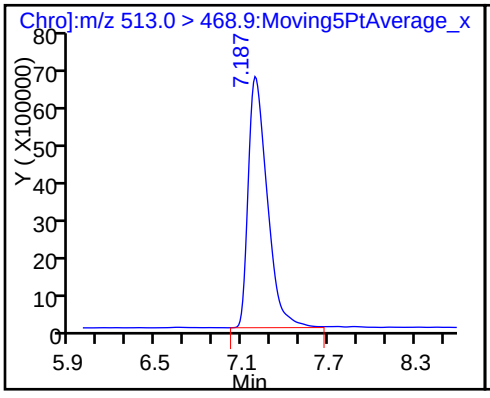
20 Perfluorononanoic acid



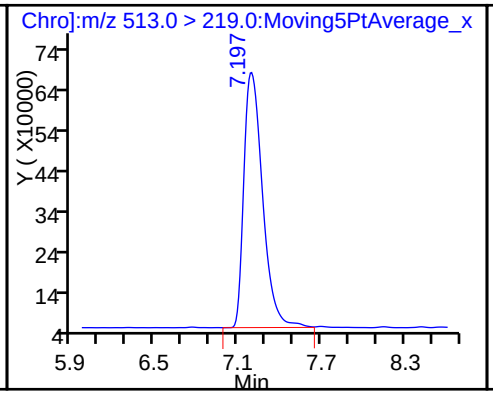
* 22 13C2 PFDA (IS)



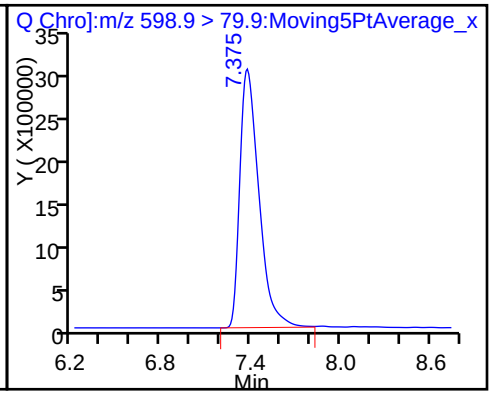
23 Perfluorodecanoic acid



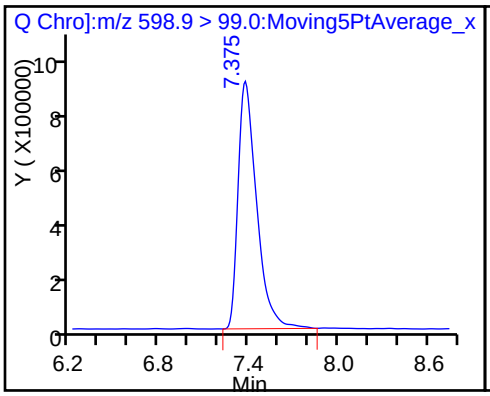
23 Perfluorodecanoic acid



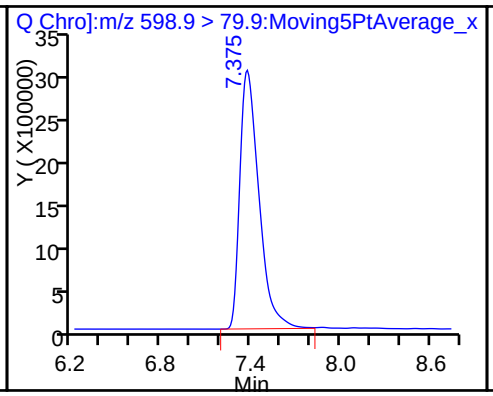
25 Perfluorodecane Sulfonate



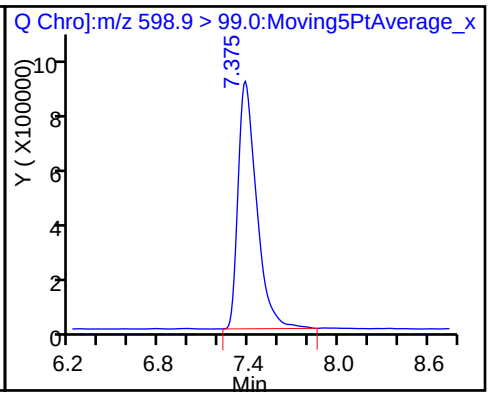
25 Perfluorodecane Sulfonate



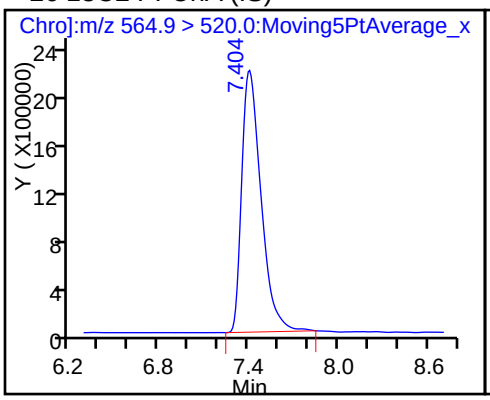
24 Perfluorodecane Sulfonic acid



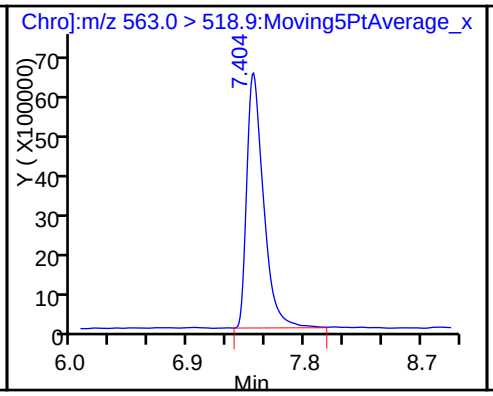
24 Perfluorodecane Sulfonic acid



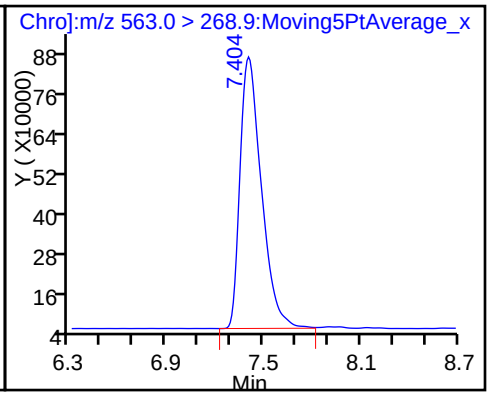
* 26 13C2 PFUnA (IS)



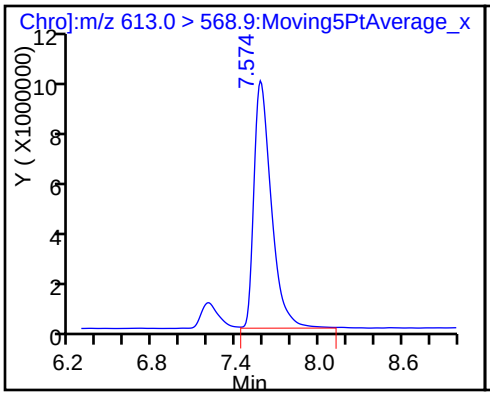
27 Perfluoroundecanoic acid



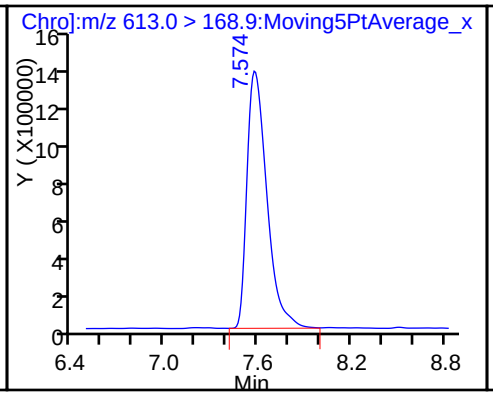
27 Perfluoroundecanoic acid



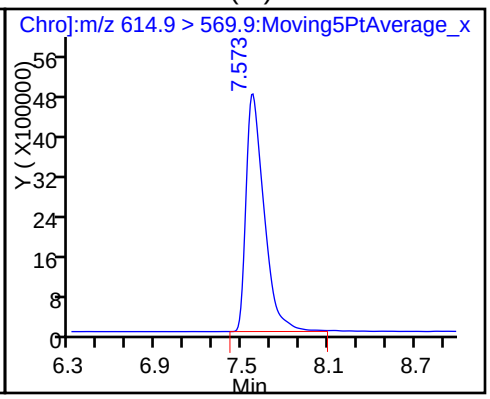
29 Perfluorododecanoic acid



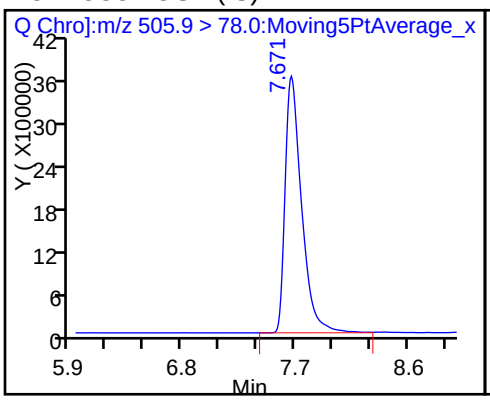
29 Perfluorododecanoic acid



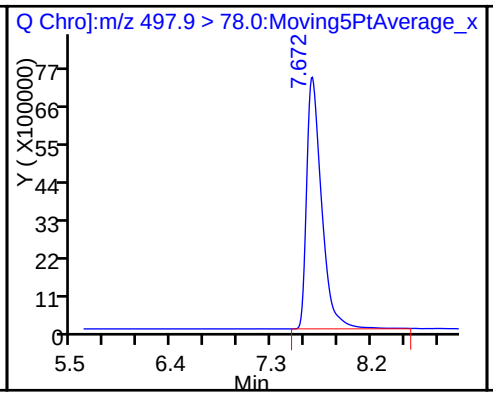
* 28 13C2 PFDoA (IS)



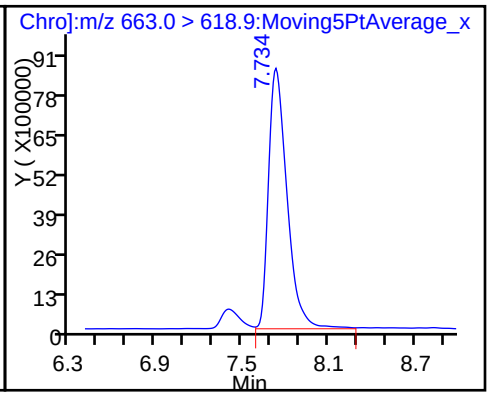
* 31 13C8 FOSA (IS)



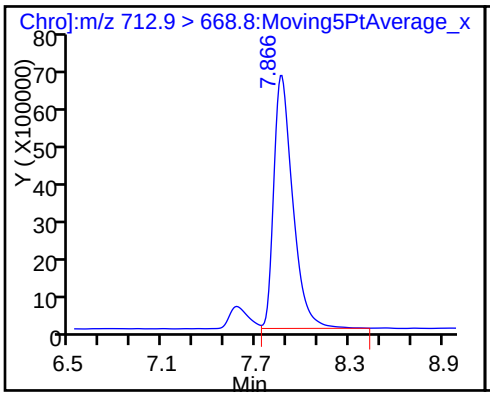
32 Perfluorooctane Sulfonamide



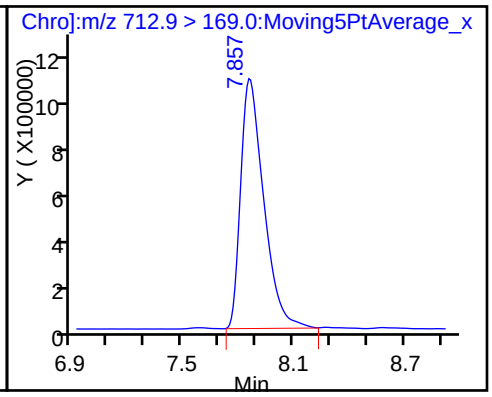
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020013.d
Lims ID: STD0500
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 20-Sep-2016 17:45:31 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 0500, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:10:09 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:56:34

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.399	4.219	0.180		34557838	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.390	4.219	0.171	0.998	198972066	50.9			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.365	5.318	0.047	0.907	133619150	50.3			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.478	5.431	0.047	0.866	69260845	44.8			
298.9 > 98.9	5.478	5.431	0.047	0.866	21144309		3.28(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.478	5.431	0.047	0.866	69260845	44.8			
298.9 > 98.9	5.478	5.431	0.047	0.866	21144309		3.28(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.913	5.904	0.009		24373420	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.913	5.913	0.0	1.000	114428545	50.2			
313.0 > 118.6	5.913	5.913	0.0	1.000	2961132		38.64(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.329	6.338	-0.009		2949297	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.329	6.339	-0.010	1.000	54412052	46.4			
398.9 > 98.9	6.329	6.339	-0.010	1.000	22556057		2.41(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.329	6.339	-0.010	1.000	54412052	46.4			
398.9 > 98.9	6.329	6.339	-0.010	1.000	22556057		2.41(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.330	6.339	-0.009	0.949	164642017	47.9			
363.0 > 168.9	6.320	6.339	-0.019	0.948	41029892		4.01(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.659	6.678	-0.019	0.959	56871258	45.4			
449.0 > 98.9	6.659	6.678	-0.019	0.959	18172854		3.13(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.659	6.678	-0.019	0.959	56871258	45.4			
449.0 > 98.9	6.659	6.678	-0.019	0.959	18172854		3.13(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.669	6.688	-0.019	1.000	125163457	47.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.669	6.688	-0.019		34715618	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.669	6.698	-0.029	1.000	169838921	47.5			
413.0 > 169.0	6.669	6.698	-0.029	1.000	53081389		3.20(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.942	6.999	-0.057		10037376	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.942	6.999	-0.057	1.000	61111761	46.4			
498.9 > 98.9	6.932	6.999	-0.067	0.999	25923683		2.36(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.941	7.008	-0.067	1.000	26247769	48.2			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.962	7.018	-0.056		21200610	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.962	7.019	-0.057	1.000	122670542	49.5			
463.0 > 218.9	6.971	7.019	-0.048	1.001	19125126		6.41(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.206	7.282	-0.076		28888681	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.197	7.291	-0.094	0.999	149162205	49.5			
513.0 > 219.0	7.206	7.291	-0.085	1.000	14164232		10.53(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.385	7.479	-0.094	1.064	67054900	50.8			
598.9 > 99.0	7.385	7.479	-0.094	1.064	18885289		3.55(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.385	7.479	-0.094	1.064	67054900	50.8			
598.9 > 99.0	7.385	7.479	-0.094	1.064	18885289		3.55(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.414	7.499	-0.085		19102241	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.414	7.499	-0.085	1.000	132964459	48.6			R
563.0 > 268.9	7.414	7.499	-0.085	1.000	15268872		8.71(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.583	7.659	-0.076	1.000	205665191	50.8			
613.0 > 168.9	7.583	7.659	-0.076	1.000	26773436		7.68(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.583	7.668	-0.085		40271436	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.680	7.756	-0.076		30479173	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.681	7.757	-0.076	1.000	168358537	51.9			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.734	7.801	-0.067	1.020	169950610	49.6			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.866	7.923	-0.057	1.037	138526186	49.9			
712.9 > 169.0	7.866	7.923	-0.057	1.037	22828249		6.07(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC-LCS_00085	Amount Added: 100.00	Units: uL
PFC_Surr_00023	Amount Added: 100.00	Units: uL

Report Date: 21-Sep-2016 12:10:10 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020013.d

Injection Date: 20-Sep-2016 17:45:31 Instrument ID: LC_LCMS5

Lims ID: STD0500

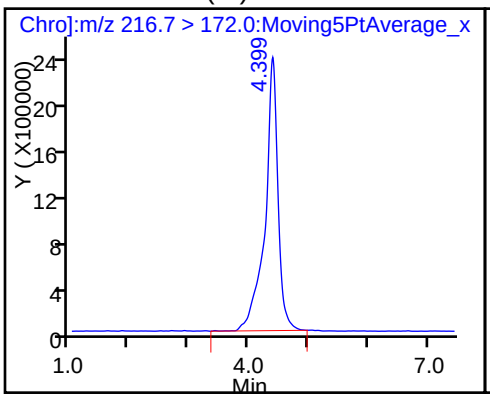
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 10

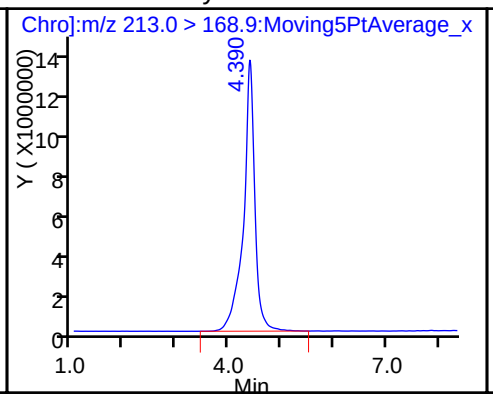
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

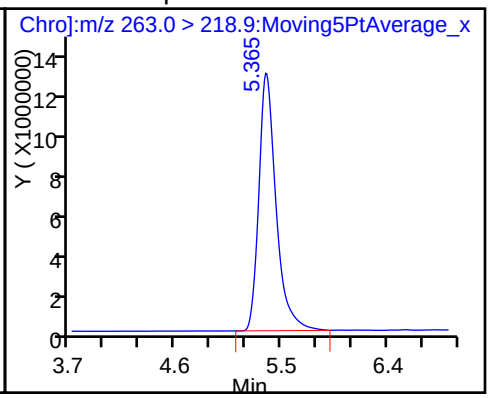
* 1 13C4 PFBA (IS)



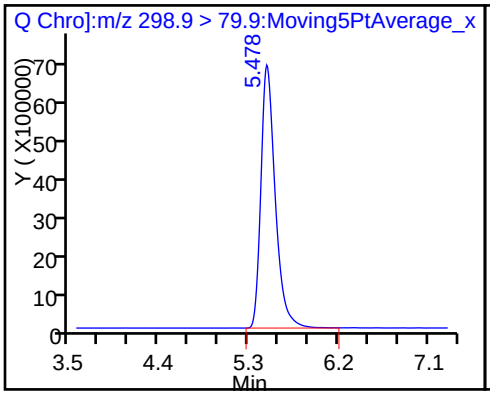
2 Perfluorobutyric acid



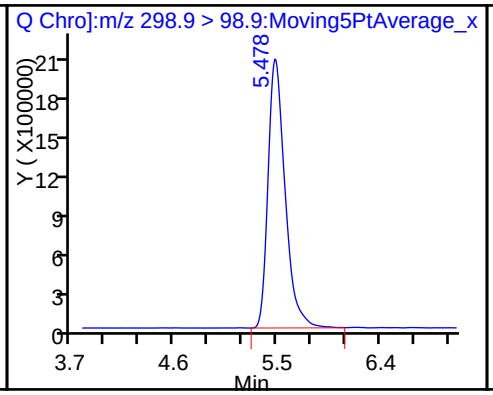
3 Perfluoropentanoic acid



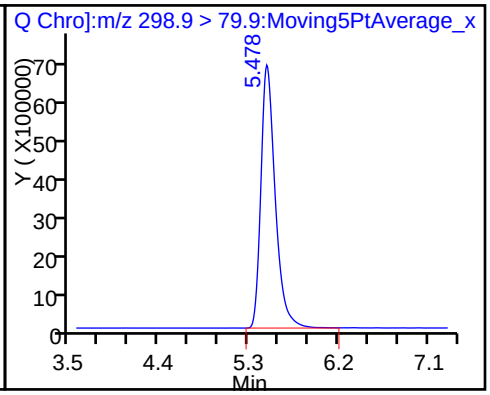
5 Perfluorobutanesulfonic acid



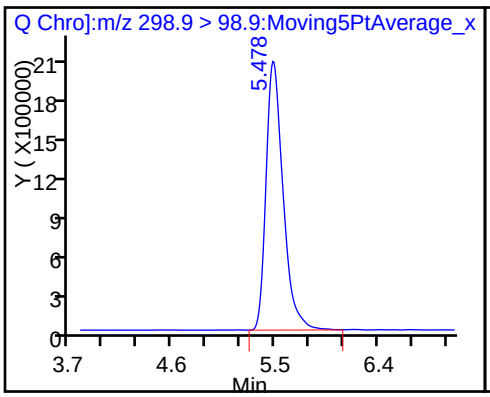
5 Perfluorobutanesulfonic acid



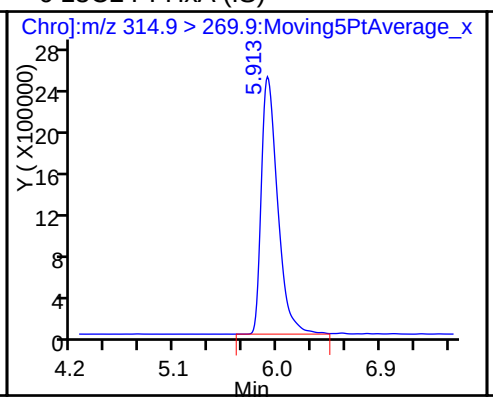
4 Perfluorobutane Sulfonate



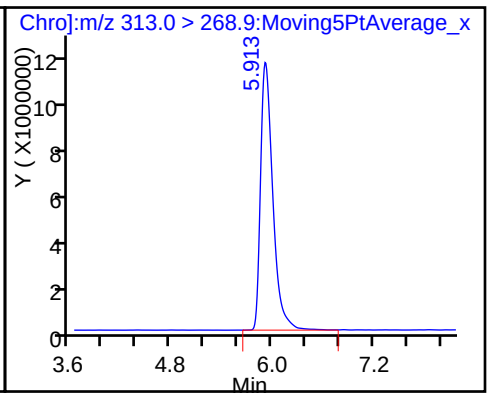
4 Perfluorobutane Sulfonate



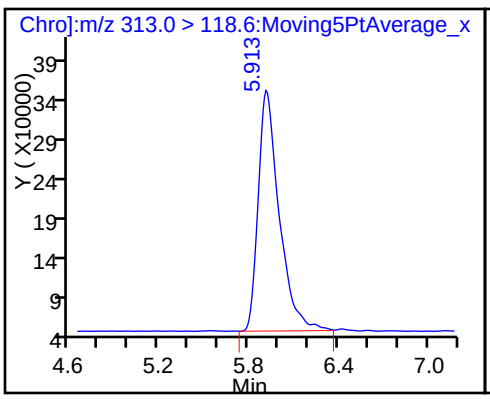
* 6 13C2 PFHxA (IS)



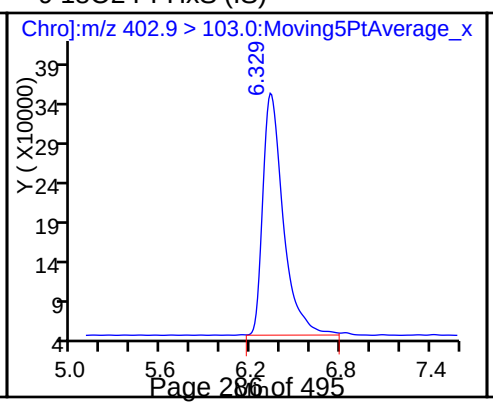
7 Perfluorohexanoic acid



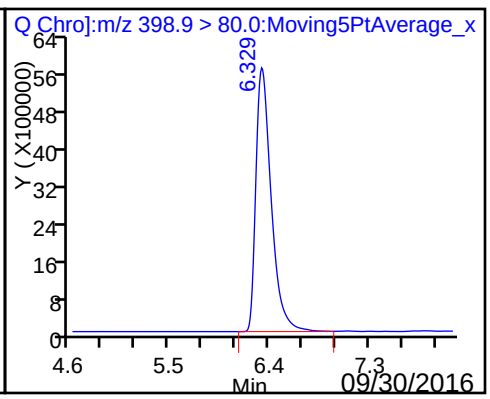
7 Perfluorohexanoic acid



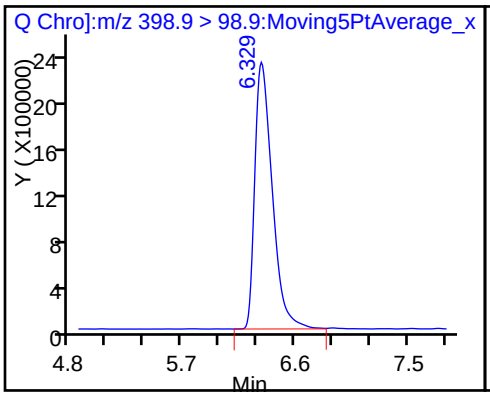
* 9 18O2 PFHxS (IS)



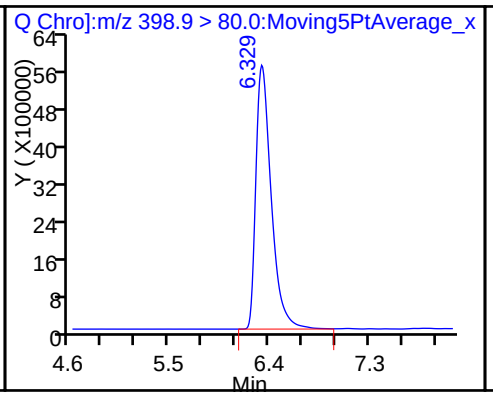
10 Perfluorohexane Sulfonate



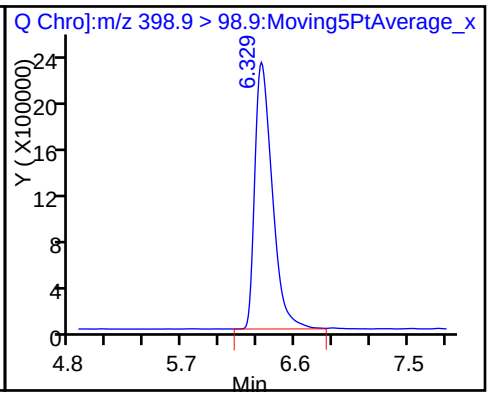
10 Perfluorohexane Sulfonate



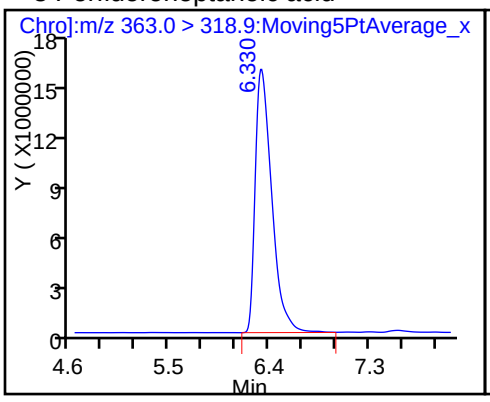
11 Perfluorohexanesulfonic acid



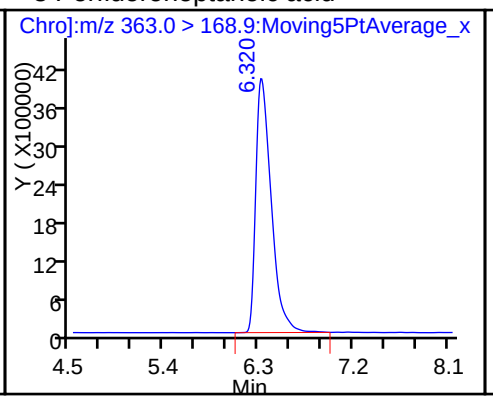
11 Perfluorohexanesulfonic acid



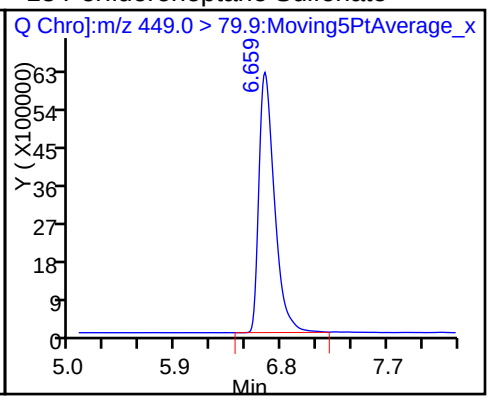
8 Perfluoroheptanoic acid



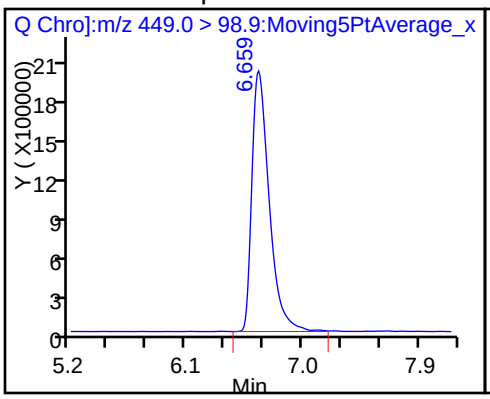
8 Perfluoroheptanoic acid



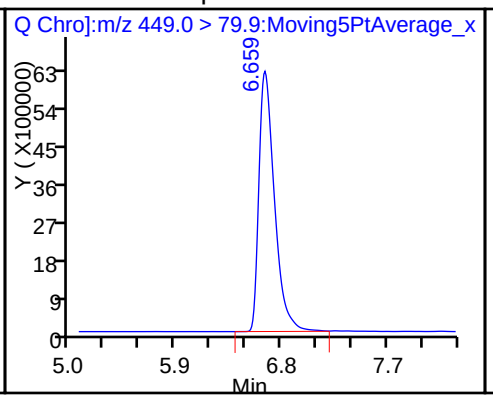
13 Perfluoroheptane Sulfonate



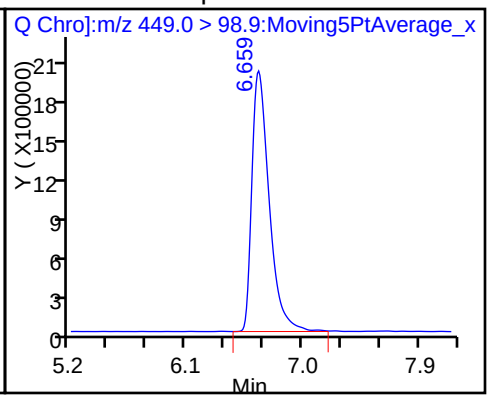
13 Perfluoroheptane Sulfonate



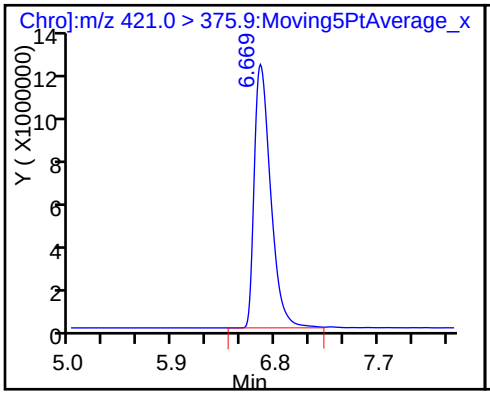
12 Perfluoroheptanesulfonic Acid



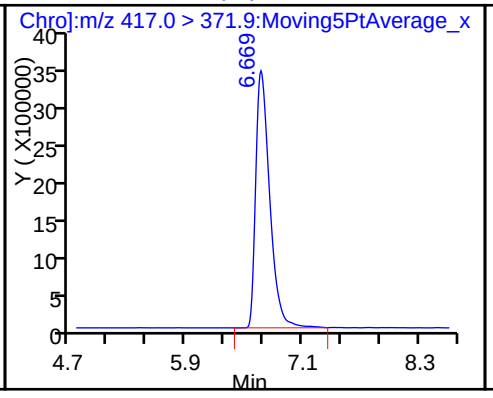
12 Perfluoroheptanesulfonic Acid



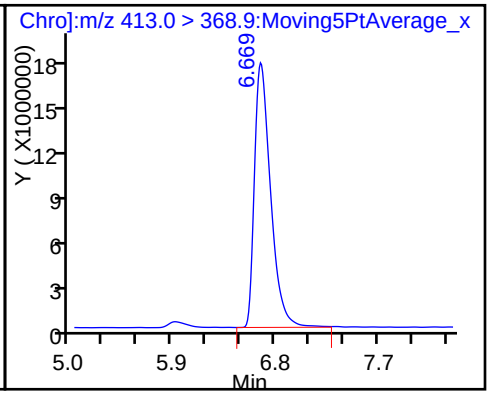
$ 14 13C8 PFOA



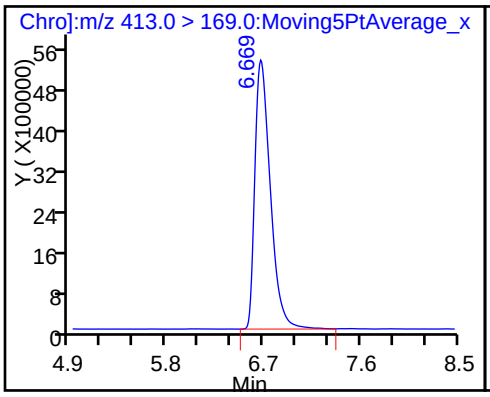
* 15 13C4 PFOA (IS)



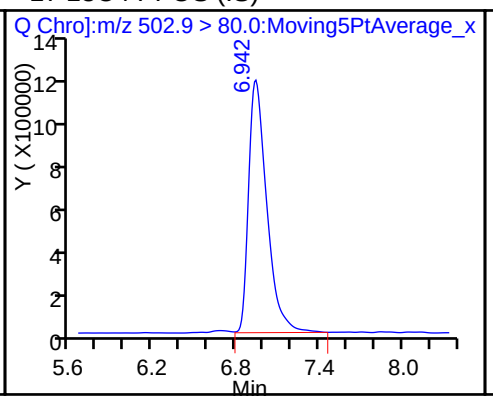
16 Perfluorooctanoic acid



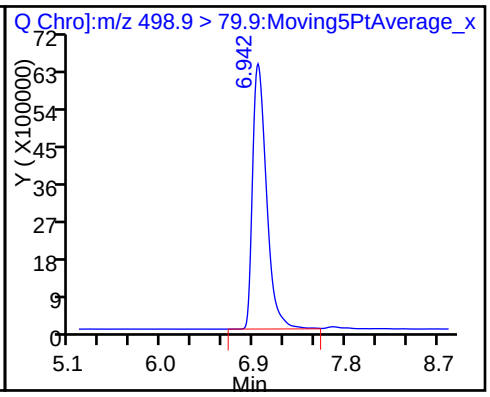
16 Perfluorooctanoic acid



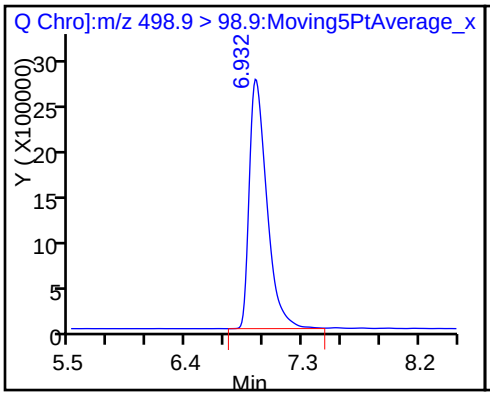
* 17 13C4 PFOS (IS)



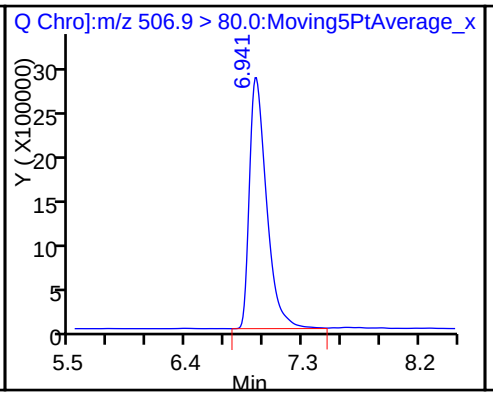
19 Perfluorooctane sulfonic acid



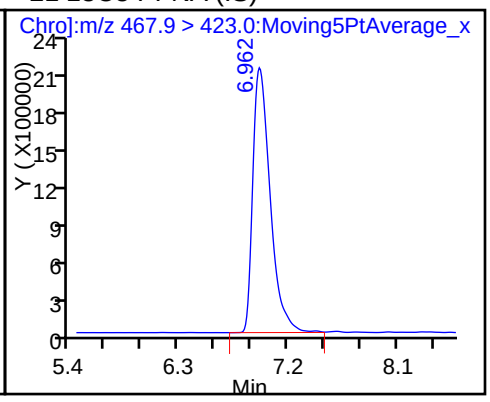
19 Perfluorooctane sulfonic acid



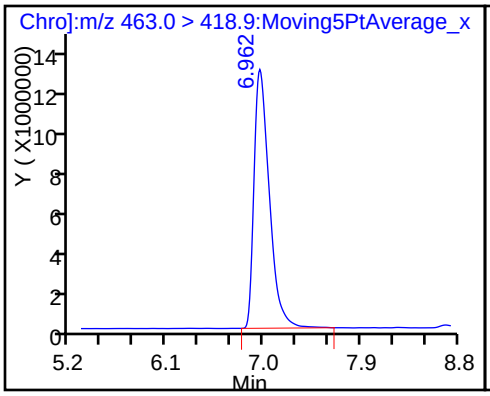
$ 18 13C8 PFOS



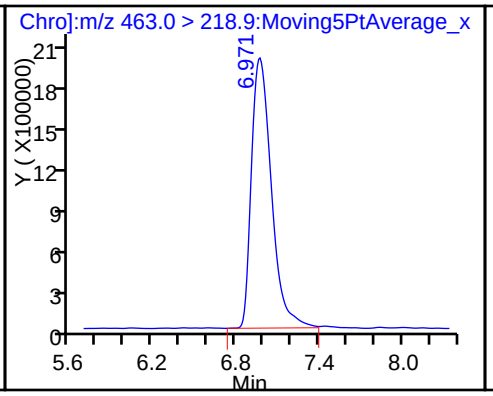
* 21 13C5 PFNA (IS)



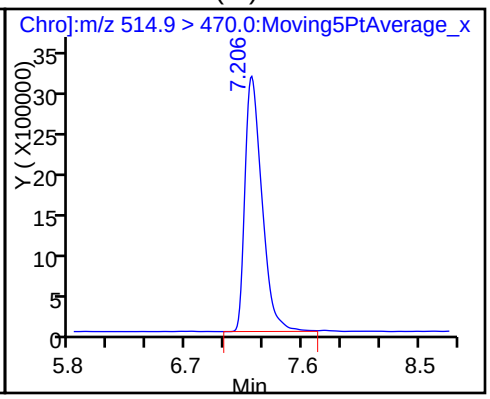
20 Perfluorononanoic acid



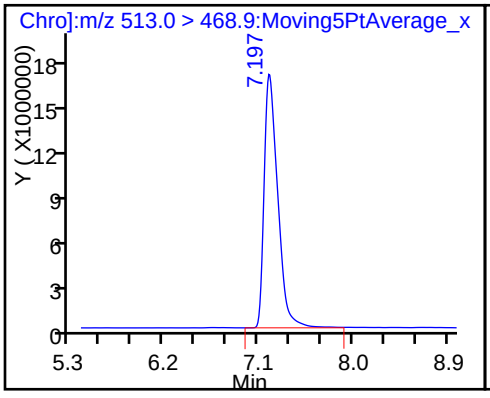
20 Perfluorononanoic acid



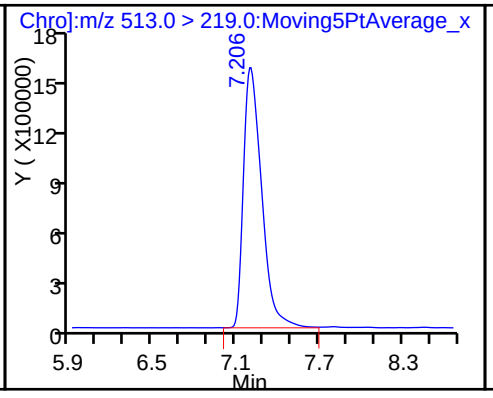
* 22 13C2 PFDA (IS)



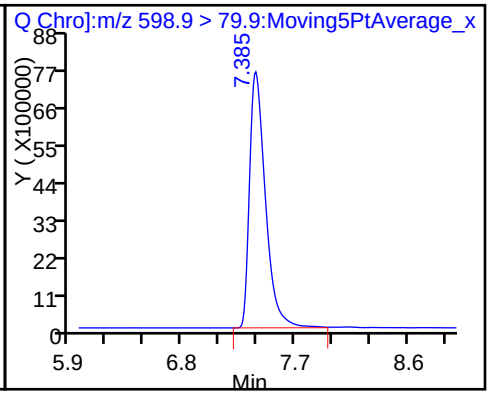
23 Perfluorodecanoic acid



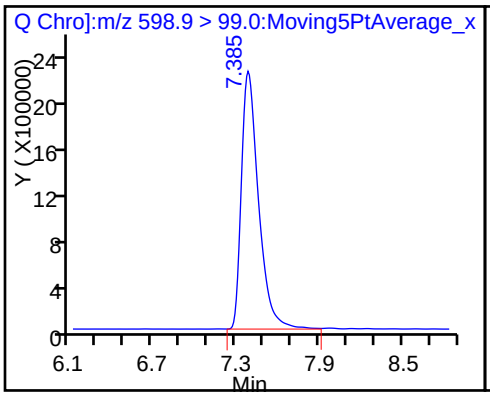
23 Perfluorodecanoic acid



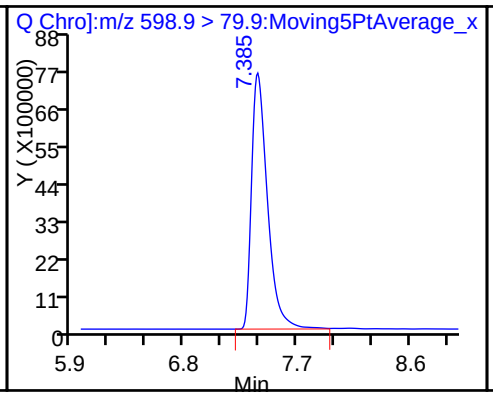
25 Perfluorodecane Sulfonate



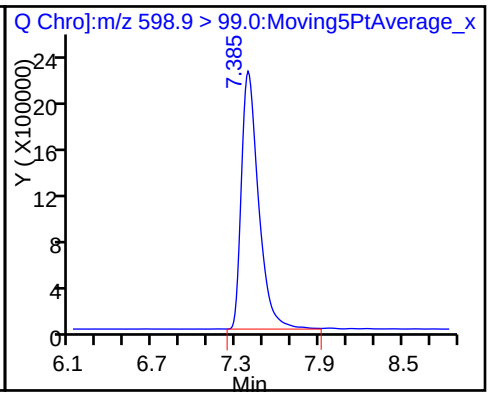
25 Perfluorodecane Sulfonate



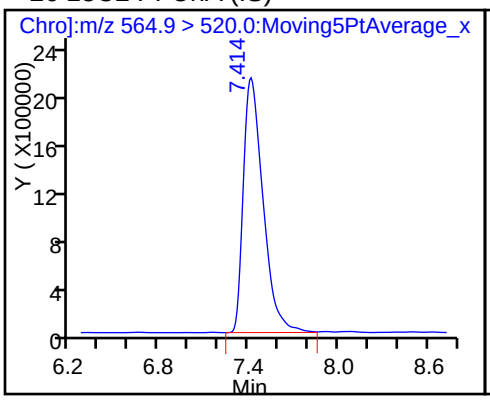
24 Perfluorodecane Sulfonic acid



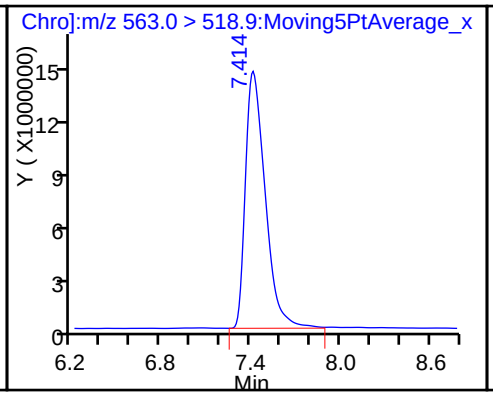
24 Perfluorodecane Sulfonic acid



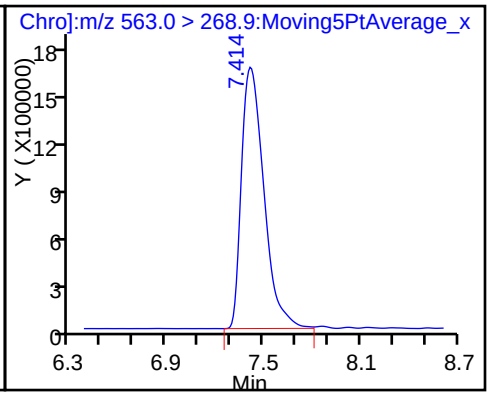
* 26 13C2 PFUnA (IS)



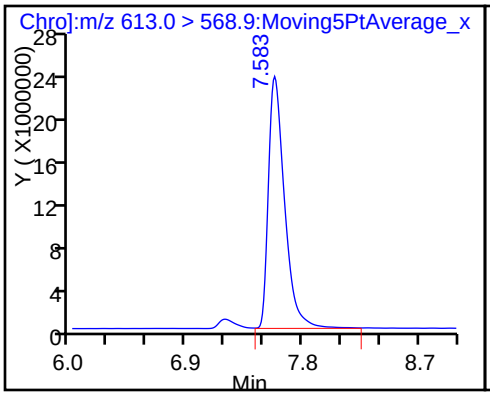
27 Perfluoroundecanoic acid



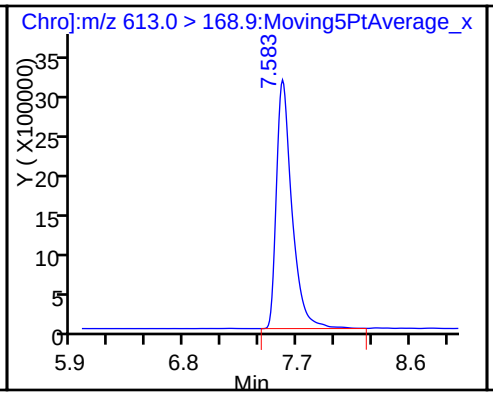
27 Perfluoroundecanoic acid



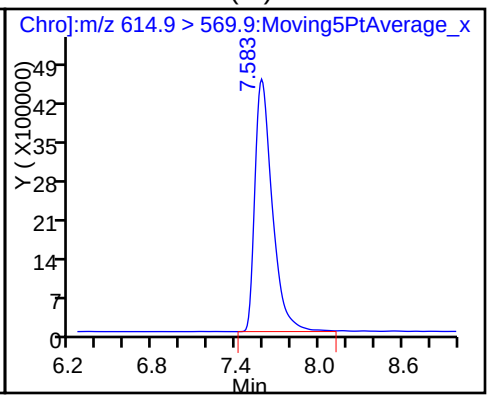
29 Perfluorododecanoic acid



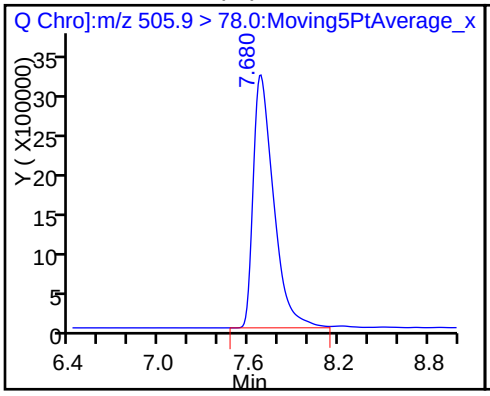
29 Perfluorododecanoic acid



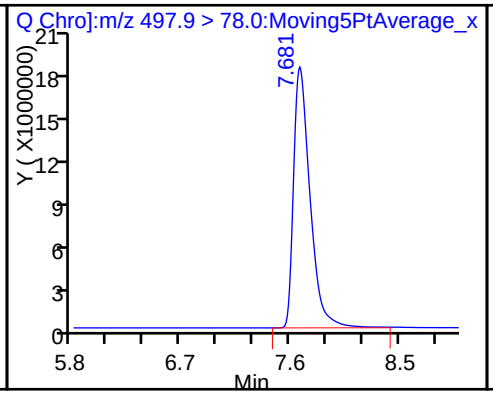
* 28 13C2 PFDoA (IS)



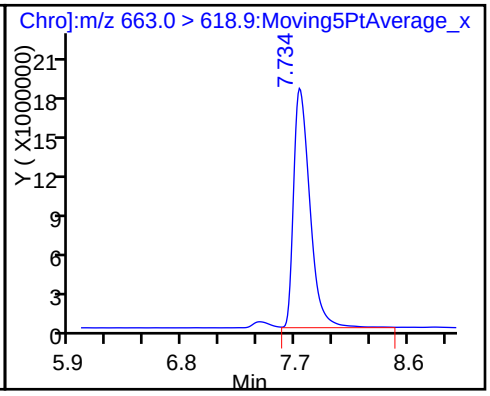
* 31 13C8 FOSA (IS)



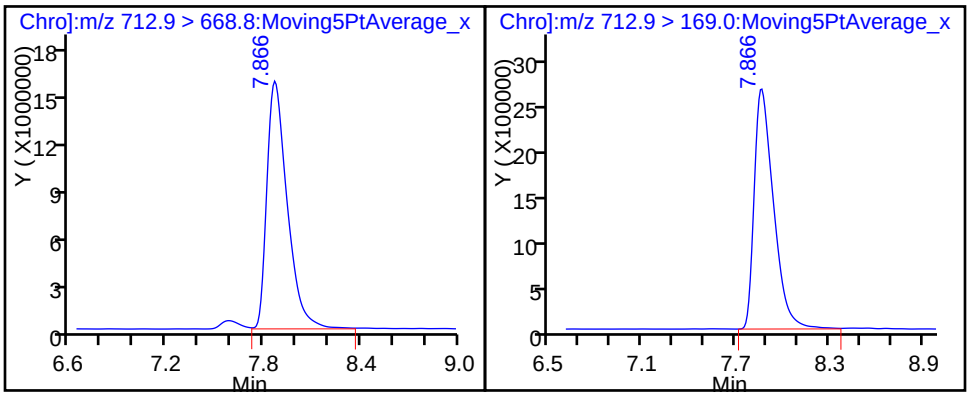
32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d
Lims ID: STD1250
Client ID:
Sample Type: IC Calib Level: 9
Inject. Date: 20-Sep-2016 17:57:50 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: STD 1250, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:10:13 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:57:41

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.389	4.219	0.170		33092552	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.399	4.219	0.180	1.002	480951659	128.4			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.336	5.318	0.018	0.905	298933771	120.3			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.459	5.431	0.028	0.866	161962462	105.4			
298.9 > 98.9	5.459	5.431	0.028	0.866	50836311		3.19(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.459	5.431	0.028	0.866	161962462	105.4			
298.9 > 98.9	5.459	5.431	0.028	0.866	50836311		3.19(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.894	5.904	-0.010		22781878	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.894	5.913	-0.019	1.000	268228608	125.9			
313.0 > 118.6	5.894	5.913	-0.019	1.000	7299531		36.75(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.300	6.338	-0.038		2932998	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.301	6.339	-0.038	1.000	128473186	110.2			R
398.9 > 98.9	6.301	6.339	-0.038	1.000	51799116		2.48(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.301	6.339	-0.038	1.000	128473186	110.2			
398.9 > 98.9	6.301	6.339	-0.038	1.000	51799116		2.48(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.301	6.339	-0.038	0.949	347876937	112.0			
363.0 > 168.9	6.292	6.339	-0.047	0.947	87225050		3.99(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.631	6.678	-0.047	0.959	131546462	107.3			
449.0 > 98.9	6.631	6.678	-0.047	0.959	40689976		3.23(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.631	6.678	-0.047	0.959	131546462	107.3			
449.0 > 98.9	6.631	6.678	-0.047	0.959	40689976		3.23(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.641	6.688	-0.047	1.000	260626751	109.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.641	6.688	-0.047		31383905	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.641	6.698	-0.057	1.000	355809526	110.2			
413.0 > 169.0	6.641	6.698	-0.057	1.000	108275733		3.29(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.913	6.999	-0.086		9810547	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.914	6.999	-0.085	1.000	130448320	101.4			R
498.9 > 98.9	6.914	6.999	-0.085	1.000	53020443		2.46(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.903	7.008	-0.105	0.999	57527663	108.1			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.933	7.018	-0.085		17312997	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.933	7.019	-0.086	1.000	254683894	125.7			
463.0 > 218.9	6.933	7.019	-0.086	1.000	39386238		6.47(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.177	7.282	-0.105		26119981	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.178	7.291	-0.113	1.000	334740758	122.9			
513.0 > 219.0	7.178	7.291	-0.113	1.000	31439713		10.65(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.366	7.479	-0.113	1.065	155280095	120.4			
598.9 > 99.0	7.366	7.479	-0.113	1.065	44528761		3.49(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.366	7.479	-0.113	1.065	155280095	120.4			
598.9 > 99.0	7.366	7.479	-0.113	1.065	44528761		3.49(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.395	7.499	-0.104		14788392	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.395	7.499	-0.104	1.000	263645691	124.4			R
563.0 > 268.9	7.395	7.499	-0.104	1.000	33008082		7.99(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.564	7.659	-0.095	1.000	439734706	122.5			
613.0 > 168.9	7.564	7.659	-0.095	1.000	58973075		7.46(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.564	7.668	-0.104		35754810	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.652	7.756	-0.104		27048665	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.653	7.757	-0.104	1.000	367419064	127.6			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.715	7.801	-0.086	1.020	376700238	123.9			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.838	7.923	-0.085	1.036	323561373	131.4			
712.9 > 169.0	7.838	7.923	-0.085	1.036	50297868		6.43(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 250.00	Units: uL
PFC-LCS_00085	Amount Added: 250.00	Units: uL

Report Date: 21-Sep-2016 12:10:13 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Injection Date: 20-Sep-2016 17:57:50 Instrument ID: LC_LCMS5

Lims ID: STD1250

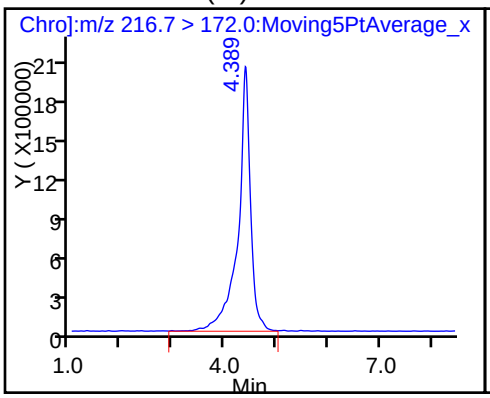
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 11

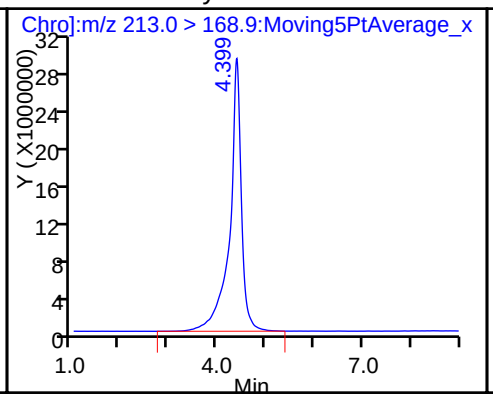
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

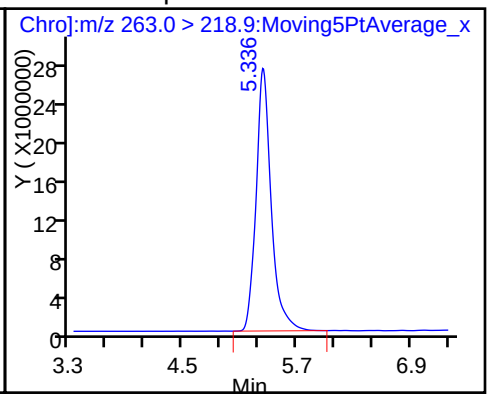
* 1 13C4 PFBA (IS)



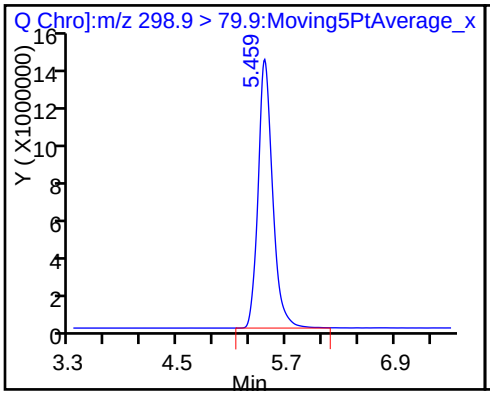
2 Perfluorobutyric acid



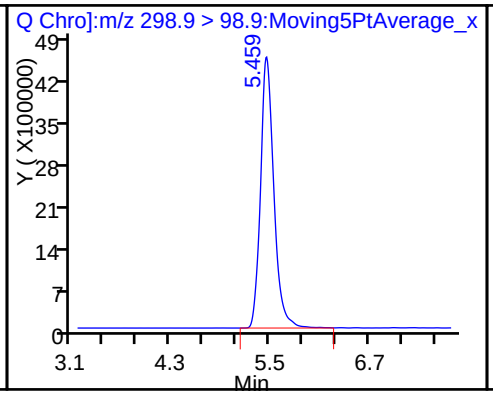
3 Perfluoropentanoic acid



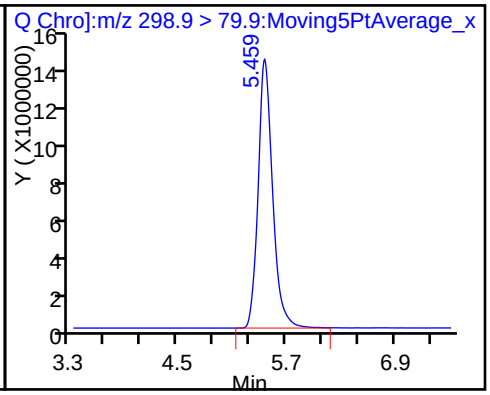
5 Perfluorobutanesulfonic acid



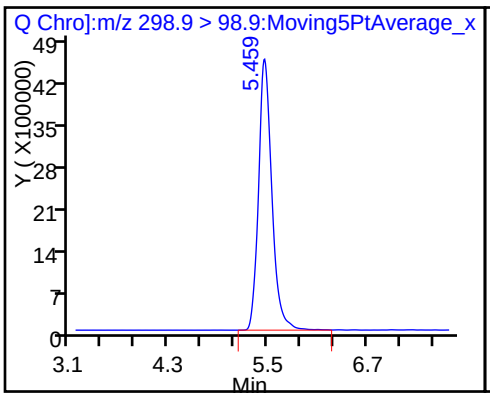
5 Perfluorobutanesulfonic acid



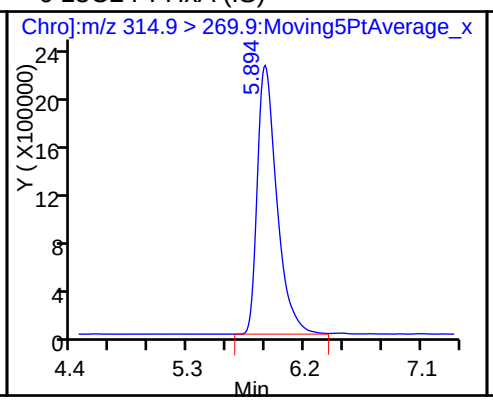
4 Perfluorobutane Sulfonate



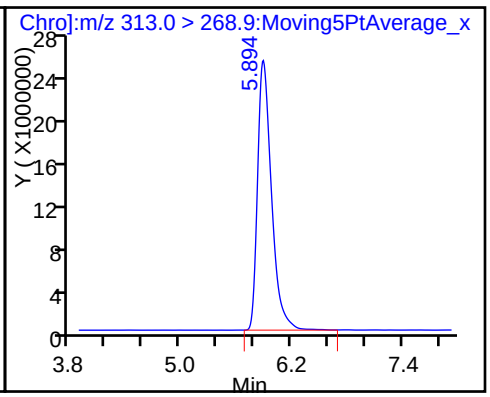
4 Perfluorobutane Sulfonate



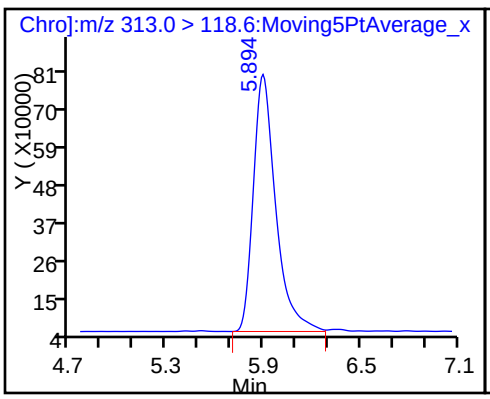
* 6 13C2 PFHxA (IS)



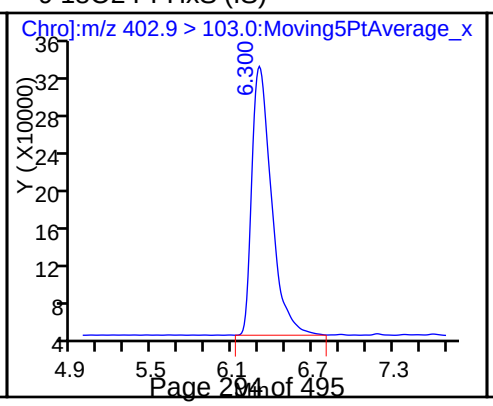
7 Perfluorohexanoic acid



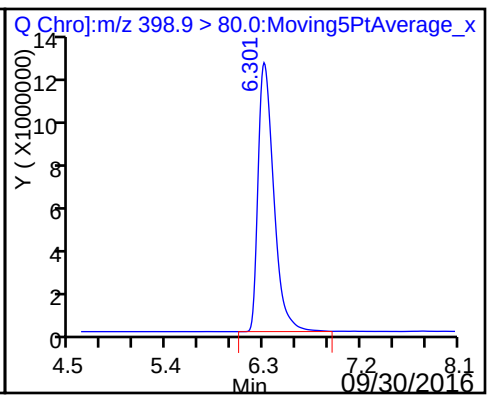
7 Perfluorohexanoic acid



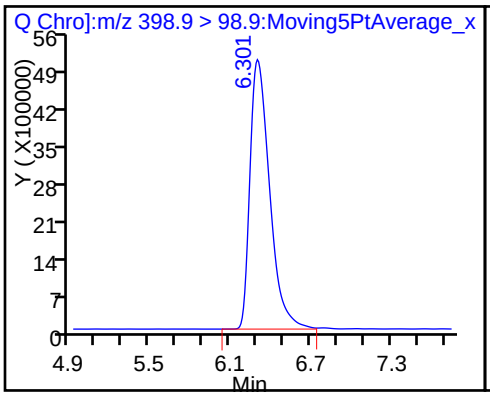
* 9 18O2 PFHxS (IS)



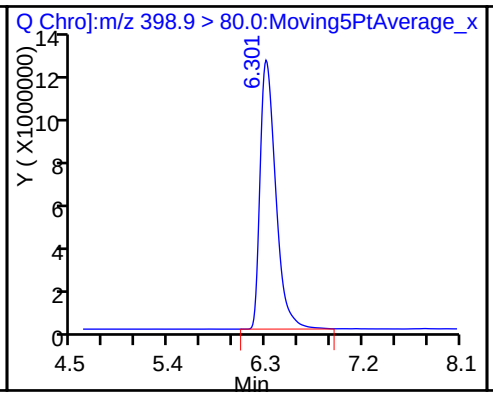
10 Perfluorohexane Sulfonate



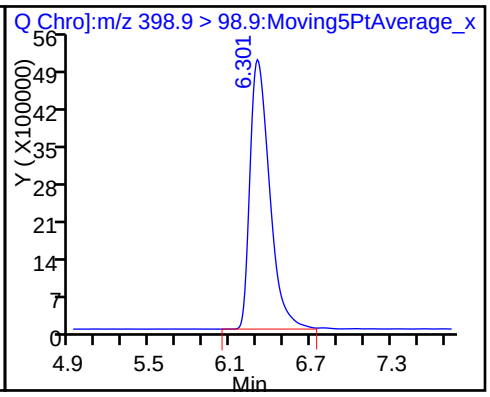
10 Perfluorohexane Sulfonate



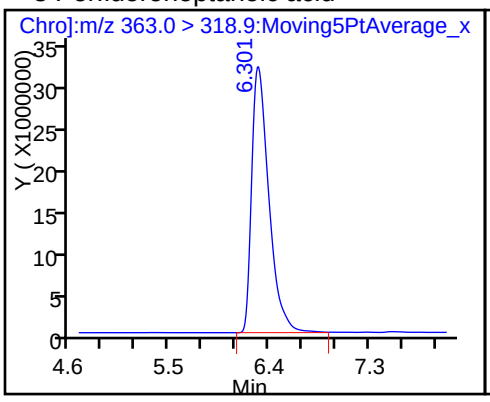
11 Perfluorohexanesulfonic acid



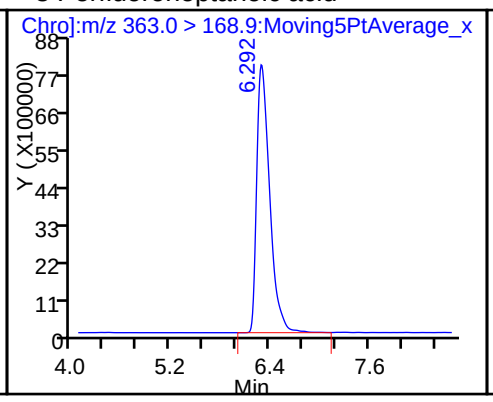
11 Perfluorohexanesulfonic acid



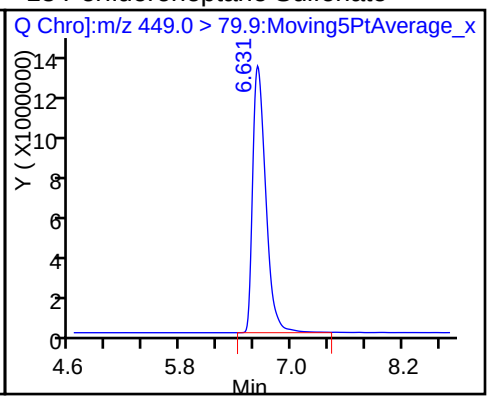
8 Perfluoroheptanoic acid



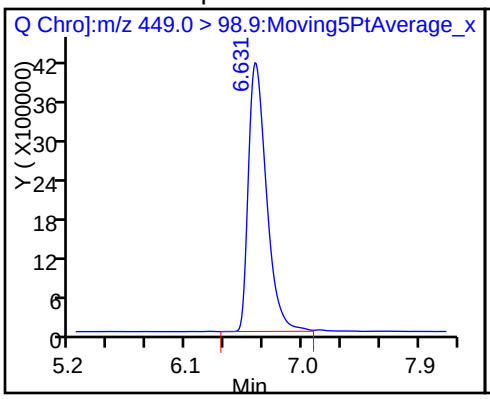
8 Perfluoroheptanoic acid



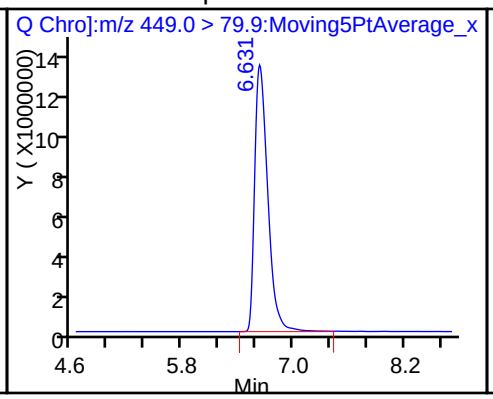
13 Perfluoroheptane Sulfonate



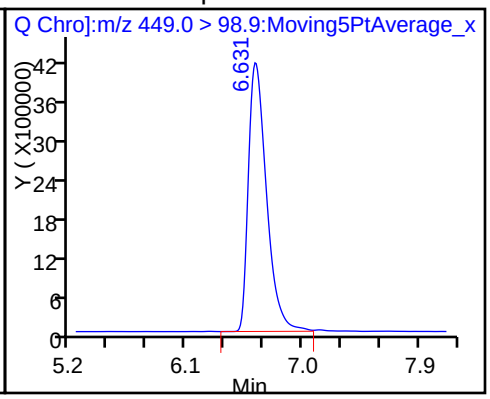
13 Perfluoroheptane Sulfonate



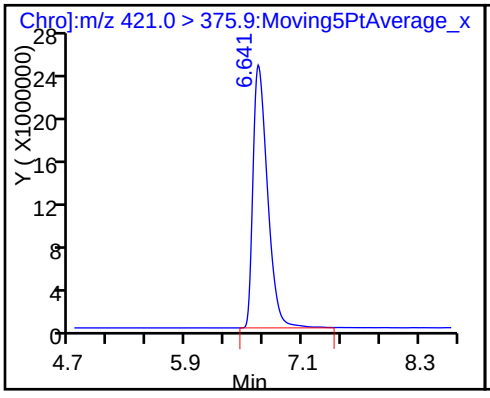
12 Perfluoroheptanesulfonic Acid



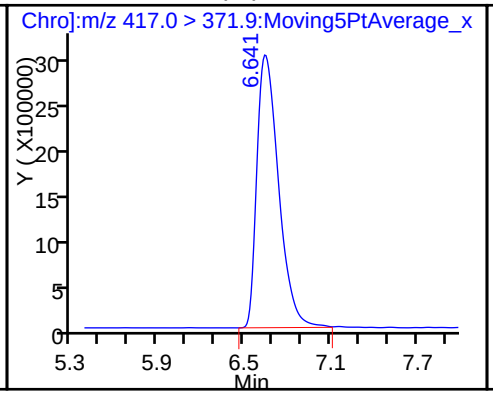
12 Perfluoroheptanesulfonic Acid



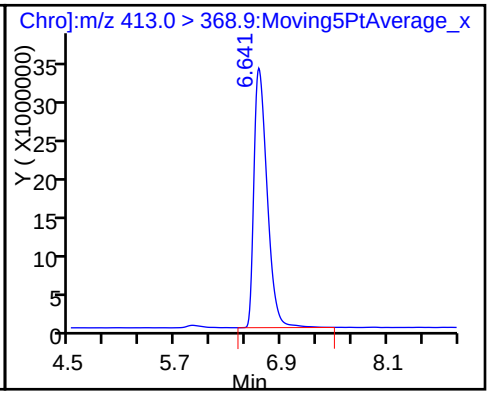
$ 14 13C8 PFOA



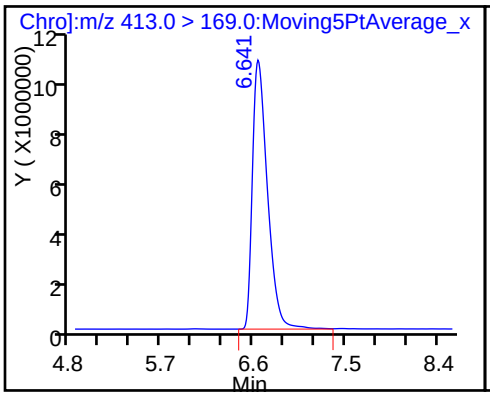
* 15 13C4 PFOA (IS)



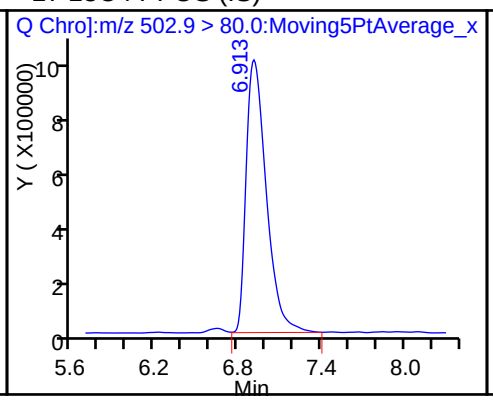
16 Perfluorooctanoic acid



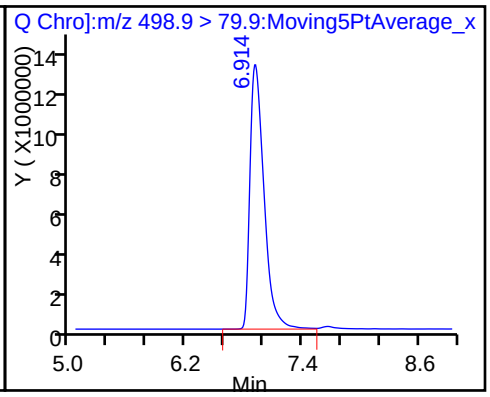
16 Perfluorooctanoic acid



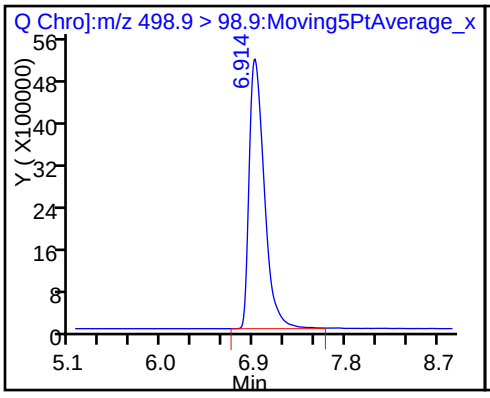
* 17 13C4 PFOS (IS)



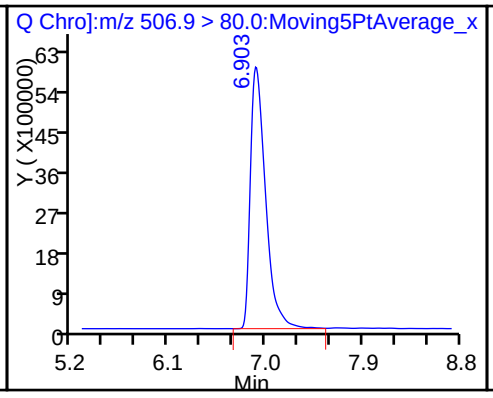
19 Perfluorooctane sulfonic acid



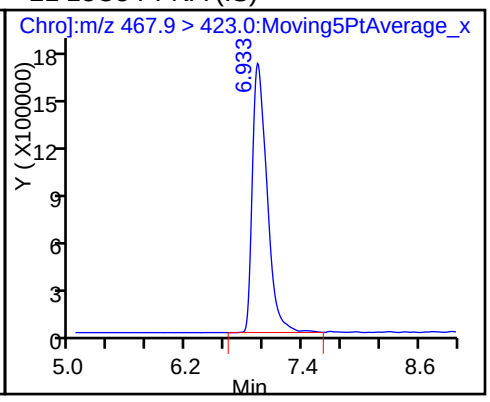
19 Perfluorooctane sulfonic acid



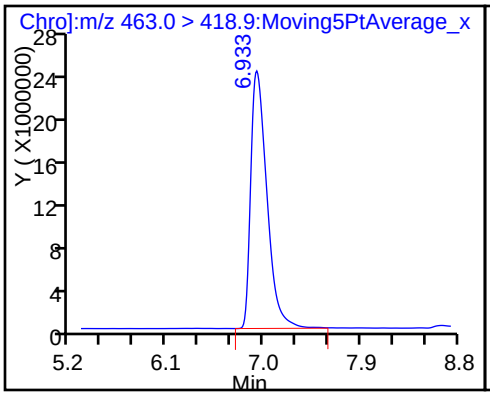
$ 18 13C8 PFOS



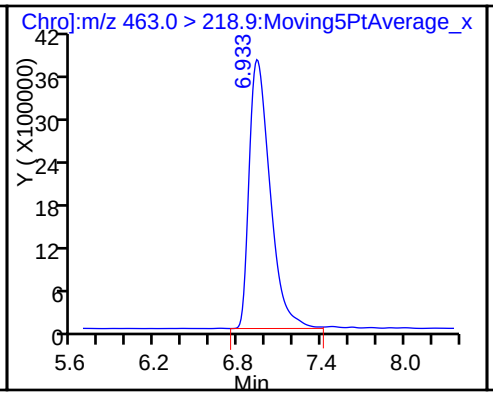
* 21 13C5 PFNA (IS)



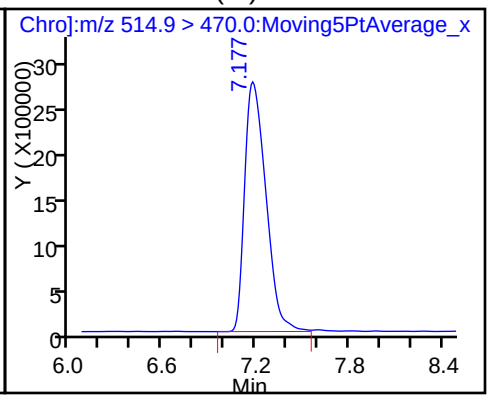
20 Perfluorononanoic acid



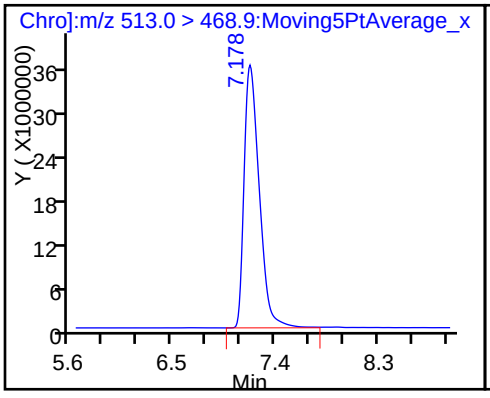
20 Perfluorononanoic acid



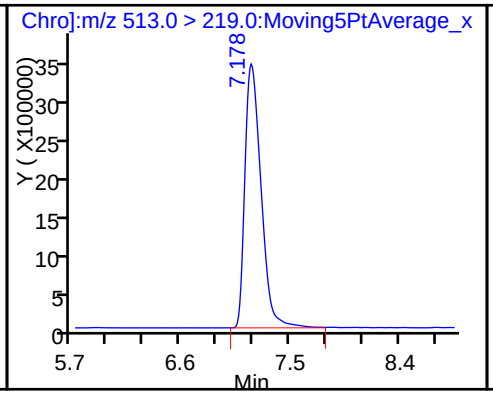
* 22 13C2 PFDA (IS)



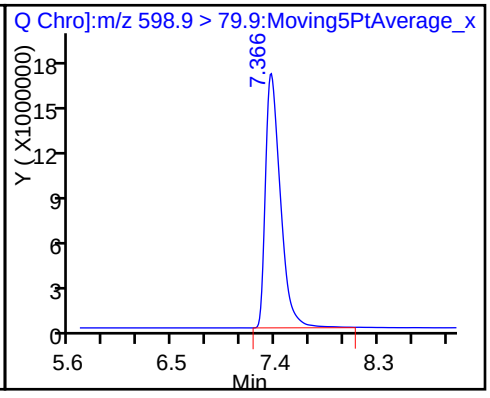
23 Perfluorodecanoic acid



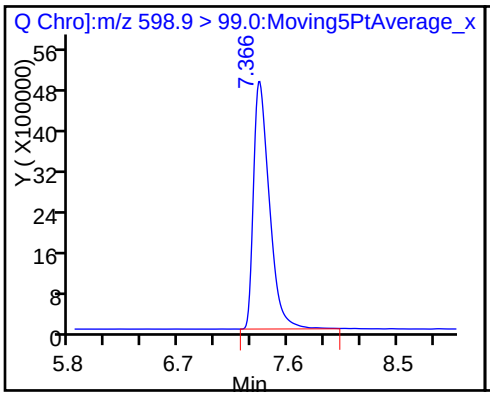
23 Perfluorodecanoic acid



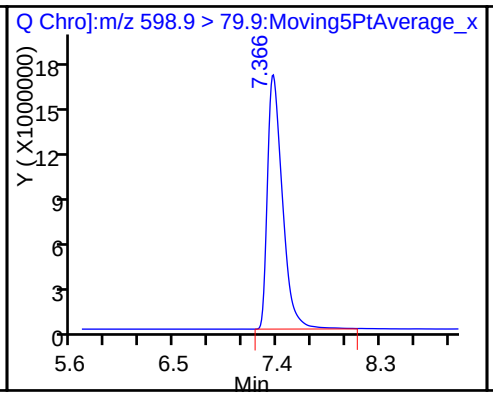
25 Perfluorodecane Sulfonate



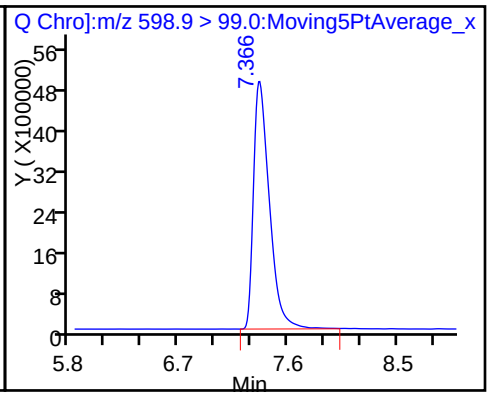
25 Perfluorodecane Sulfonate



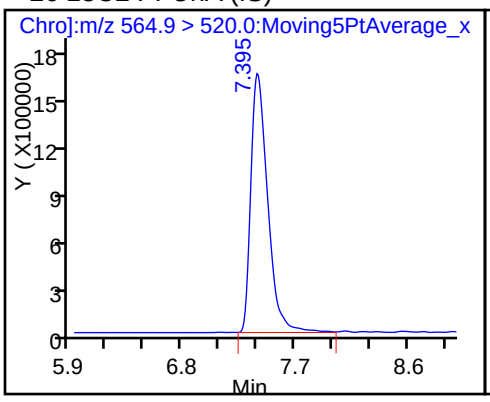
24 Perfluorodecane Sulfonic acid



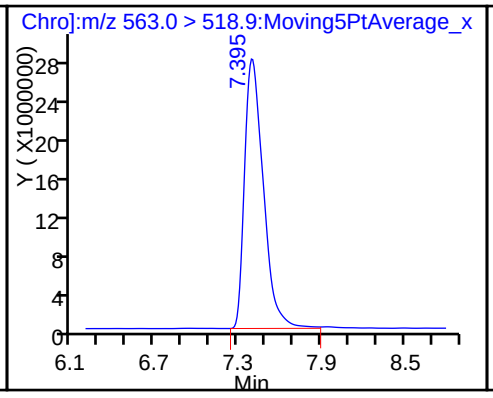
24 Perfluorodecane Sulfonic acid



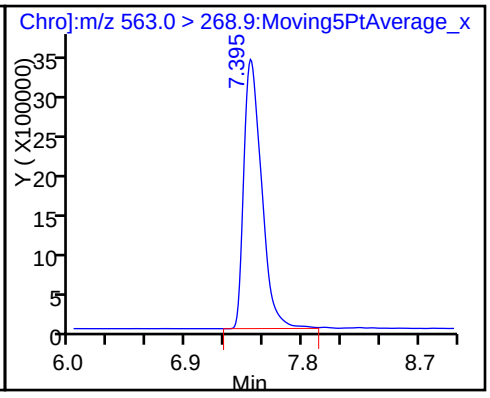
* 26 13C2 PFUnA (IS)



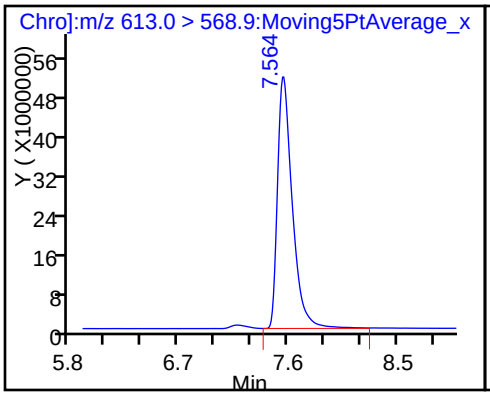
27 Perfluoroundecanoic acid



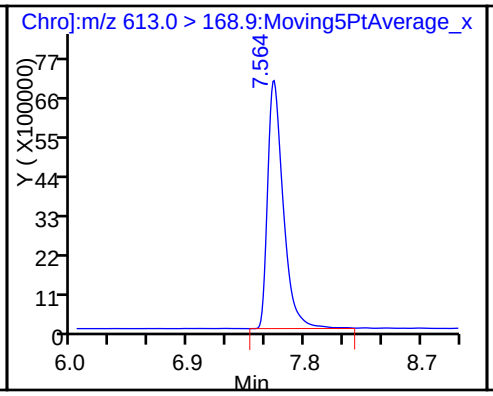
27 Perfluoroundecanoic acid



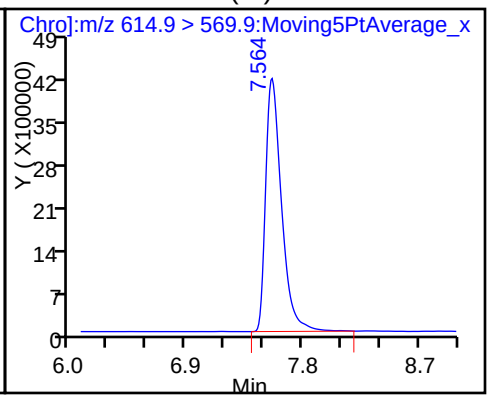
29 Perfluorododecanoic acid



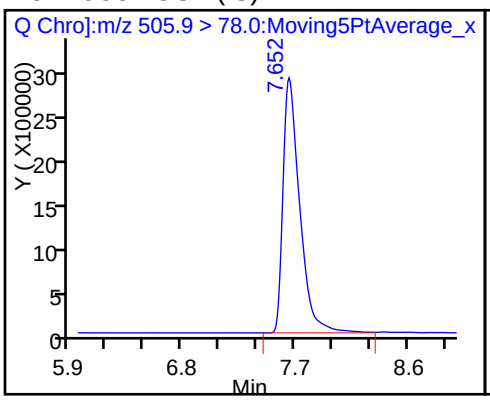
29 Perfluorododecanoic acid



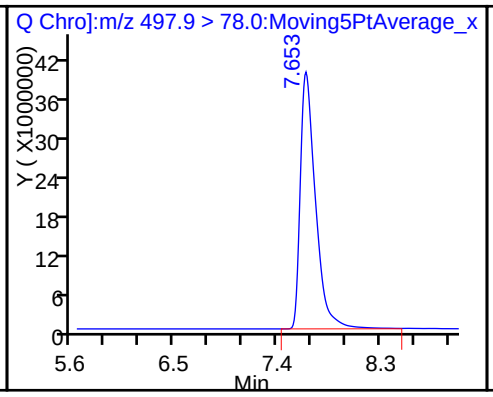
* 28 13C2 PFDoA (IS)



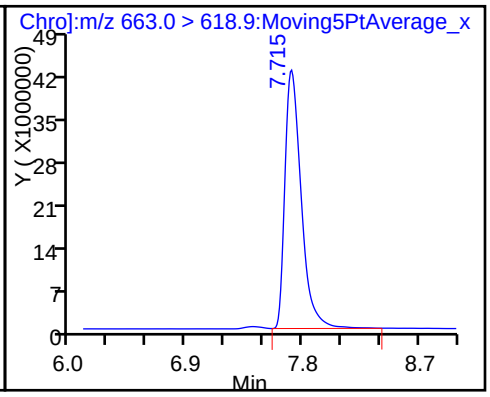
* 31 13C8 FOSA (IS)



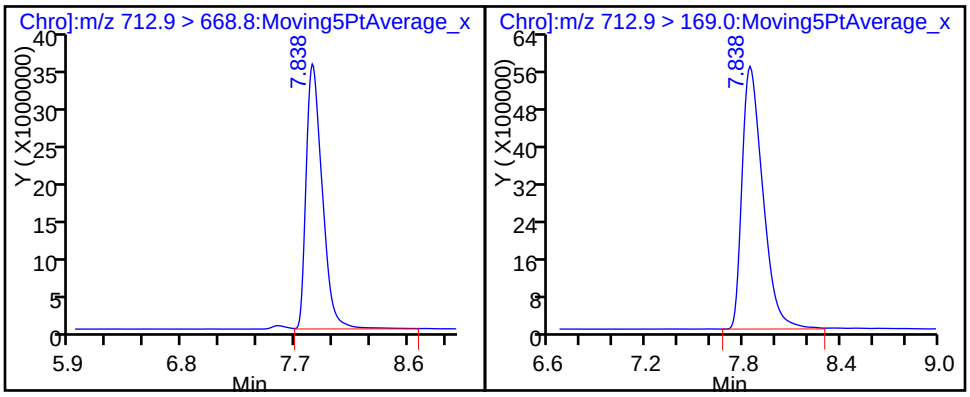
32 Perfluorooctane Sulfonamide



30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab Sample ID: ICV 280-343000/13 Calibration Date: 09/20/2016 18:22

Instrument ID: LC_LCMS5 Calib Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calib End Date: 09/20/2016 17:57

Lab File ID: PC516I020016.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.166		2.09	2.00	4.5	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.090		2.00	2.00	-0.1	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.991		1.81	1.77	2.1	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		1.100		2.33	2.00	16.5	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.370		2.12	1.82	16.1	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		1.033		2.11	2.00	5.5	30.0
Perfluoroheptane Sulfonate	Lin2		1.141		1.86	1.90	-2.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.141		1.86	1.90	-2.5	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.140		2.11	2.00	5.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.411		2.27	2.00	13.7	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.248		2.19	2.00	9.3	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.133		2.19	2.00	9.4	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.318		2.03	1.93	5.2	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.371		1.89	2.00	-5.7	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.059		2.05	2.00	2.5	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.154		2.18	2.00	8.9	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8492		1.94	2.00	-3.0	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7465		2.15	2.00	7.3	30.0
13C8 PFOA	Lin2		0.7761		10.2	10.0	2.2	30.0
13C8 PFOS	Lin2		0.5010		9.20	9.56	-3.8	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020016.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 20-Sep-2016 18:22:28 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: ICV, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist:

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:10:19 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 07:58:36

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.314	4.314	0.0		34616662	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.314	4.314	0.0	1.000	8073082	2.09			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.327	5.327	0.0	0.905	5413184	2.00			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.440	5.440	0.0	0.865	2766987	1.81			R
298.9 > 98.9	5.450	5.440	0.010	0.866	800002		3.46(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.885	5.885	0.0		24836692	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.876	5.876	0.0	0.998	5461917	2.33			
313.0 > 118.6	5.894	5.876	0.018	1.002	112826		48.41(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.291	6.291	0.0		2962815	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.291	6.291	0.0	1.000	2493704	2.11			R
398.9 > 98.9	6.291	6.291	0.0	1.000	991797		2.51(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.292	6.292	0.0	0.950	8278402	2.11			
363.0 > 168.9	6.282	6.292	-0.010	0.949	2178496		3.80(3.35-6.23)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.602	6.602	0.0	0.960	2265982	1.86			
449.0 > 98.9	6.602	6.602	0.0	0.960	738495		3.07(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.602	6.602	0.0	0.960	2265982	1.86			
449.0 > 98.9	6.602	6.602	0.0	0.960	738495		3.07(0.00-0.00)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
$ 14 13C8 PFOA									
421.0 > 375.9	6.622	6.622	0.0	1.000	31107762	10.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.622	6.622	0.0		40081246	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.613	6.613	0.0	0.999	9136620	2.11			
413.0 > 169.0	6.622	6.613	0.009	1.000	2798527		3.26(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.875	6.875	0.0		9974383	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.866	6.866	0.0	0.999	2944898	2.27			R
498.9 > 98.9	6.866	6.866	0.0	0.999	1058592		2.78(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.875	6.875	0.0	1.000	4996956	9.20			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.905	6.905	0.0		26739184	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.895	6.895	0.0	0.999	6673099	2.19			R
463.0 > 218.9	6.905	6.895	0.010	1.000	1206432		5.53(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.140	7.140	0.0		30249311	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.140	7.140	0.0	1.000	6852214	2.19			
513.0 > 219.0	7.140	7.140	0.0	1.000	593834		11.54(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.328	7.328	0.0	1.066	2651371	2.03			
598.9 > 99.0	7.309	7.328	-0.019	1.063	865597		3.06(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.347	7.347	0.0		21690948	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.357	7.357	0.0	1.001	5949107	1.89			R
563.0 > 268.9	7.347	7.357	-0.010	1.000	619359		9.61(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.536	7.536	0.0	1.000	9205036	2.05			
613.0 > 168.9	7.526	7.536	-0.010	0.999	1204342		7.64(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.536	7.536	0.0		43469080	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.633	7.633	0.0		31659480	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.634	7.634	0.0	1.000	7308257	2.18			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.706	7.706	0.0	1.023	7382790	1.94			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.838	7.838	0.0	1.040	6489588	2.15			
712.9 > 169.0	7.829	7.838	-0.009	1.039	1142344		5.68(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_ICV_00010	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFHpS-LCS_00002	Amount Added:	4.00	Units: uL

Report Date: 21-Sep-2016 12:10:20 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020016.d

Injection Date: 20-Sep-2016 18:22:28 Instrument ID: LC_LCMS5

Lims ID: ICV

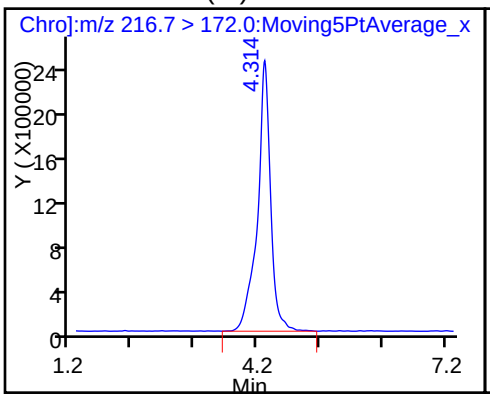
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 13

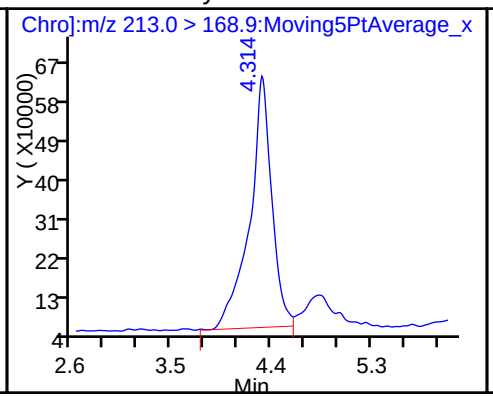
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

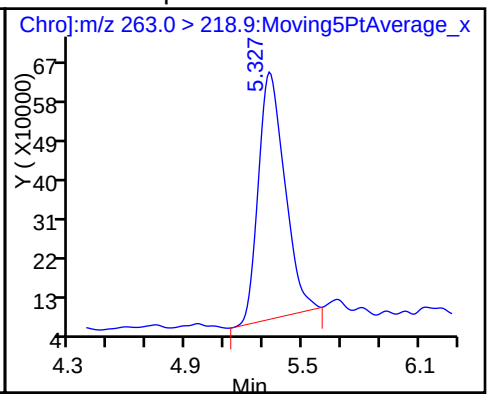
* 1 13C4 PFBA (IS)



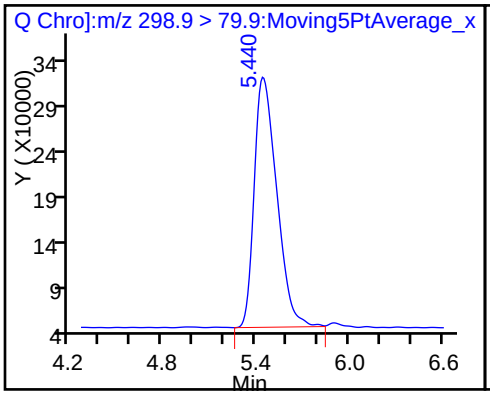
2 Perfluorobutyric acid



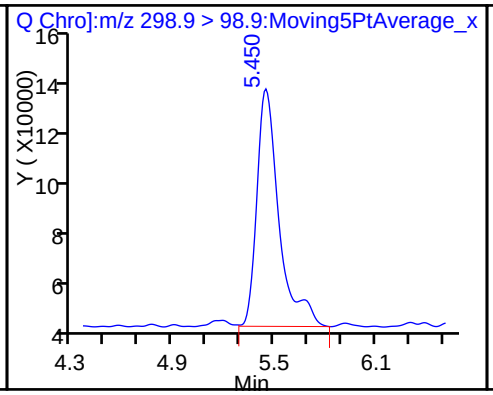
3 Perfluoropentanoic acid



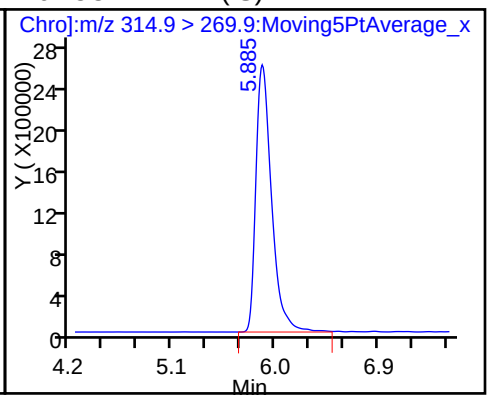
4 Perfluorobutane Sulfonate



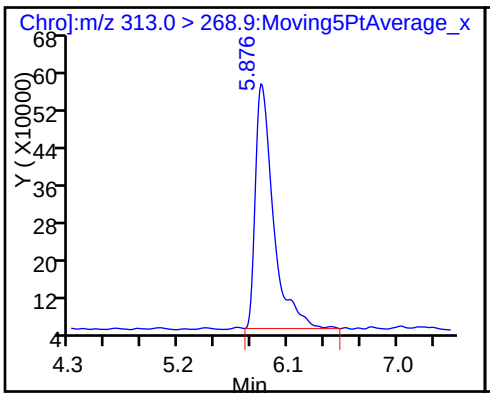
4 Perfluorobutane Sulfonate



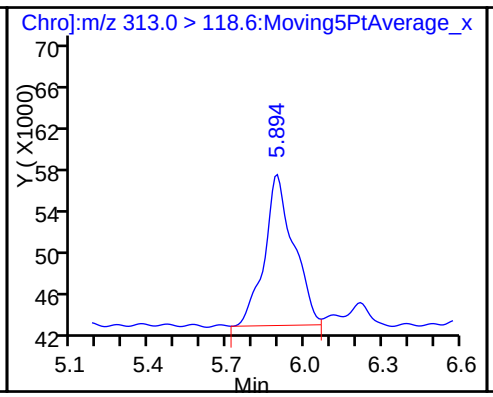
* 6 13C2 PFHxA (IS)



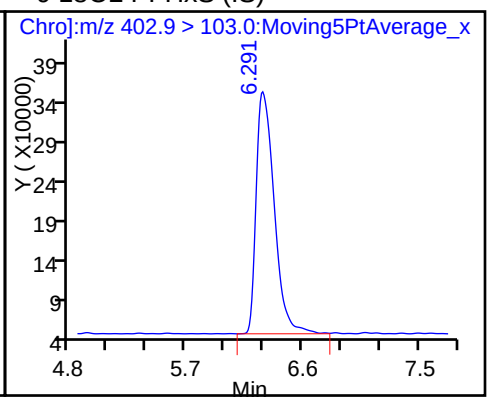
7 Perfluorohexanoic acid



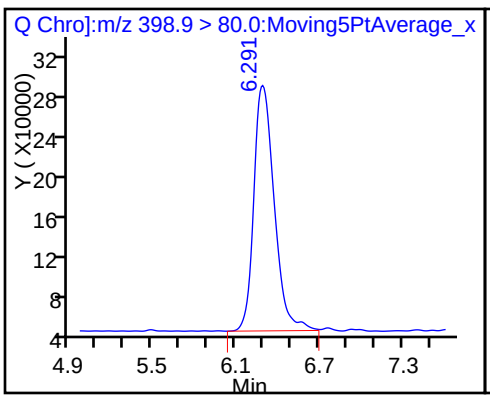
7 Perfluorohexanoic acid



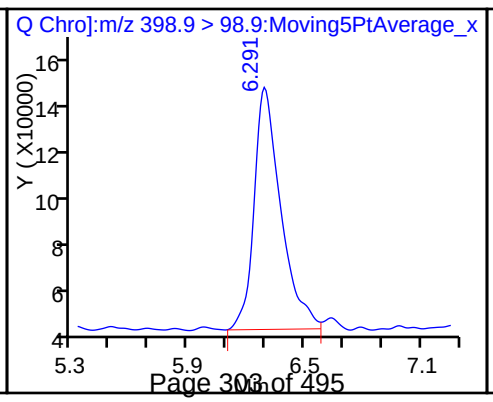
* 9 18O2 PFHxS (IS)



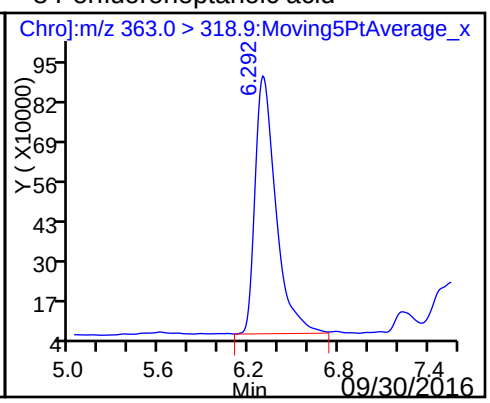
10 Perfluorohexane Sulfonate



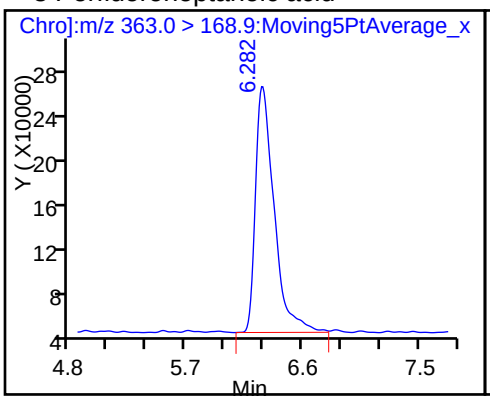
10 Perfluorohexane Sulfonate



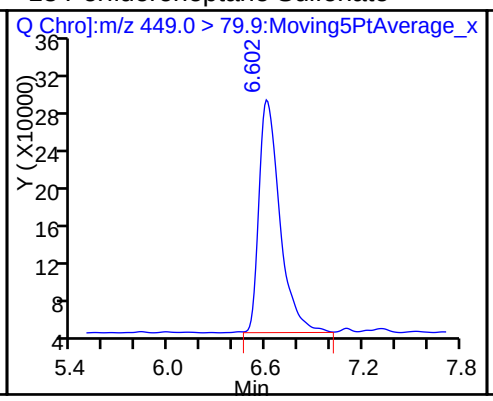
8 Perfluoroheptanoic acid



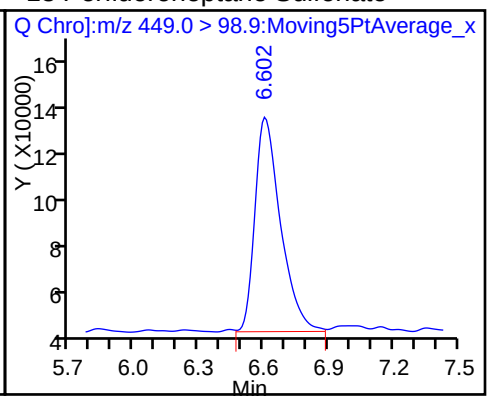
8 Perfluoroheptanoic acid



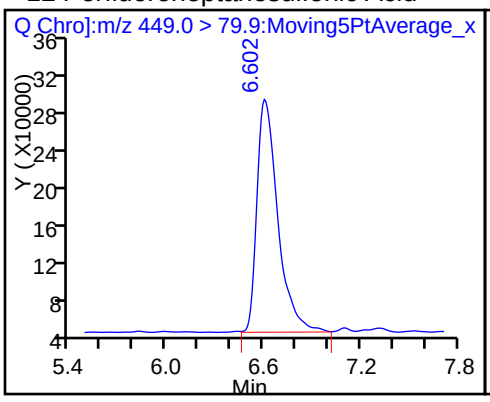
13 Perfluoroheptane Sulfonate



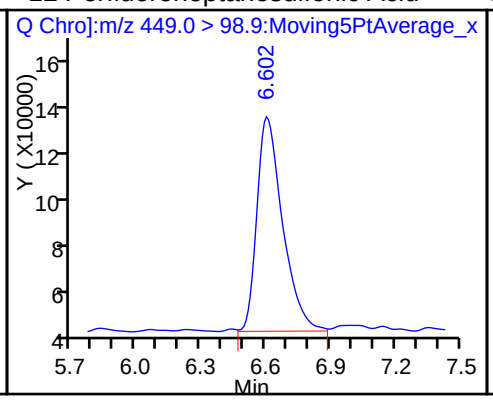
13 Perfluoroheptane Sulfonate



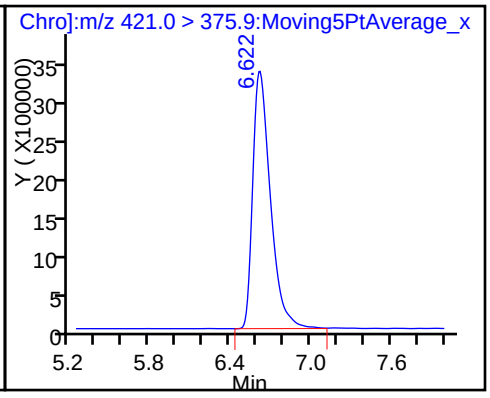
12 Perfluoroheptanesulfonic Acid



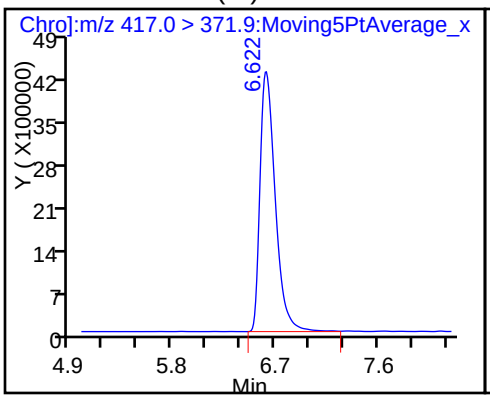
12 Perfluoroheptanesulfonic Acid



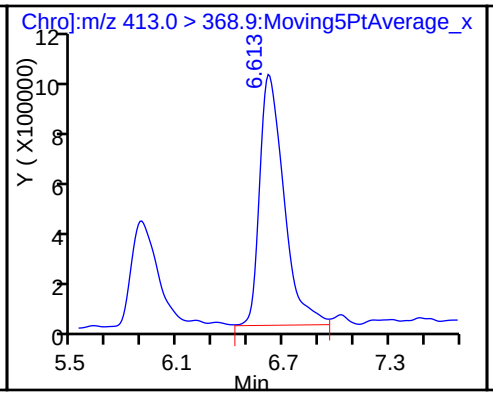
$ 14 13C8 PFOA



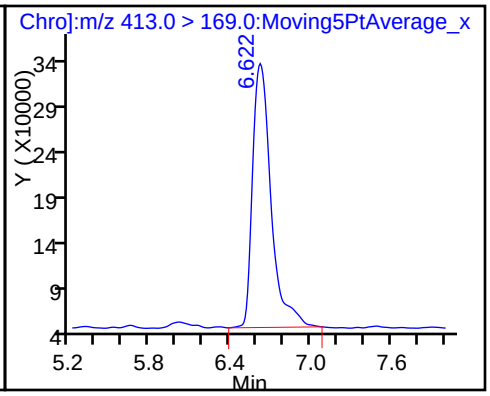
* 15 13C4 PFOA (IS)



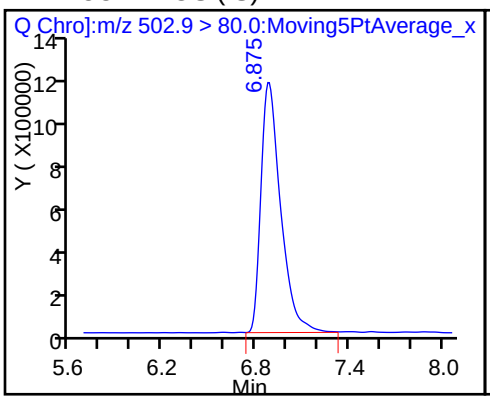
16 Perfluorooctanoic acid



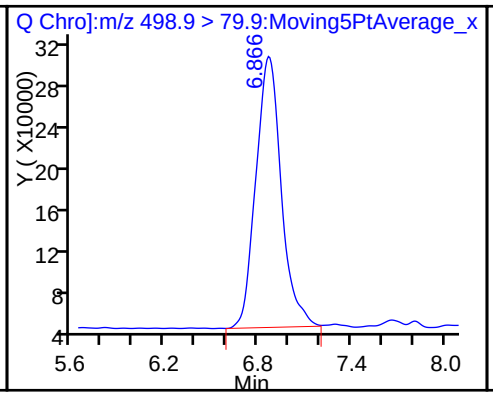
16 Perfluorooctanoic acid



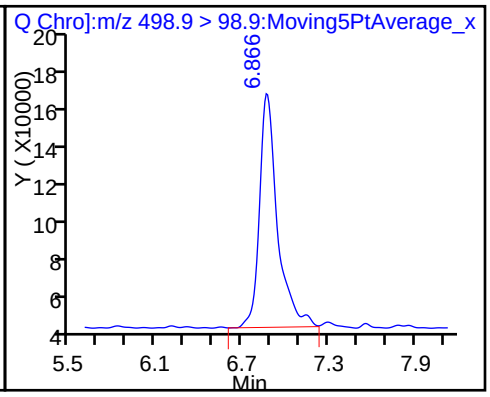
* 17 13C4 PFOS (IS)



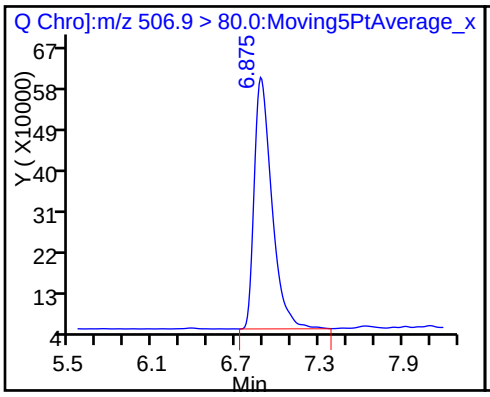
19 Perfluorooctane sulfonic acid



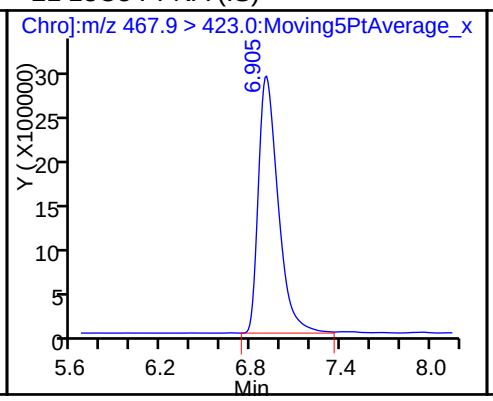
19 Perfluorooctane sulfonic acid



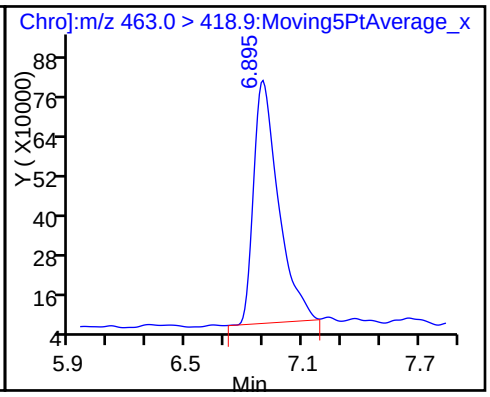
$ 18 13C8 PFOS



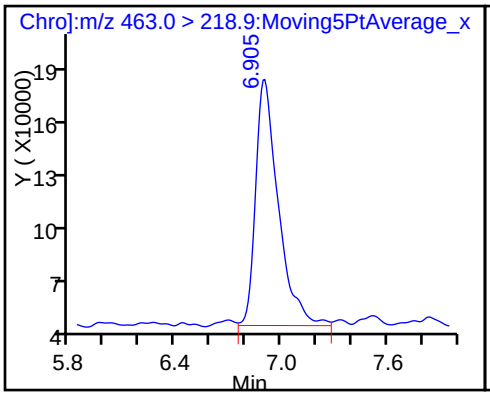
* 21 13C5 PFNA (IS)



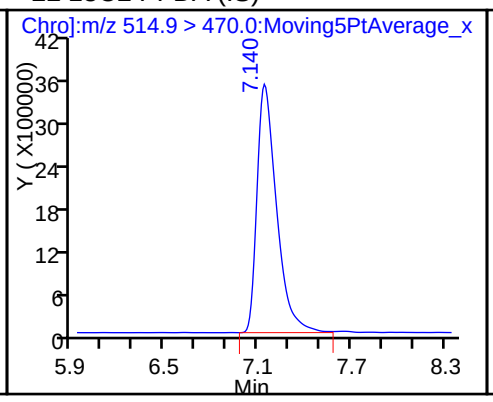
20 Perfluorononanoic acid



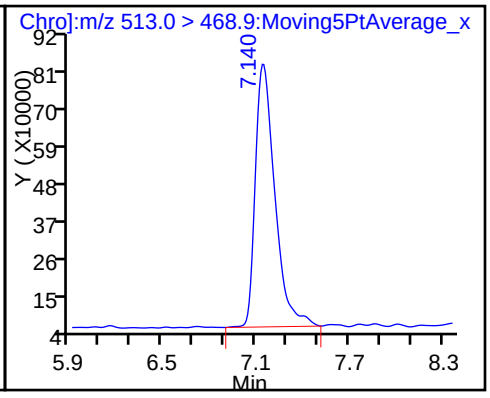
20 Perfluorononanoic acid



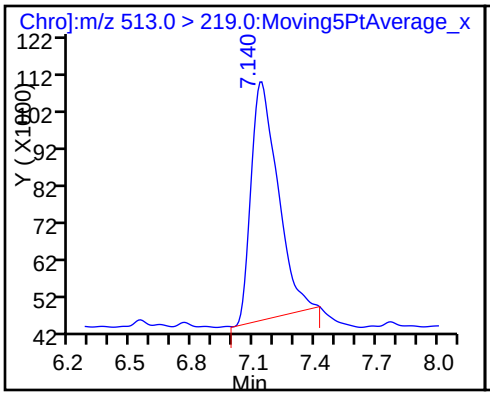
* 22 13C2 PFDA (IS)



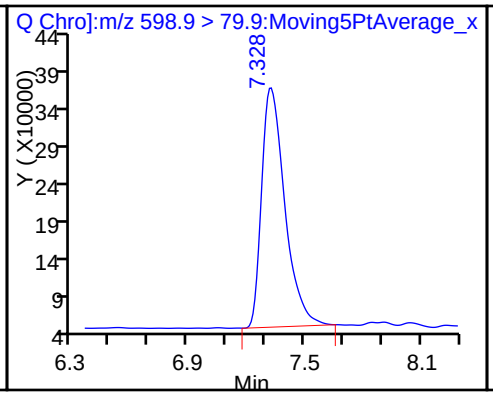
23 Perfluorodecanoic acid



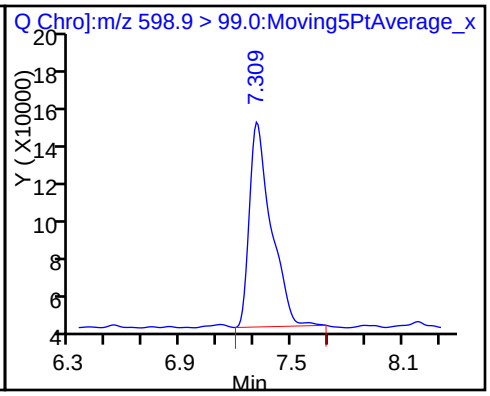
23 Perfluorodecanoic acid



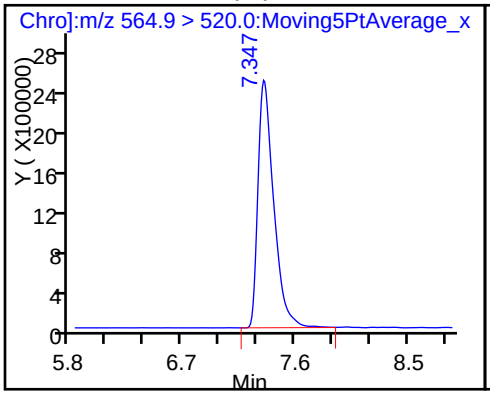
25 Perfluorodecane Sulfonate



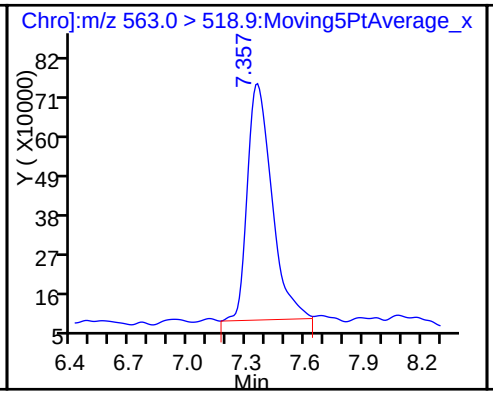
25 Perfluorodecane Sulfonate



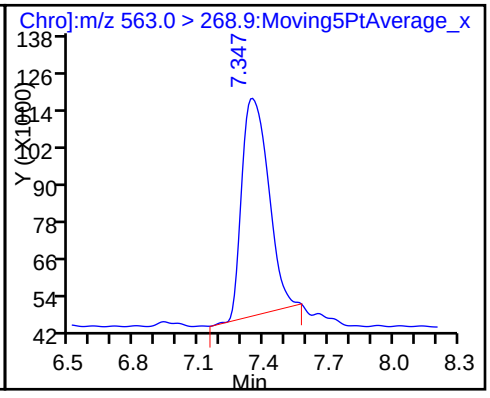
* 26 13C2 PFUnA (IS)



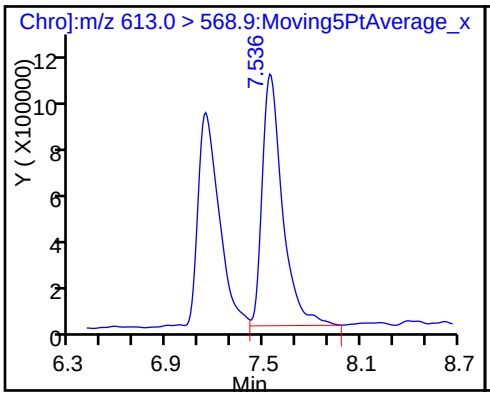
27 Perfluoroundecanoic acid



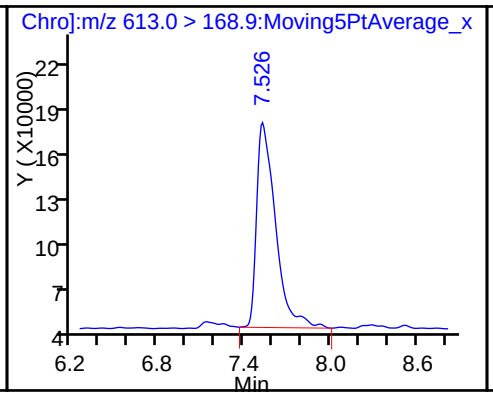
27 Perfluoroundecanoic acid



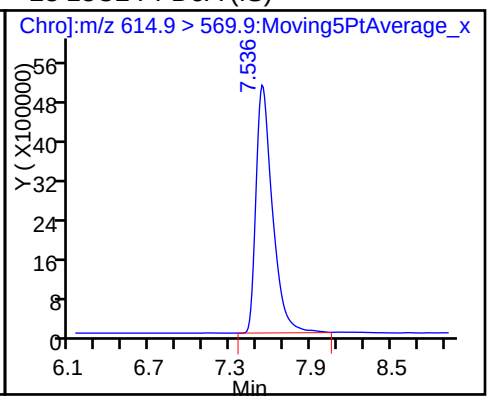
29 Perfluorododecanoic acid



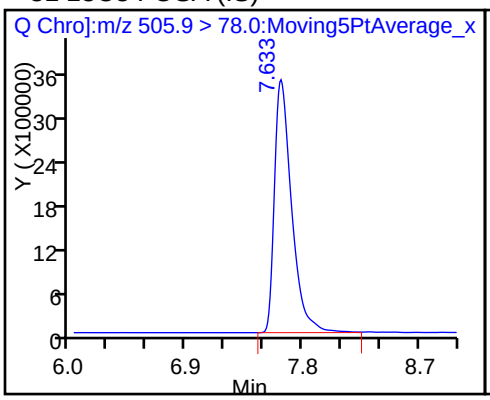
29 Perfluorododecanoic acid



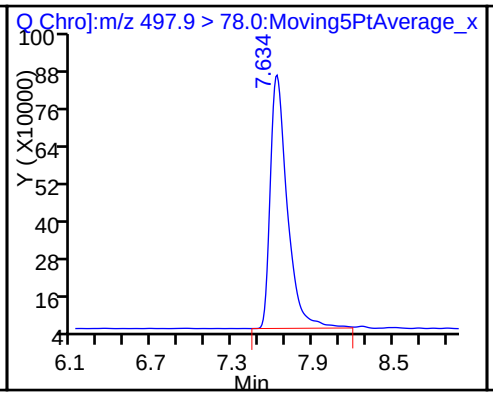
* 28 13C2 PFDoA (IS)



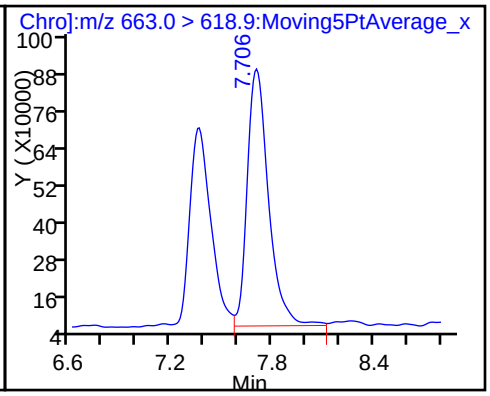
* 31 13C8 FOSA (IS)



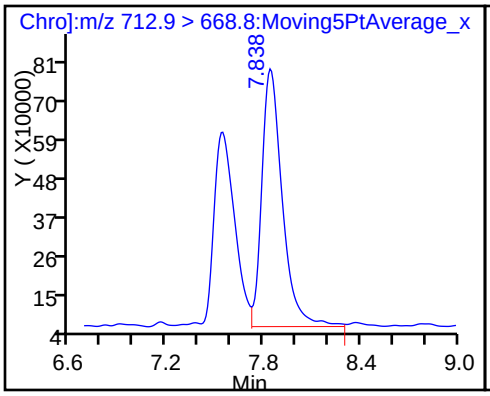
32 Perfluorooctane Sulfonamide



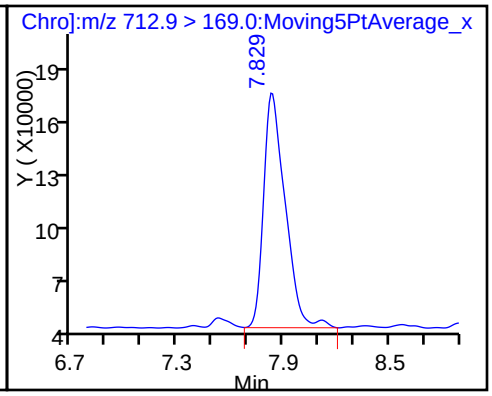
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab Sample ID: CCV 280-344279/3 Calibration Date: 09/28/2016 19:37

Instrument ID: LC_LCMS5 Calib Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calib End Date: 09/20/2016 17:57

Lab File ID: PC516I028079.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.082		9.59	10.0	-4.1	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.171		10.7	10.0	7.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.616		8.26	8.85	-6.6	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.616		8.26	8.85	-6.6	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.8958		9.56	10.0	-4.4	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8939		9.06	10.0	-9.4	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.798		9.54	9.45	1.0	30.0
Perfluorohexanesulfonic acid	Lin2		3.798		9.54	9.45	1.0	30.0
Perfluoroheptane Sulfonate	Lin2		1.088		8.70	9.52	-8.6	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.088		8.70	9.52	-8.6	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.034		9.96	10.0	-0.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.193		9.11	9.55	-4.6	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.062		9.12	10.0	-8.8	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.015		9.75	10.0	-2.5	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.227		9.43	9.65	-2.3	30.0
Perfluorodecane Sulfonic acid	Lin2		1.227		9.43	9.65	-2.3	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.378		9.59	10.0	-4.1	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.050		10.4	10.0	4.0	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9339		10.9	10.0	9.3	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.076		10.1	10.0	1.2	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7037		10.2	10.0	2.0	30.0
13C8 PFOA	Lin2		0.8078		10.6	10.0	6.4	30.0
13C8 PFOS	Lin2		0.5871		10.8	9.56	12.8	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028079.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 28-Sep-2016 19:37:35 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:20:11

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.963	3.963	0.0		25947978	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.963	3.963	0.0	1.000	28073181	9.59			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.062	5.062	0.0	0.898	23087408	10.7			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.175	5.175	0.0	0.852	9442214	8.26			
298.9 > 98.9	5.175	5.175	0.0	0.852	2938590		3.21(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.175	5.175	0.0	0.852	9442214	8.26			
298.9 > 98.9	5.175	5.175	0.0	0.852	2938590		3.21(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.638	5.638	0.0		19717851	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.629	5.629	0.0	0.998	17663069	9.56			
313.0 > 118.6	5.620	5.629	-0.009	0.997	503572		35.08(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.073	6.073	0.0		2186371	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.064	6.064	0.0	0.998	8295419	9.54			R
398.9 > 98.9	6.073	6.064	0.009	1.000	3230173		2.57(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.064	6.064	0.0	0.998	8295419	9.54			
398.9 > 98.9	6.073	6.064	0.009	1.000	3230173		2.57(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.064	6.064	0.0	0.947	26370996	9.06			
363.0 > 168.9	6.064	6.064	0.0	0.947	7034959		3.75(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.403	6.403	0.0	0.959	8239111	8.70			
449.0 > 98.9	6.394	6.403	-0.009	0.958	2762152		2.98(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.403	6.403	0.0	0.959	8239111	8.70			
449.0 > 98.9	6.394	6.403	-0.009	0.958	2762152		2.98(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.413	6.413	0.0	1.001	23830650	10.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.404	6.404	0.0		29501949	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.414	6.414	0.0	1.002	30509415	9.96			
413.0 > 169.0	6.414	6.414	0.0	1.002	9223556		3.31(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.676	6.676	0.0		7606890	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.677	6.677	0.0	1.000	9069092	9.11			R
498.9 > 98.9	6.677	6.677	0.0	1.000	3487159		2.60(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.685	6.685	0.0	1.001	4465945	10.8			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.696	6.696	0.0		23045346	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.697	6.697	0.0	1.000	24463307	9.12			
463.0 > 218.9	6.706	6.697	0.009	1.001	4138200		5.91(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.941	6.941	0.0		23959611	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.941	6.941	0.0	1.000	24309493	9.75			R
513.0 > 219.0	6.941	6.941	0.0	1.000	2359331		10.30(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.129	7.129	0.0	1.068	9425152	9.43			
598.9 > 99.0	7.129	7.129	0.0	1.068	2930258		3.22(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.129	7.129	0.0	1.068	9425152	9.43			
598.9 > 99.0	7.129	7.129	0.0	1.068	2930258		3.22(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.148	7.148	0.0		15904017	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.149	7.149	0.0	1.000	21918143	9.59			R
563.0 > 268.9	7.149	7.149	0.0	1.000	2820615		7.77(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.327	7.327	0.0	1.000	33370029	10.4			
613.0 > 168.9	7.337	7.327	0.010	1.001	4167940		8.01(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.327	7.327	0.0		31787719	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.488	7.488	0.0	1.022	29687800	10.9			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.539	0.0	1.000	25993200	10.1			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.538	0.0		24160540	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.611	7.611	0.0	1.039	22367967	10.2			
712.9 > 169.0	7.611	7.611	0.0	1.039	3444819		6.49(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00085	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

Report Date: 29-Sep-2016 11:09:04 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028079.d

Injection Date: 28-Sep-2016 19:37:35 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

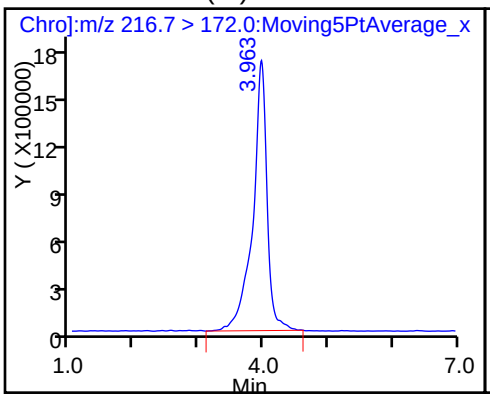
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

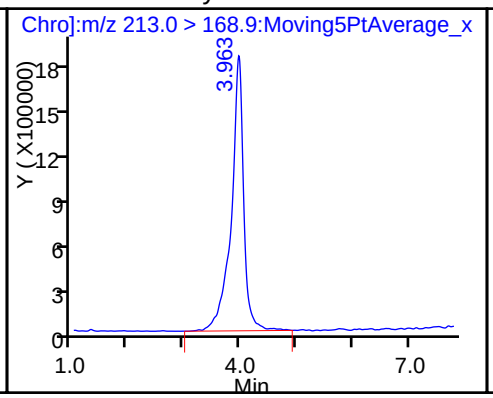
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

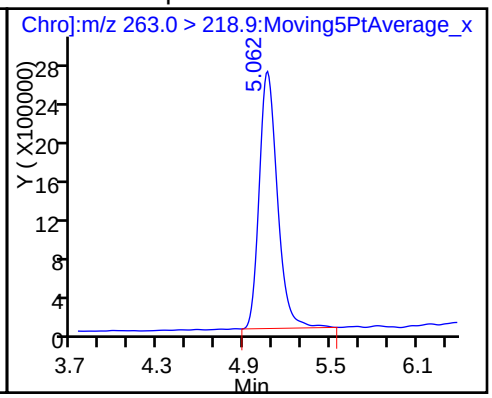
* 1 13C4 PFBA (IS)



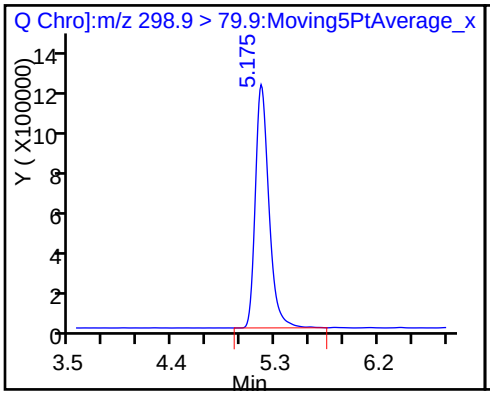
2 Perfluorobutyric acid



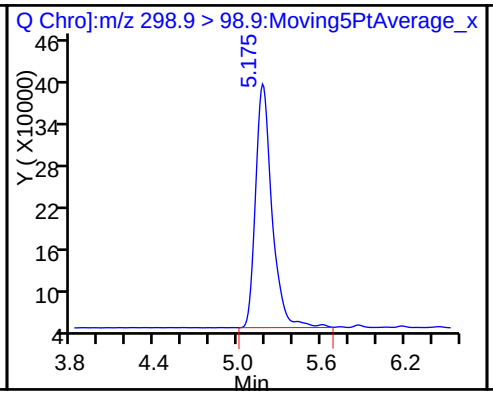
3 Perfluoropentanoic acid



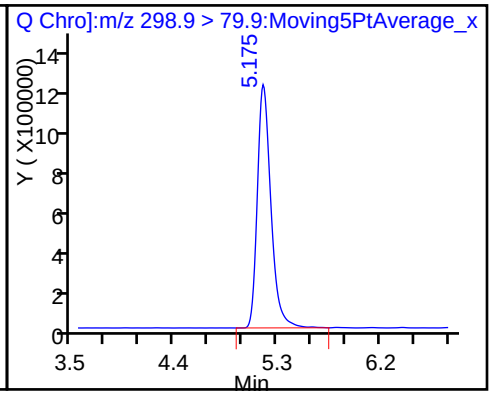
5 Perfluorobutanesulfonic acid



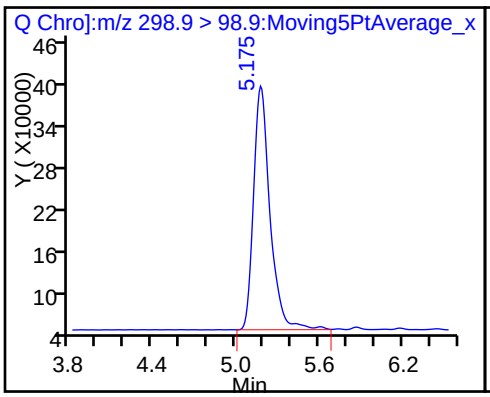
5 Perfluorobutanesulfonic acid



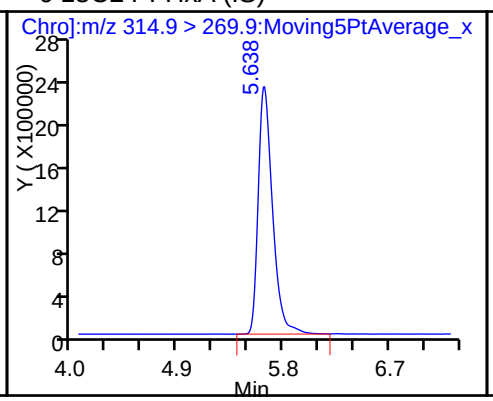
4 Perfluorobutane Sulfonate



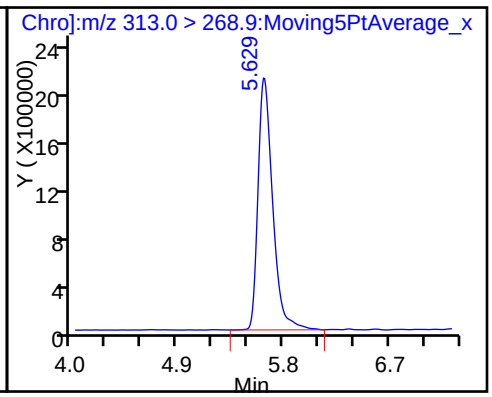
4 Perfluorobutane Sulfonate



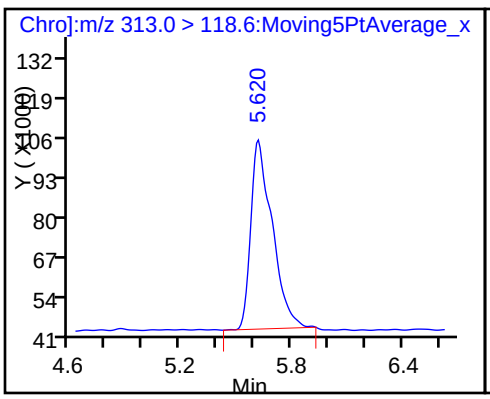
* 6 13C2 PFHxA (IS)



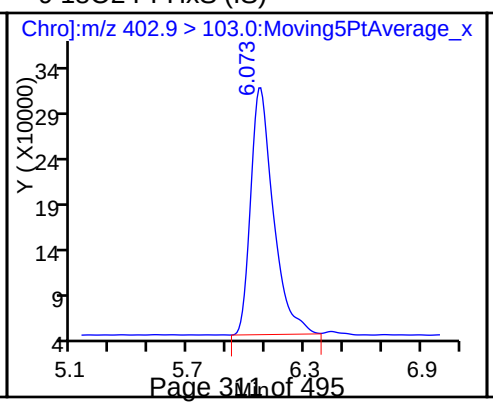
7 Perfluorohexanoic acid



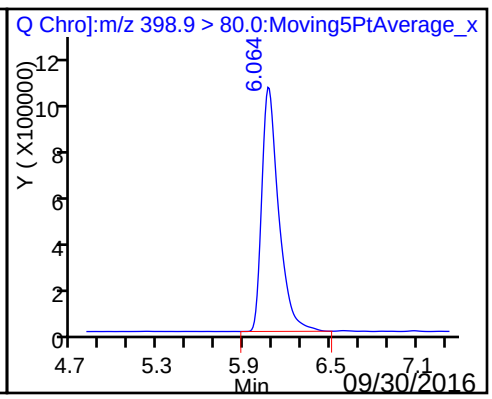
7 Perfluorohexanoic acid



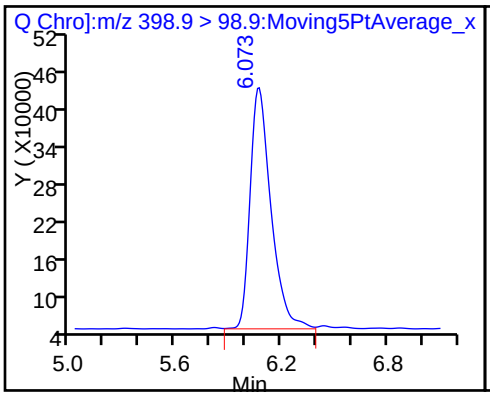
* 9 18O2 PFHxS (IS)



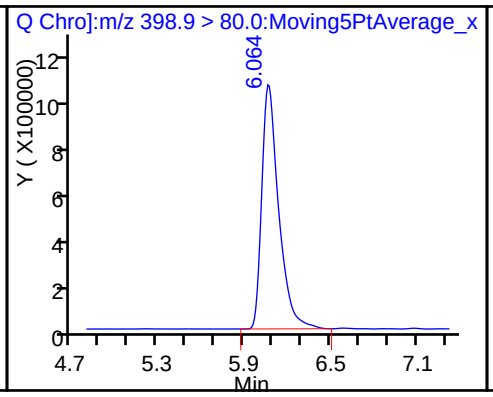
10 Perfluorohexane Sulfonate



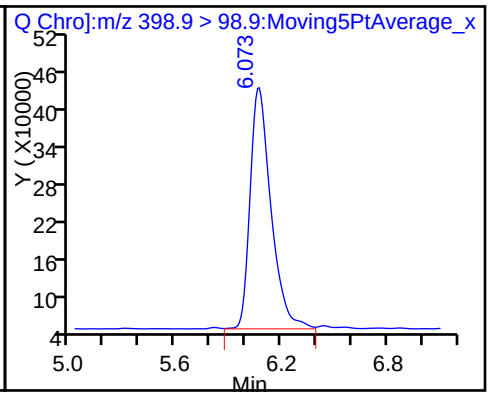
10 Perfluorohexane Sulfonate



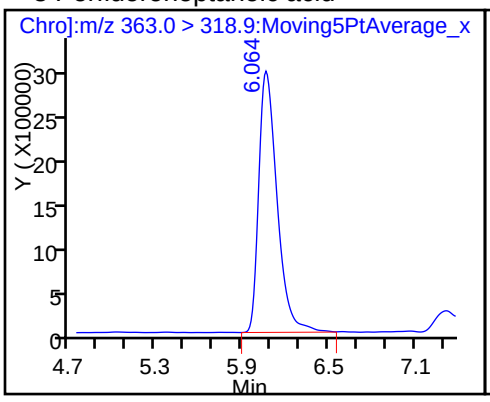
11 Perfluorohexanesulfonic acid



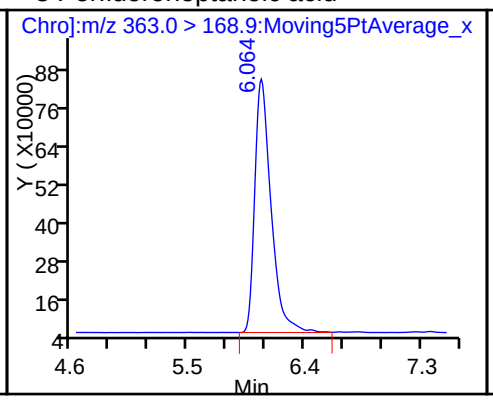
11 Perfluorohexanesulfonic acid



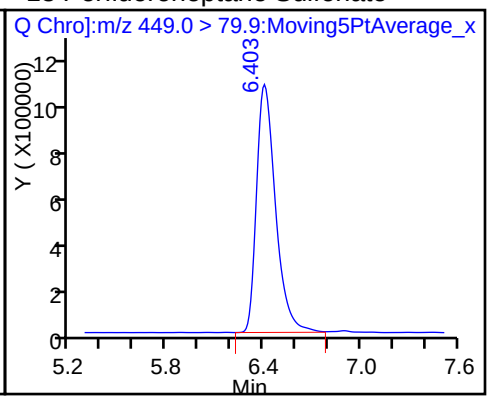
8 Perfluoroheptanoic acid



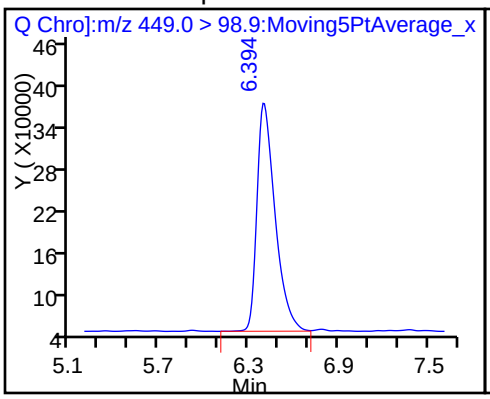
8 Perfluoroheptanoic acid



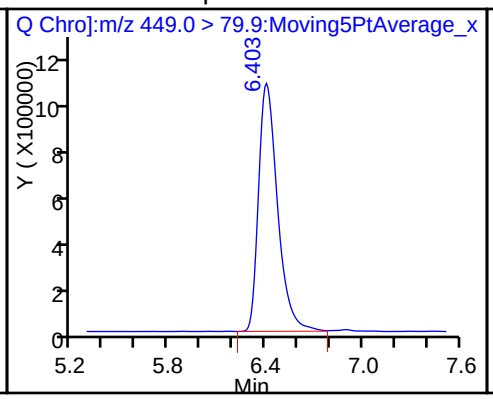
13 Perfluoroheptane Sulfonate



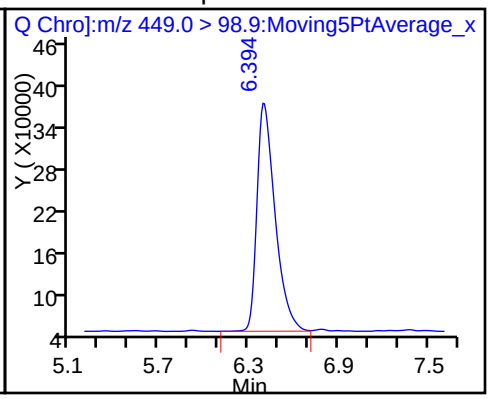
13 Perfluoroheptane Sulfonate



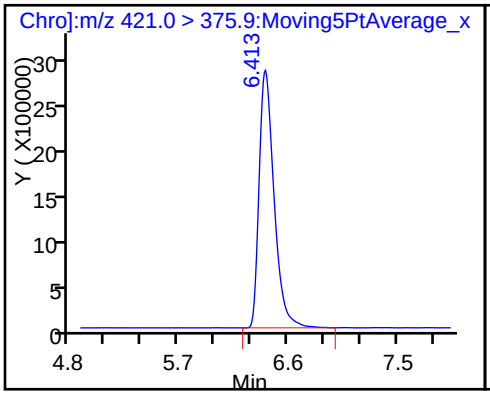
12 Perfluoroheptanesulfonic Acid



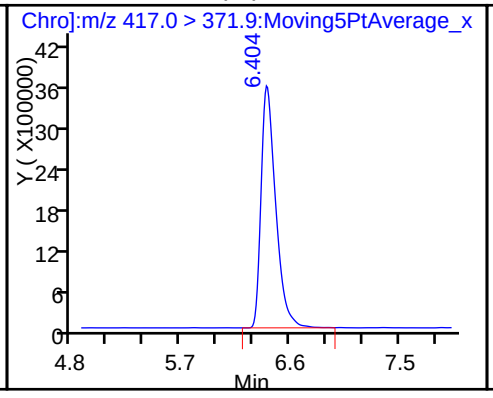
12 Perfluoroheptanesulfonic Acid



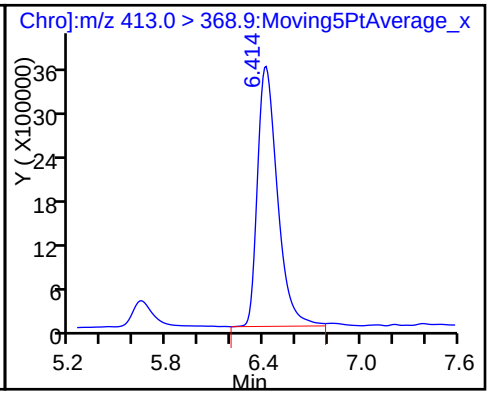
$ 14 13C8 PFOA



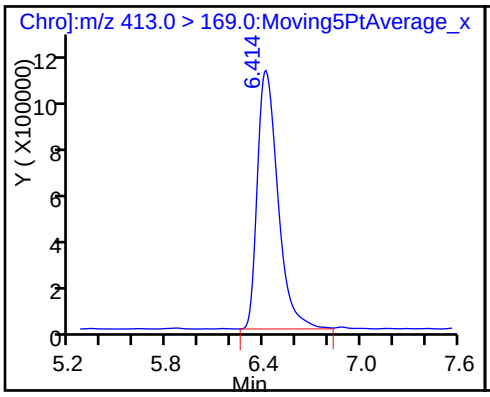
* 15 13C4 PFOA (IS)



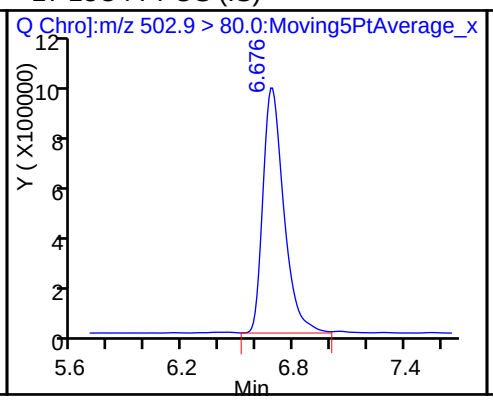
16 Perfluorooctanoic acid



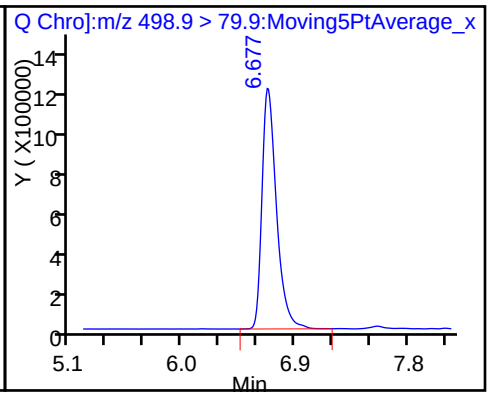
16 Perfluorooctanoic acid



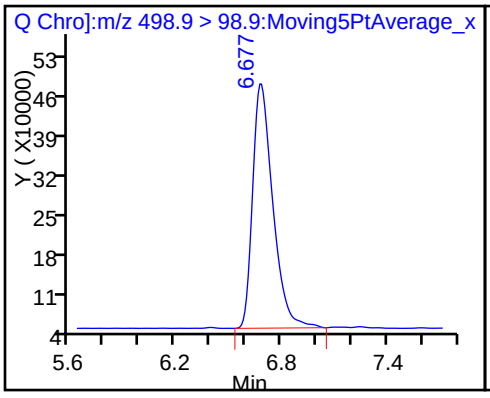
* 17 13C4 PFOS (IS)



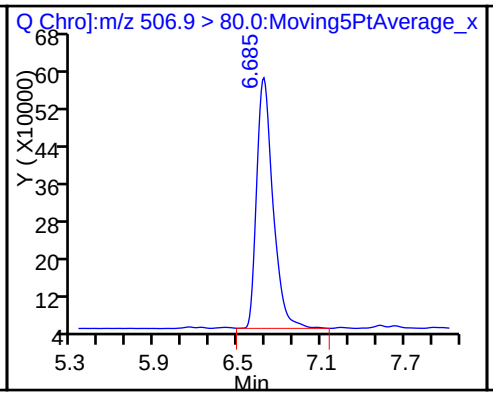
19 Perfluorooctane sulfonic acid



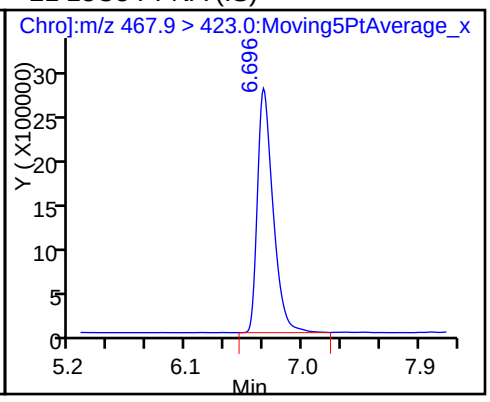
19 Perfluorooctane sulfonic acid



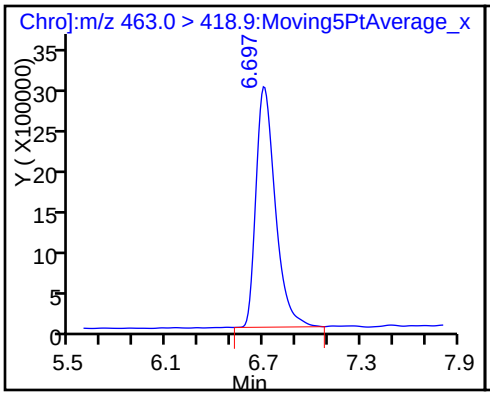
$ 18 13C8 PFOS



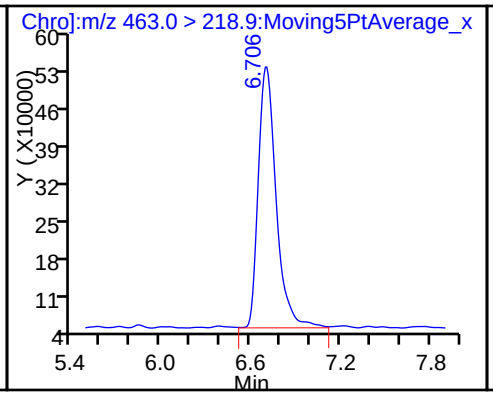
* 21 13C5 PFNA (IS)



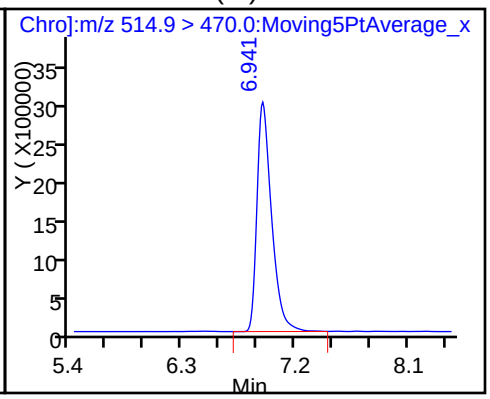
20 Perfluorononanoic acid



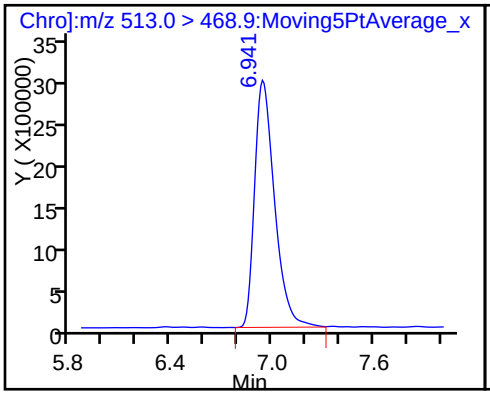
20 Perfluorononanoic acid



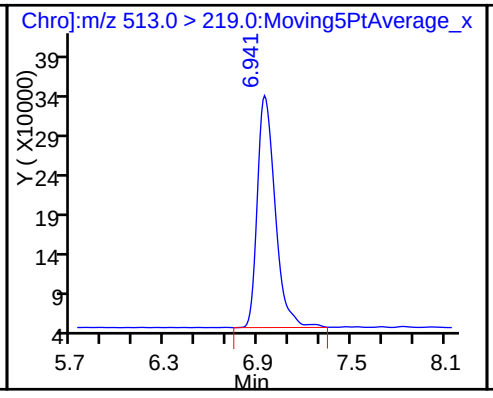
* 22 13C2 PFDA (IS)



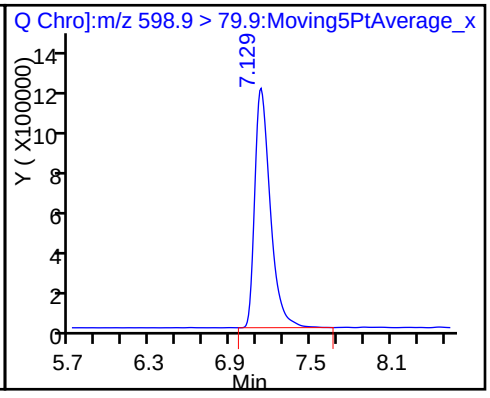
23 Perfluorodecanoic acid



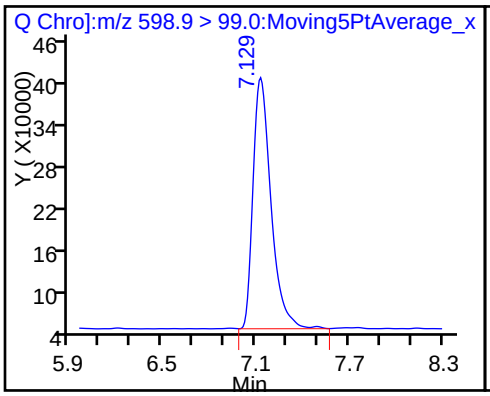
23 Perfluorodecanoic acid



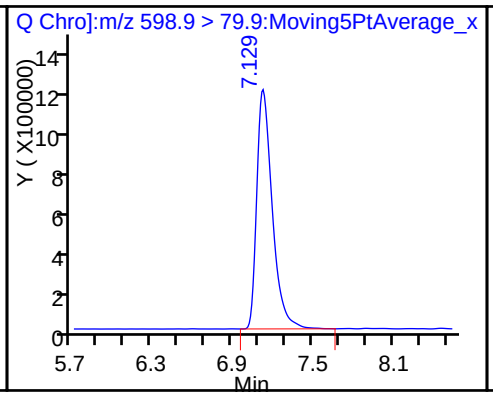
25 Perfluorodecane Sulfonate



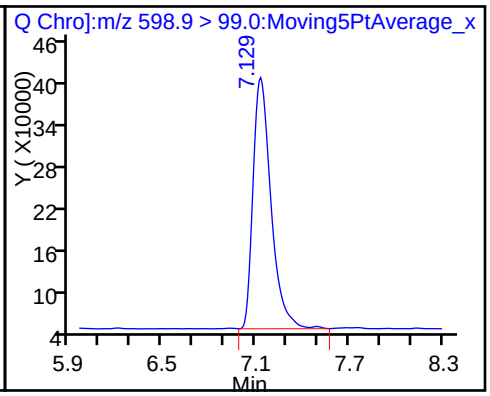
25 Perfluorodecane Sulfonate



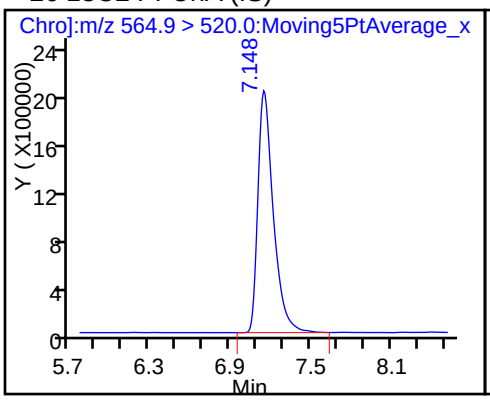
24 Perfluorodecane Sulfonic acid



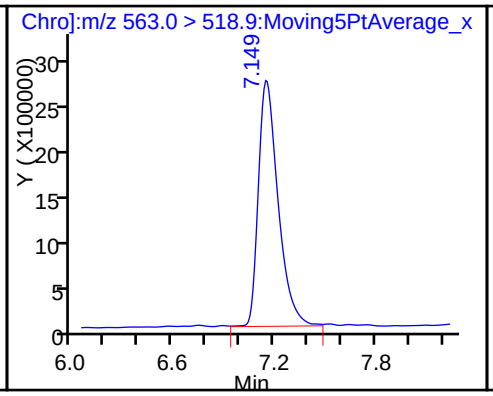
24 Perfluorodecane Sulfonic acid



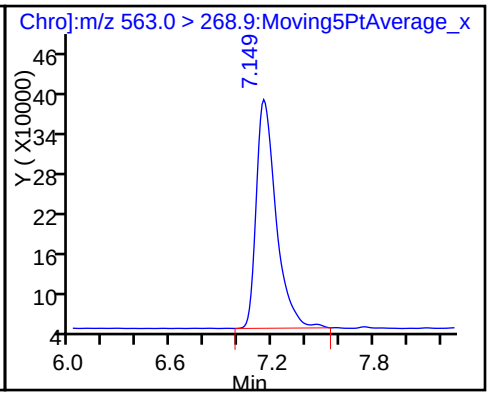
* 26 13C2 PFUnA (IS)



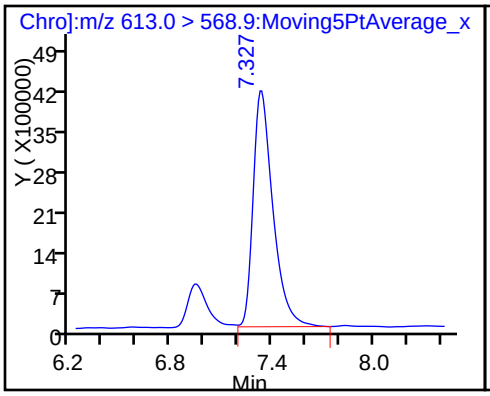
27 Perfluoroundecanoic acid



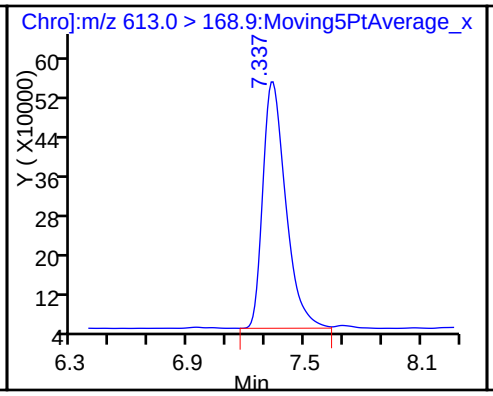
27 Perfluoroundecanoic acid



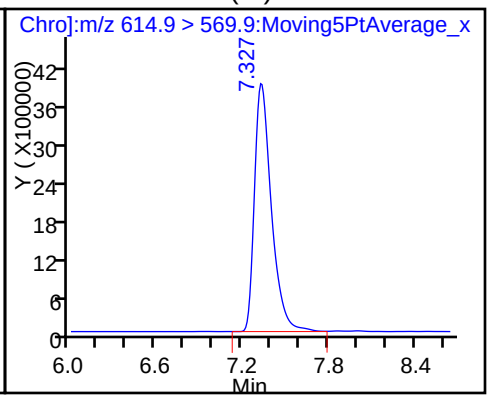
29 Perfluorododecanoic acid



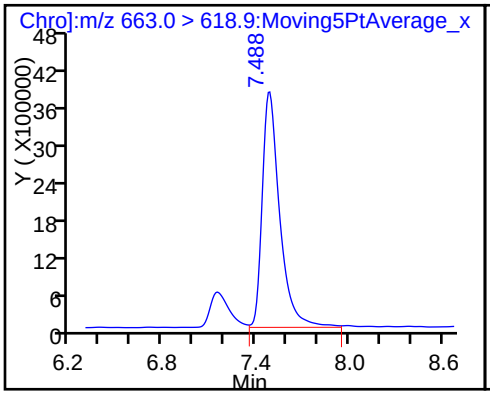
29 Perfluorododecanoic acid



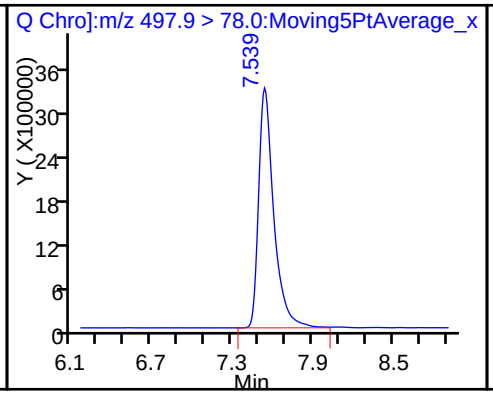
* 28 13C2 PFDoA (IS)



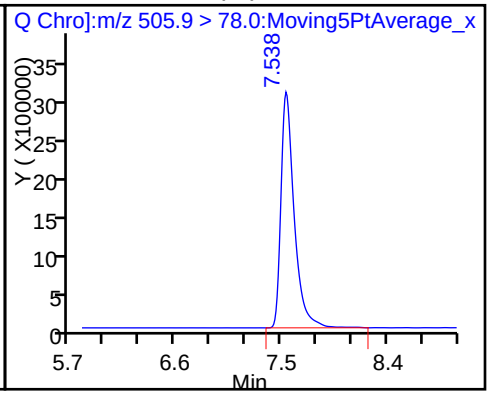
30 Perfluorotridecanoic acid



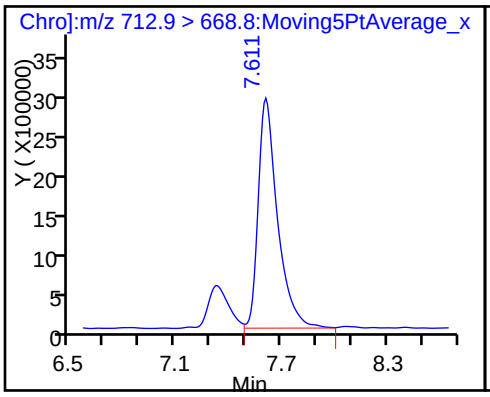
32 Perfluorooctane Sulfonamide



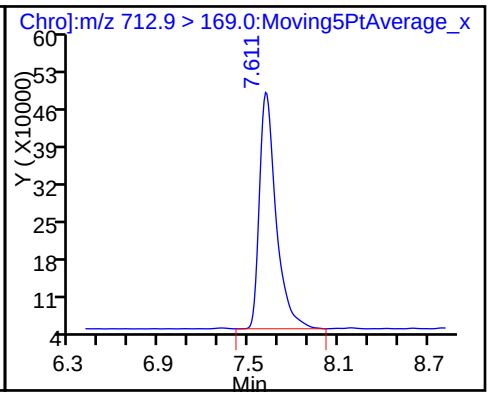
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab Sample ID: CCV 280-344279/14 Calibration Date: 09/28/2016 21:53

Instrument ID: LC_LCMS5 Calib Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calib End Date: 09/20/2016 17:57

Lab File ID: PC516I028090.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.054		4.69	5.00	-6.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.191		5.46	5.00	9.2	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.593		4.12	4.43	-6.8	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.593		4.12	4.43	-6.8	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9637		5.13	5.00	2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9226		4.68	5.00	-6.3	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.855		4.84	4.73	2.4	30.0
Perfluorohexanesulfonic acid	Lin2		3.855		4.84	4.73	2.4	30.0
Perfluoroheptane Sulfonate	Lin2		1.083		4.35	4.76	-8.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.083		4.35	4.76	-8.5	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.147		5.47	5.00	9.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.240		4.74	4.78	-0.7	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.149		4.96	5.00	-0.8	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.029		4.95	5.00	-1.0	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.283		4.93	4.83	2.2	30.0
Perfluorodecane Sulfonic acid	Lin2		1.283		4.93	4.83	2.2	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.505		5.23	5.00	4.5	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.997		4.91	5.00	-1.8	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9115		5.31	5.00	6.1	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.115		5.25	5.00	4.9	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7081		5.12	5.00	2.4	30.0
13C8 PFOA	Lin2		0.7723		5.06	5.00	1.2	30.0
13C8 PFOS	Lin2		0.5214		4.77	4.78	-0.2	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028090.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 28-Sep-2016 21:53:29 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:36 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:53:29

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.906	3.906	0.0		28937086	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.907	3.907	0.0	1.000	15255045	4.69			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.014	5.014	0.0	0.895	12826528	5.46			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.137	5.137	0.0	0.851	5102282	4.12			
298.9 > 98.9	5.137	5.137	0.0	0.851	1614045		3.16(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.137	5.137	0.0	0.851	5102282	4.12			
298.9 > 98.9	5.137	5.137	0.0	0.851	1614045		3.16(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.601	5.601	0.0		21531945	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.591	5.591	0.0	0.998	10374599	5.13			
313.0 > 118.6	5.610	5.591	0.019	1.002	223188		46.48(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.035	6.035	0.0		2375065	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.035	6.035	0.0	1.000	4573389	4.84			R
398.9 > 98.9	6.035	6.035	0.0	1.000	1666012		2.75(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.035	6.035	0.0	1.000	4573389	4.84			
398.9 > 98.9	6.035	6.035	0.0	1.000	1666012		2.75(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.026	6.026	0.0	0.945	14324587	4.68			
363.0 > 168.9	6.026	6.026	0.0	0.945	3764486		3.81(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.375	6.375	0.0	0.959	4536638	4.35			
449.0 > 98.9	6.375	6.375	0.0	0.959	1493910		3.04(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.375	6.375	0.0	0.959	4536638	4.35			
449.0 > 98.9	6.375	6.375	0.0	0.959	1493910		3.04(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.375	6.375	0.0	1.000	11991164	5.06			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.376	6.376	0.0		31053180	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.376	6.376	0.0	1.000	17807972	5.47			
413.0 > 169.0	6.376	6.376	0.0	1.000	5165798		3.45(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.648	6.648	0.0		8412608	9.56			
19 Perfluorooctane sulfonic acid									M
498.9 > 79.9	6.648	6.648	0.0	1.000	5209575	4.74			M
$ 18 13C8 PFOS									
506.9 > 80.0	6.648	6.648	0.0	1.000	2193068	4.77			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.668	6.668	0.0		24958077	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.668	6.668	0.0	1.000	14340619	4.96			
463.0 > 218.9	6.659	6.668	-0.009	0.999	2381702		6.02(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.912	6.912	0.0		27024572	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.903	6.903	0.0	0.999	13901765	4.95			R
513.0 > 219.0	6.912	6.903	0.009	1.000	1444701		9.62(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.091	7.091	0.0	1.067	5448541	4.93			
598.9 > 99.0	7.100	7.091	0.009	1.068	1554971		3.50(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.091	7.091	0.0	1.067	5448541	4.93			
598.9 > 99.0	7.100	7.091	0.009	1.068	1554971		3.50(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.120	7.120	0.0		17656739	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.120	7.120	0.0	1.000	13289666	5.23			R
563.0 > 268.9	7.120	7.120	0.0	1.000	1468578		9.05(3.47-6.45)		
29 Perfluorododecanoic acid									R
613.0 > 568.9	7.299	7.299	0.0	1.000	17418532	4.91			R
613.0 > 168.9	7.299	7.299	0.0	1.000	972497		17.91(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.299	7.299	0.0		34936138	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.450	7.450	0.0	1.021	15922006	5.31			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.511	0.0	1.000	1411378	5.25			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.510	7.510	0.0		25311905	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.582	7.582	0.0	1.039	12369705	5.12			
712.9 > 169.0	7.582	7.582	0.0	1.039	1871987		6.61(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	10.00	Units: uL
PFC-LCS_00085	Amount Added:	10.00	Units: uL

Report Date: 29-Sep-2016 11:09:37 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028090.d

Injection Date: 28-Sep-2016 21:53:29 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

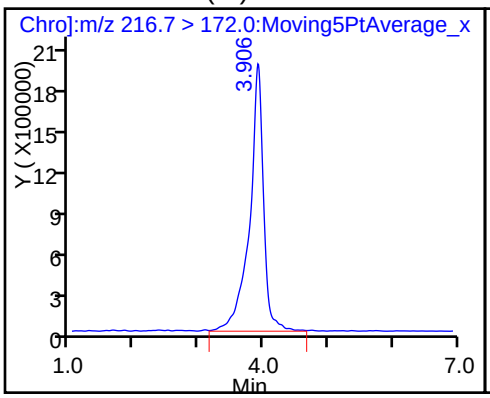
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 14

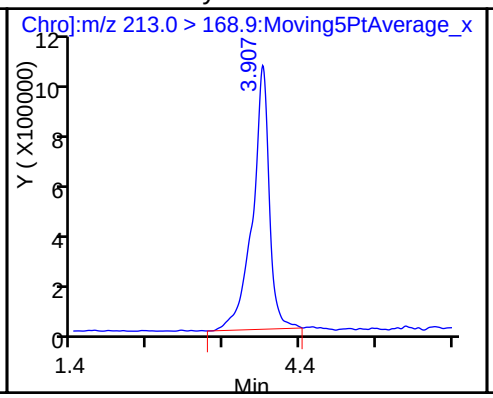
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

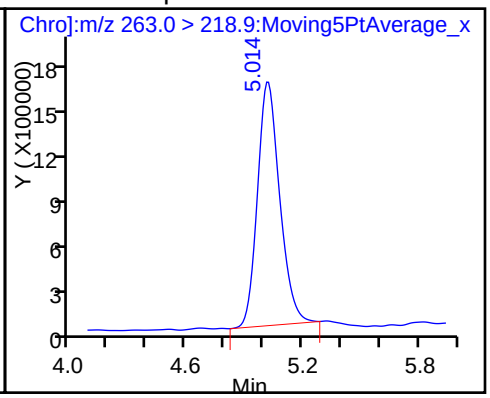
* 1 13C4 PFBA (IS)



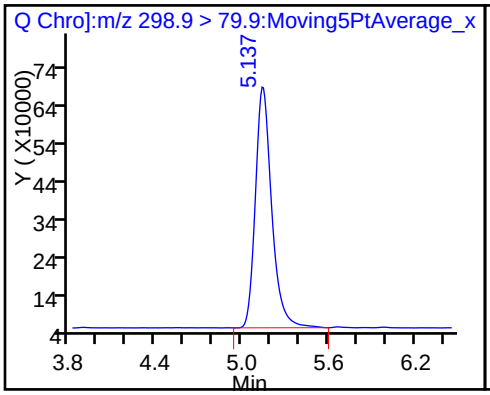
2 Perfluorobutyric acid



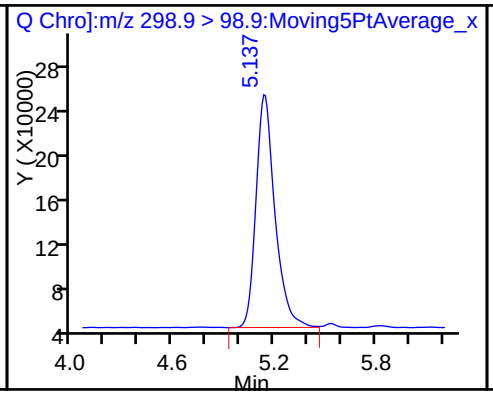
3 Perfluoropentanoic acid



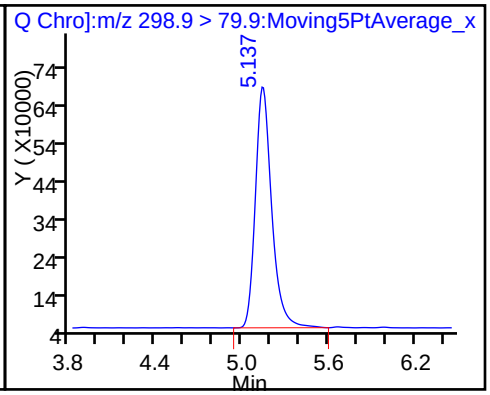
5 Perfluorobutanesulfonic acid



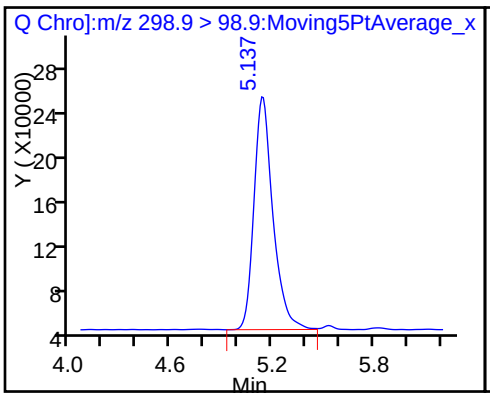
5 Perfluorobutanesulfonic acid



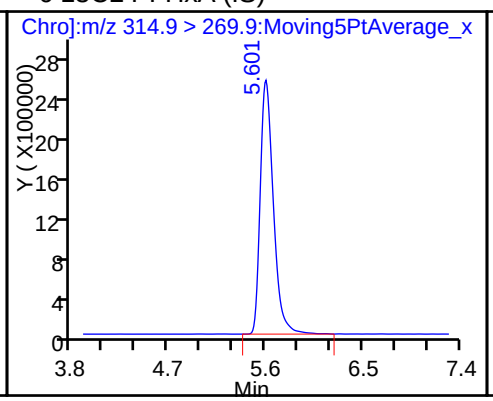
4 Perfluorobutane Sulfonate



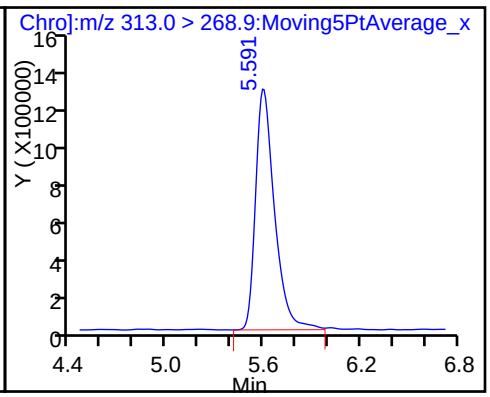
4 Perfluorobutane Sulfonate



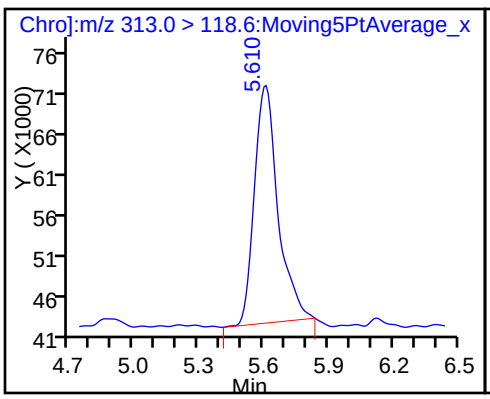
* 6 13C2 PFHxA (IS)



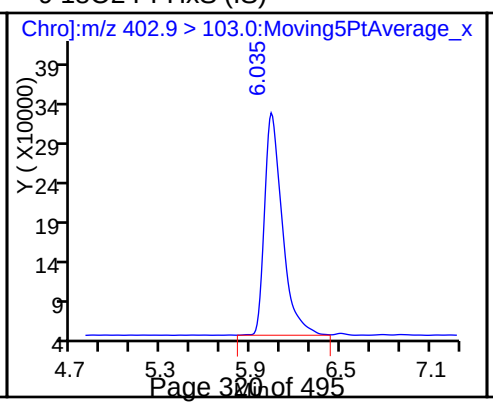
7 Perfluorohexanoic acid



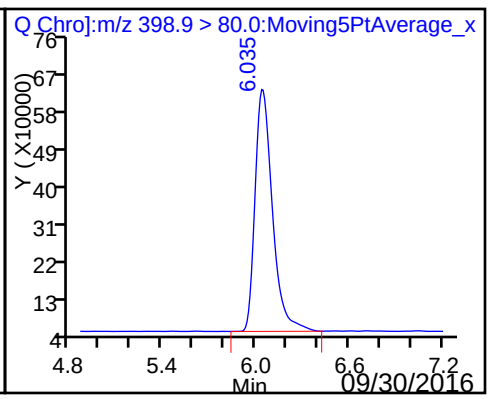
7 Perfluorohexanoic acid



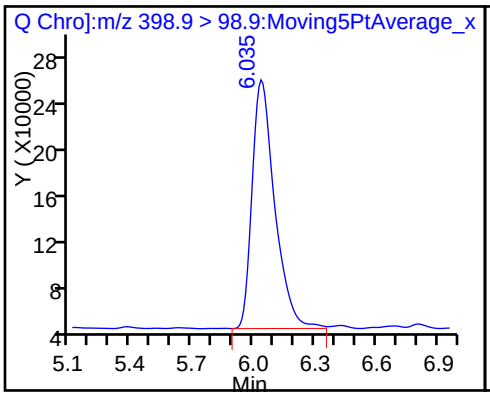
* 9 18O2 PFHxS (IS)



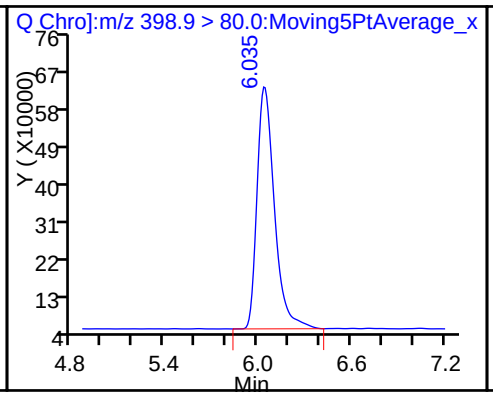
10 Perfluorohexane Sulfonate



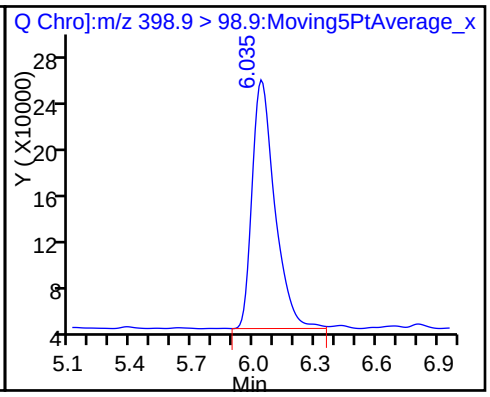
10 Perfluorohexane Sulfonate



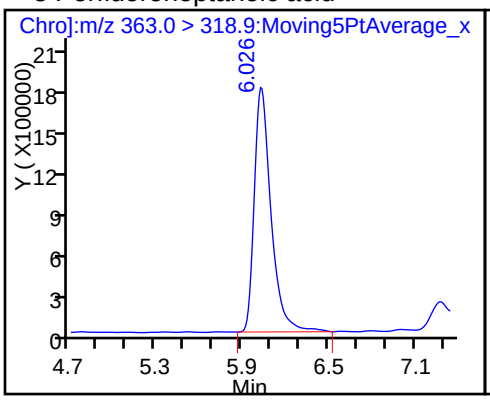
11 Perfluorohexanesulfonic acid



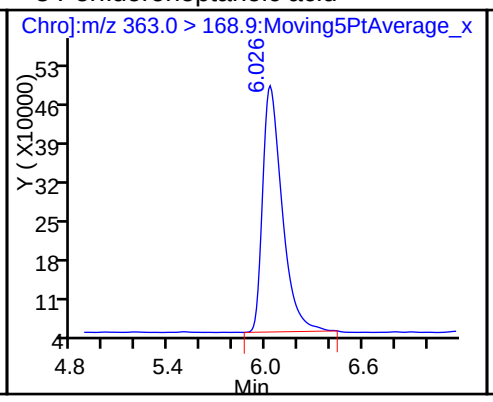
11 Perfluorohexanesulfonic acid



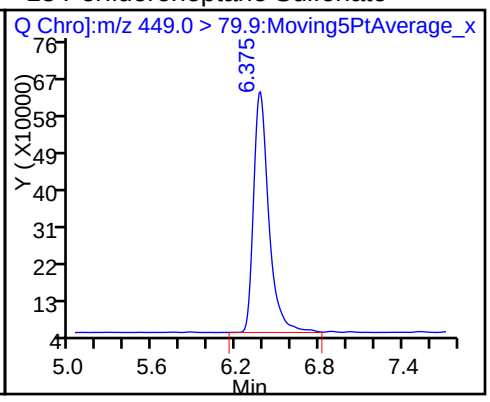
8 Perfluoroheptanoic acid



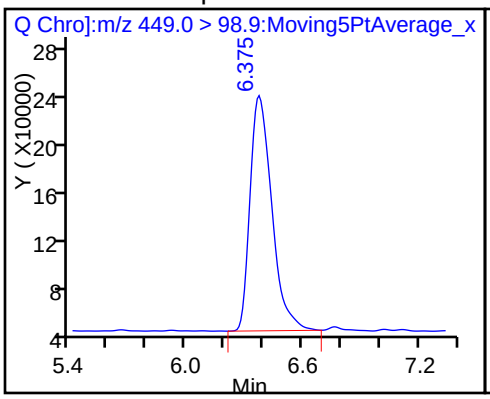
8 Perfluoroheptanoic acid



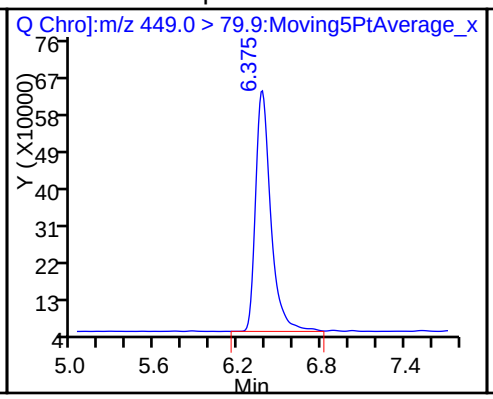
13 Perfluoroheptane Sulfonate



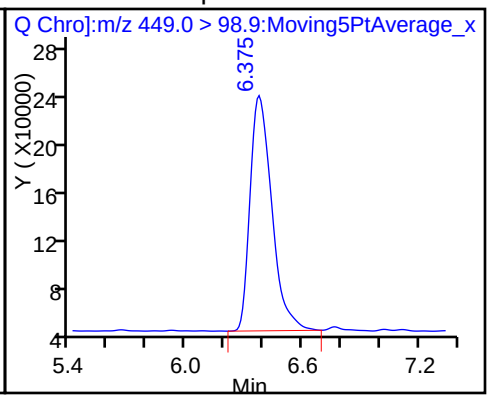
13 Perfluoroheptane Sulfonate



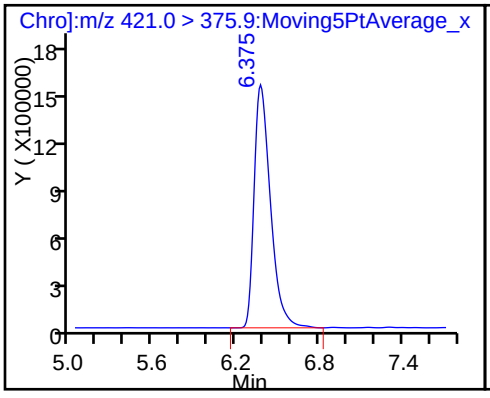
12 Perfluoroheptanesulfonic Acid



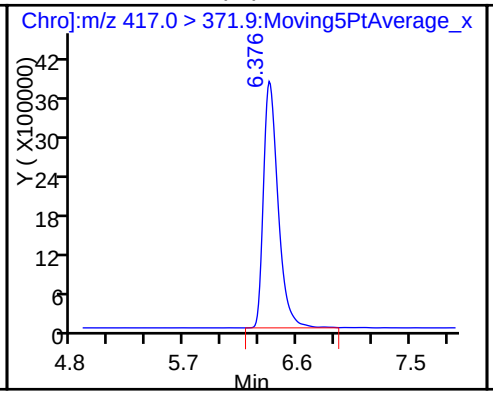
12 Perfluoroheptanesulfonic Acid



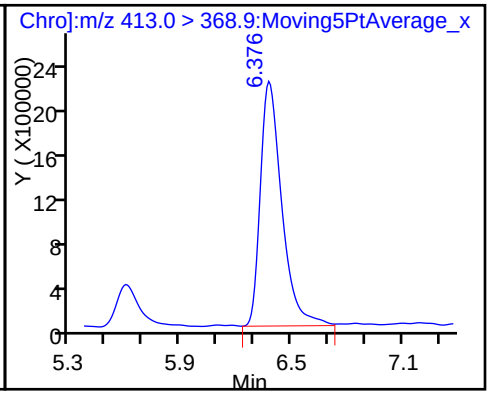
$ 14 13C8 PFOA



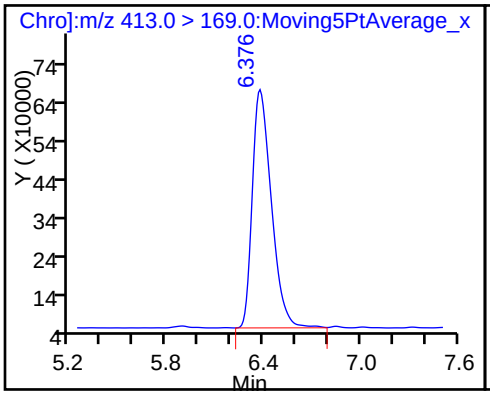
* 15 13C4 PFOA (IS)



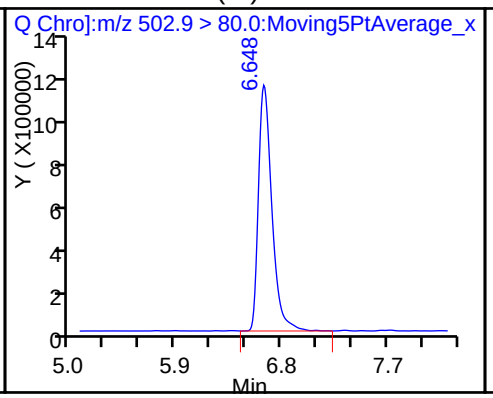
16 Perfluorooctanoic acid



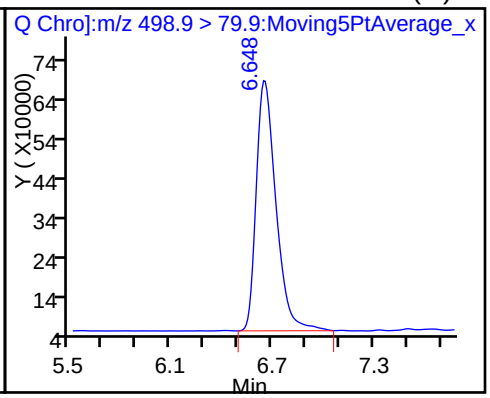
16 Perfluorooctanoic acid



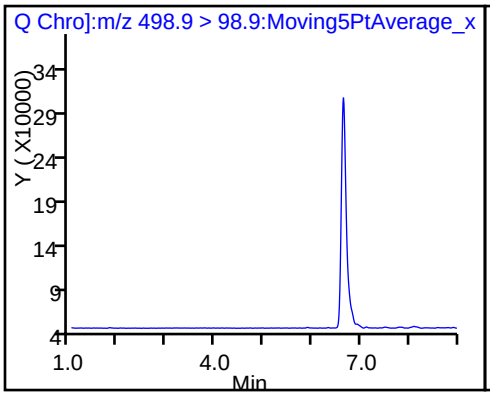
* 17 13C4 PFOS (IS)



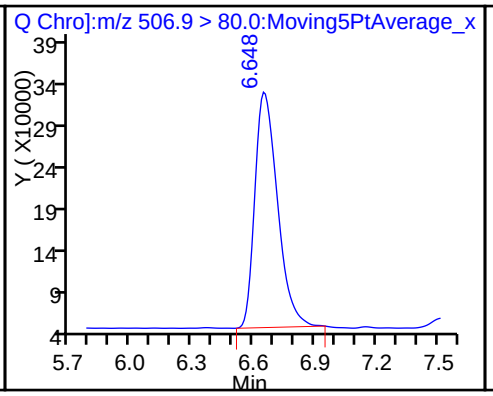
19 Perfluorooctane sulfonic acid (M)



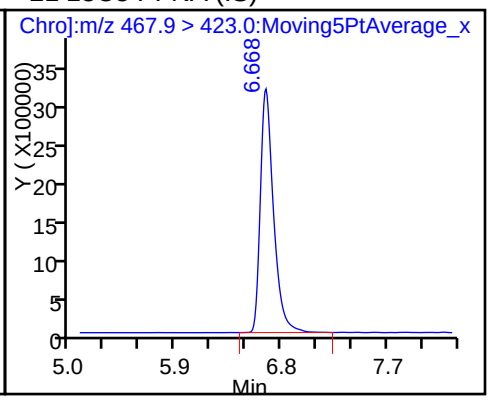
19 Perfluorooctane sulfonic acid



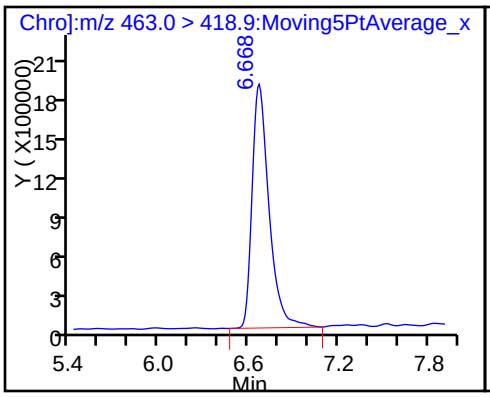
$ 18 13C8 PFOS



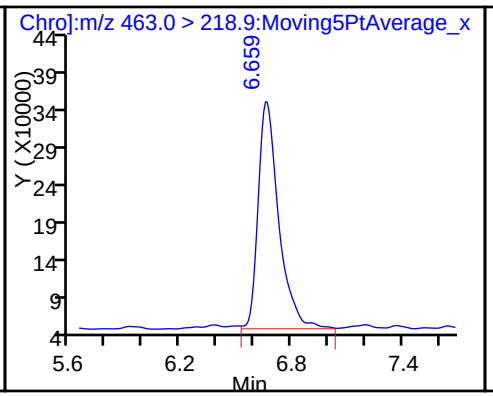
* 21 13C5 PFNA (IS)



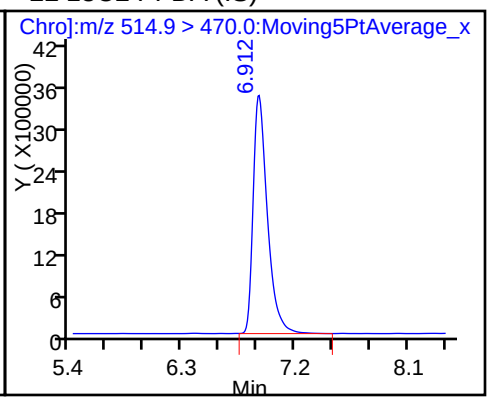
20 Perfluorononanoic acid



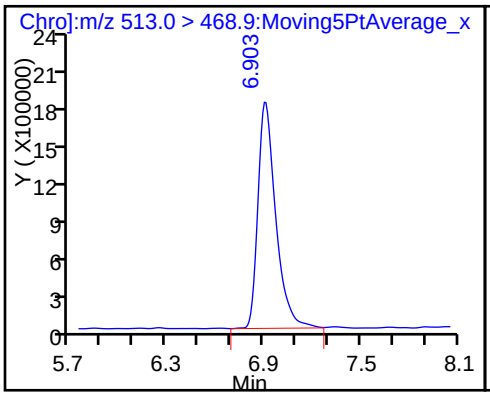
20 Perfluorononanoic acid



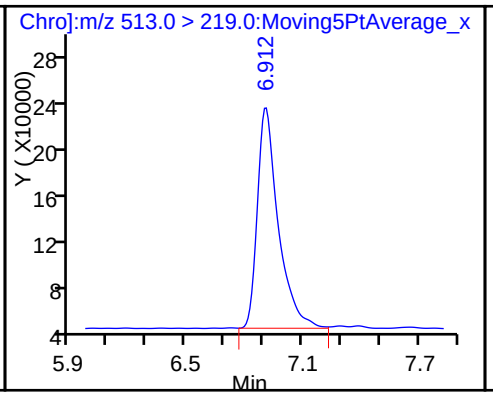
* 22 13C2 PFDA (IS)



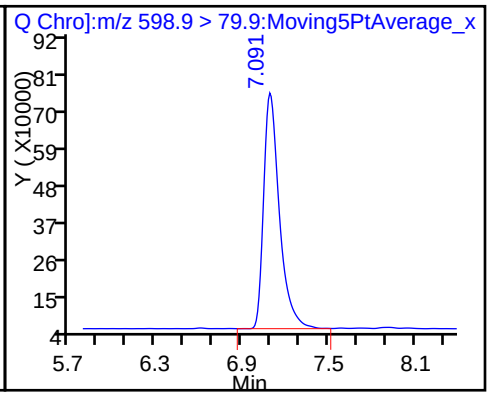
23 Perfluorodecanoic acid



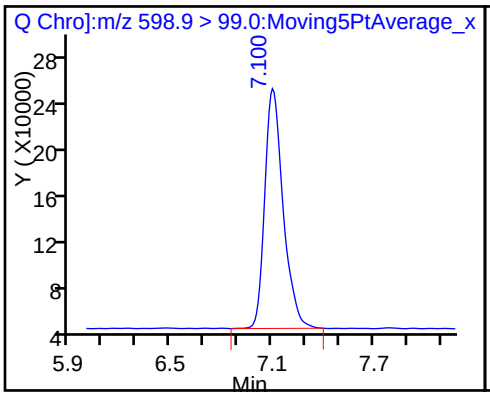
23 Perfluorodecanoic acid



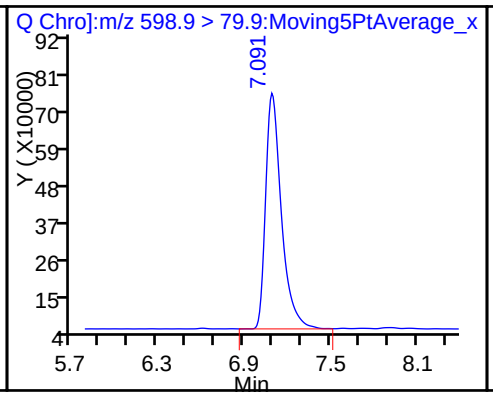
25 Perfluorodecane Sulfonate



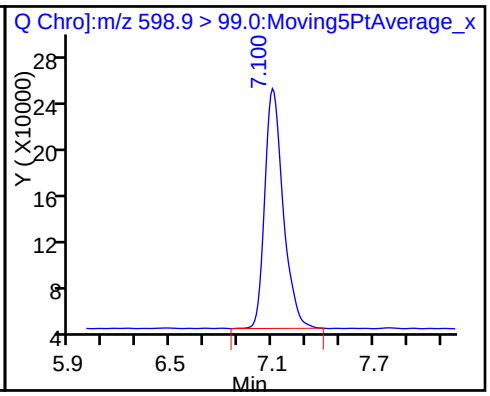
25 Perfluorodecane Sulfonate



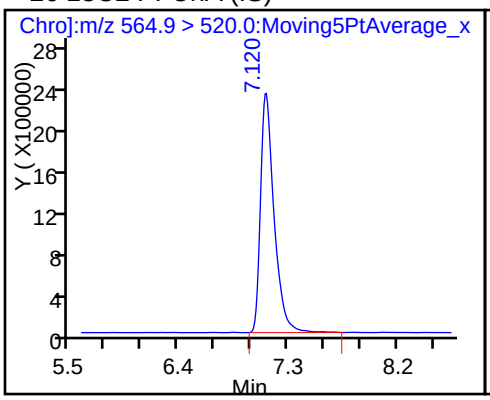
24 Perfluorodecane Sulfonic acid



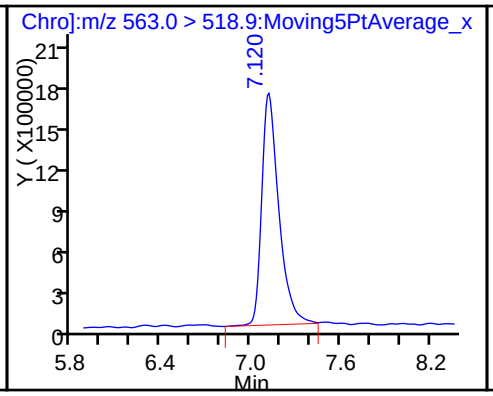
24 Perfluorodecane Sulfonic acid



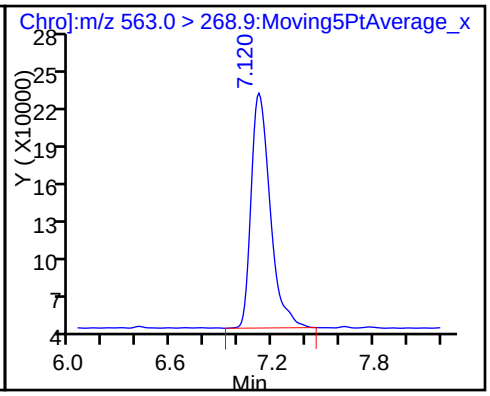
* 26 13C2 PFUnA (IS)



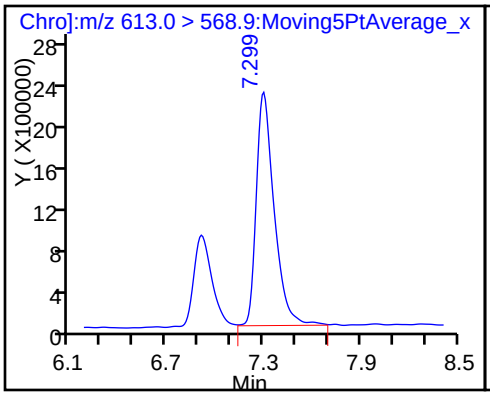
27 Perfluoroundecanoic acid



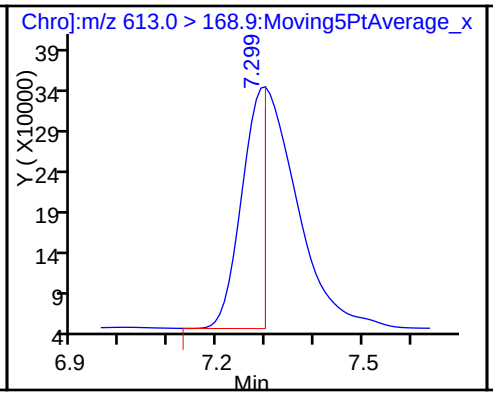
27 Perfluoroundecanoic acid



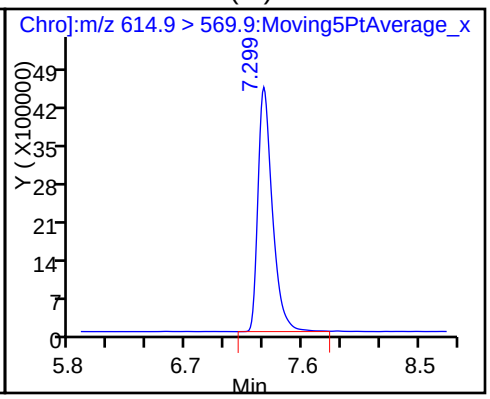
29 Perfluorododecanoic acid



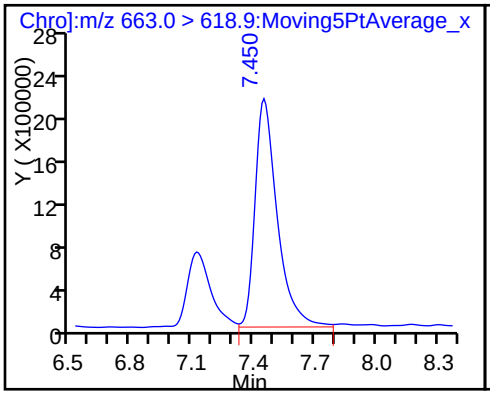
29 Perfluorododecanoic acid



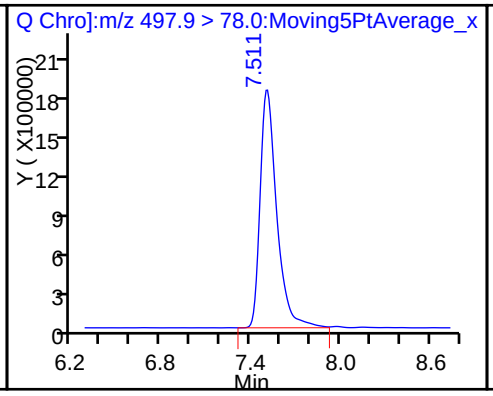
* 28 13C2 PFDoA (IS)



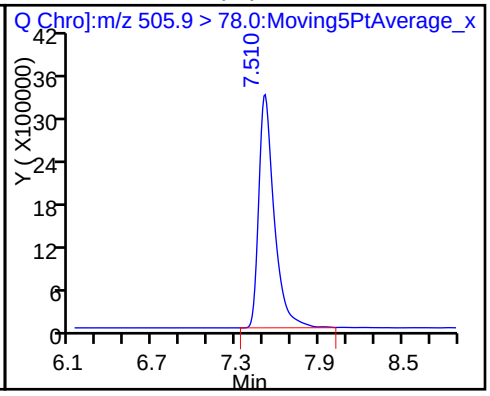
30 Perfluorotridecanoic acid



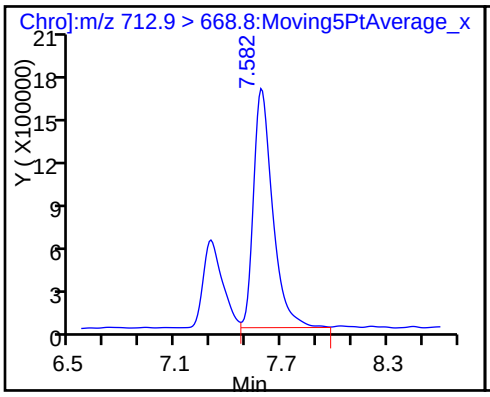
32 Perfluorooctane Sulfonamide



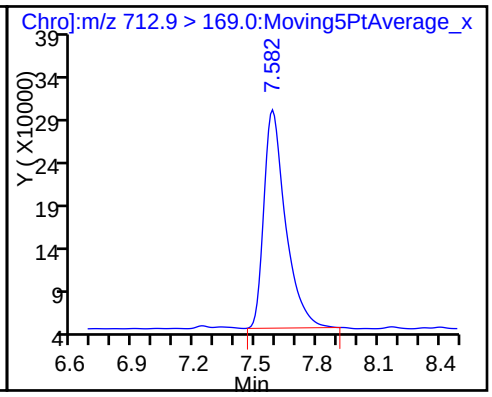
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Denver

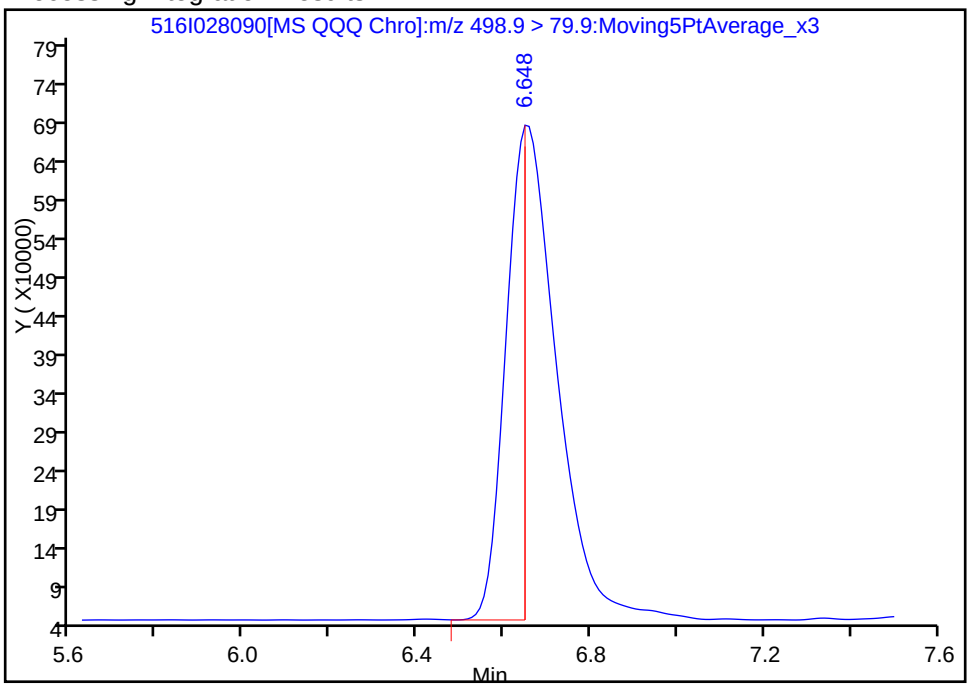
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028090.d				
Injection Date:	28-Sep-2016 21:53:29	Instrument ID:	LC_LCMS5		
Lims ID:	CCV PFC L5				
Client ID:					
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

19 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

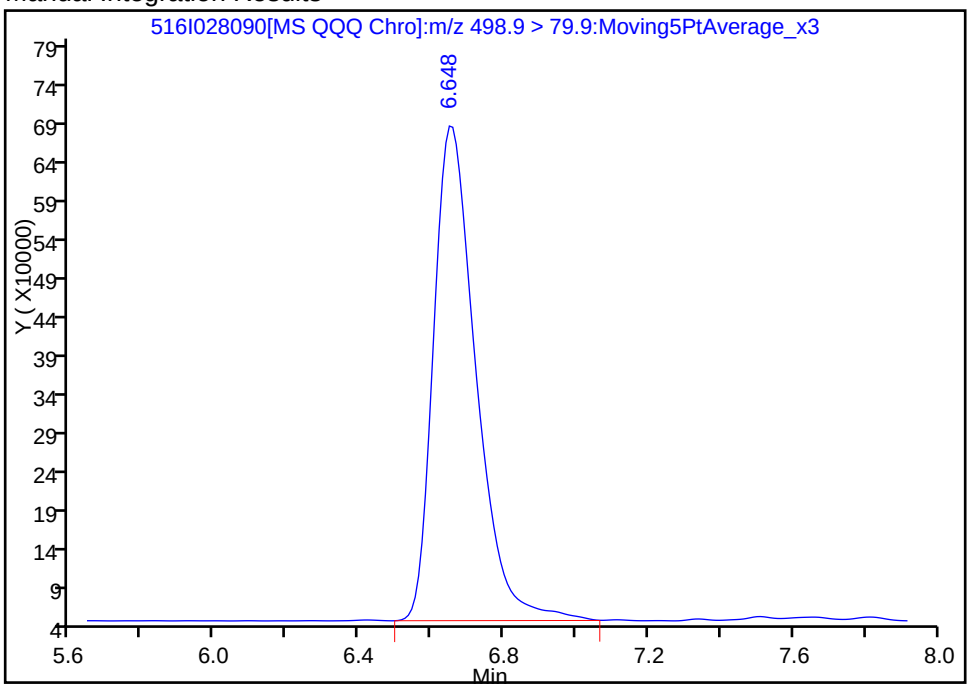
Processing Integration Results

RT: 6.65
Area: 1919698
Amount: 1.761940
Amount Units: ug/L



Manual Integration Results

RT: 6.65
Area: 5209575
Amount: 4.743653
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 09:53:29

Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab Sample ID: CCV 280-344279/24 Calibration Date: 09/28/2016 23:56

Instrument ID: LC_LCMS5 Calib Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calib End Date: 09/20/2016 17:57

Lab File ID: PC516I028100.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.037		9.19	10.0	-8.1	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.185		10.9	10.0	8.7	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.737		8.48	8.85	-4.2	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.737		8.48	8.85	-4.2	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9398		10.0	10.0	0.3	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.859		9.69	9.45	2.6	30.0
Perfluorohexanesulfonic acid	Lin2		3.859		9.69	9.45	2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9317		9.44	10.0	-5.6	30.0
Perfluoroheptane Sulfonate	Lin2		1.018		8.15	9.52	-14.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.018		8.15	9.52	-14.4	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.062		10.2	10.0	2.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.092		8.34	9.55	-12.6	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.055		9.07	10.0	-9.3	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9815		9.43	10.0	-5.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.148		8.82	9.65	-8.6	30.0
Perfluorodecane Sulfonic acid	Lin2		1.148		8.82	9.65	-8.6	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.375		9.57	10.0	-4.3	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.998		9.88	10.0	-1.2	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8547		10.0	10.0	0.0	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.049		9.86	10.0	-1.4	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6281		9.10	10.0	-9.0	30.0
13C8 PFOA	Lin2		0.8223		10.8	10.0	8.3	30.0
13C8 PFOS	Lin2		0.5947		10.9	9.56	14.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab Sample ID: CCV 280-344280/24 Calibration Date: 09/28/2016 23:56

Instrument ID: LC_LCMS5 Calib Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calib End Date: 09/20/2016 17:57

Lab File ID: PC516I028100.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.037		9.19	10.0	-8.1	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.185		10.9	10.0	8.7	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.737		8.48	8.85	-4.2	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.737		8.48	8.85	-4.2	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9398		10.0	10.0	0.3	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.859		9.69	9.45	2.6	30.0
Perfluorohexanesulfonic acid	Lin2		3.859		9.69	9.45	2.6	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9317		9.44	10.0	-5.6	30.0
Perfluoroheptane Sulfonate	Lin2		1.018		8.15	9.52	-14.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.018		8.15	9.52	-14.4	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.062		10.2	10.0	2.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.092		8.34	9.55	-12.6	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.055		9.07	10.0	-9.3	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9815		9.43	10.0	-5.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.148		8.82	9.65	-8.6	30.0
Perfluorodecane Sulfonic acid	Lin2		1.148		8.82	9.65	-8.6	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.375		9.57	10.0	-4.3	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.998		9.88	10.0	-1.2	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8547		10.0	10.0	0.0	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.049		9.86	10.0	-1.4	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6281		9.10	10.0	-9.0	30.0
13C8 PFOA	Lin2		0.8223		10.8	10.0	8.3	30.0
13C8 PFOS	Lin2		0.5947		10.9	9.56	14.3	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028100.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 28-Sep-2016 23:56:36 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:41:37

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.963	3.963	0.0		26148562	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.963	3.963	0.0	1.000	27119764	9.19			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.071	5.071	0.0	0.898	22261594	10.9			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.184	5.184	0.0	0.854	8813225	8.48			
298.9 > 98.9	5.184	5.184	0.0	0.854	2793865		3.15(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.184	5.184	0.0	0.854	8813225	8.48			
298.9 > 98.9	5.184	5.184	0.0	0.854	2793865		3.15(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.648	5.648	0.0		18781141	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.648	5.648	0.0	1.000	17651249	10.0			
313.0 > 118.6	5.629	5.648	-0.019	0.997	445227		39.65(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.074	6.074	0.0	0.947	25853060	9.44			
363.0 > 168.9	6.074	6.074	0.0	0.947	6482697		3.99(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.073	6.073	0.0		1988593	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.073	6.073	0.0	1.000	7665214	9.69			R
398.9 > 98.9	6.083	6.073	0.010	1.002	2856569		2.68(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.073	6.073	0.0	1.000	7665214	9.69			
398.9 > 98.9	6.083	6.073	0.010	1.002	2856569		2.68(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.403	6.403	0.0	0.959	7647379	8.15			
449.0 > 98.9	6.403	6.403	0.0	0.959	2528084		3.02(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.403	6.403	0.0	0.959	7647379	8.15			
449.0 > 98.9	6.403	6.403	0.0	0.959	2528084		3.02(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.413	6.413	0.0	1.000	22816145	10.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.413	6.413	0.0		27747009	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.414	6.414	0.0	1.000	29458766	10.2			
413.0 > 169.0	6.414	6.414	0.0	1.000	8815582		3.34(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.685	6.685	0.0	1.001	4487832	10.9			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.676	6.676	0.0		7546561	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.677	6.677	0.0	1.000	8235473	8.34			
498.9 > 98.9	6.686	6.677	0.009	1.001	3454812		2.38(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.696	6.696	0.0		22531765	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.697	6.697	0.0	1.000	23774567	9.07			
463.0 > 218.9	6.697	6.697	0.0	1.000	3971860		5.99(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.941	6.941	0.0		23829053	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.941	6.941	0.0	1.000	23387058	9.43			R
513.0 > 219.0	6.941	6.941	0.0	1.000	2429352		9.63(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.119	7.119	0.0	1.066	8742225	8.82			
598.9 > 99.0	7.129	7.119	0.010	1.068	2924249		2.99(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.119	7.119	0.0	1.066	8742225	8.82			
598.9 > 99.0	7.129	7.119	0.010	1.068	2924249		2.99(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.148	7.148	0.0		15574352	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.149	7.149	0.0	1.000	21411169	9.57			R
563.0 > 268.9	7.149	7.149	0.0	1.000	2481821		8.63(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.327	7.327	0.0		32178529	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.318	7.318	0.0	0.999	32107958	9.88			
613.0 > 168.9	7.318	7.318	0.0	0.999	3923012		8.18(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.478	7.478	0.0	1.021	27503151	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.548	7.548	0.0		23739631	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.539	0.0	0.999	24891379	9.86			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.611	7.611	0.0	1.039	20211987	9.10			
712.9 > 169.0	7.611	7.611	0.0	1.039	2961538		6.82(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00085	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028100.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 28-Sep-2016 23:56:36 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:41:37

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.963	3.963	0.0		26148562	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.963	3.963	0.0	1.000	27119764	9.19			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.071	5.071	0.0	0.898	22261594	10.9			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.184	5.184	0.0	0.854	8813225	8.48			
298.9 > 98.9	5.184	5.184	0.0	0.854	2793865		3.15(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.184	5.184	0.0	0.854	8813225	8.48			
298.9 > 98.9	5.184	5.184	0.0	0.854	2793865		3.15(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.648	5.648	0.0		18781141	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.648	5.648	0.0	1.000	17651249	10.0			
313.0 > 118.6	5.629	5.648	-0.019	0.997	445227		39.65(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.074	6.074	0.0	0.947	25853060	9.44			
363.0 > 168.9	6.074	6.074	0.0	0.947	6482697		3.99(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.073	6.073	0.0		1988593	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.073	6.073	0.0	1.000	7665214	9.69			R
398.9 > 98.9	6.083	6.073	0.010	1.002	2856569		2.68(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.073	6.073	0.0	1.000	7665214	9.69			
398.9 > 98.9	6.083	6.073	0.010	1.002	2856569		2.68(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.403	6.403	0.0	0.959	7647379	8.15			
449.0 > 98.9	6.403	6.403	0.0	0.959	2528084		3.02(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.403	6.403	0.0	0.959	7647379	8.15			
449.0 > 98.9	6.403	6.403	0.0	0.959	2528084		3.02(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.413	6.413	0.0	1.000	22816145	10.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.413	6.413	0.0		27747009	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.414	6.414	0.0	1.000	29458766	10.2			
413.0 > 169.0	6.414	6.414	0.0	1.000	8815582		3.34(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.685	6.685	0.0	1.001	4487832	10.9			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.676	6.676	0.0		7546561	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.677	6.677	0.0	1.000	8235473	8.34			
498.9 > 98.9	6.686	6.677	0.009	1.001	3454812		2.38(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.696	6.696	0.0		22531765	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.697	6.697	0.0	1.000	23774567	9.07			
463.0 > 218.9	6.697	6.697	0.0	1.000	3971860		5.99(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.941	6.941	0.0		23829053	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.941	6.941	0.0	1.000	23387058	9.43			R
513.0 > 219.0	6.941	6.941	0.0	1.000	2429352		9.63(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.119	7.119	0.0	1.066	8742225	8.82			
598.9 > 99.0	7.129	7.119	0.010	1.068	2924249		2.99(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.119	7.119	0.0	1.066	8742225	8.82			
598.9 > 99.0	7.129	7.119	0.010	1.068	2924249		2.99(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.148	7.148	0.0		15574352	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.149	7.149	0.0	1.000	21411169	9.57			R
563.0 > 268.9	7.149	7.149	0.0	1.000	2481821		8.63(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.327	7.327	0.0		32178529	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.318	7.318	0.0	0.999	32107958	9.88			
613.0 > 168.9	7.318	7.318	0.0	0.999	3923012		8.18(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.478	7.478	0.0	1.021	27503151	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.548	7.548	0.0		23739631	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.539	0.0	0.999	24891379	9.86			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.611	7.611	0.0	1.039	20211987	9.10			
712.9 > 169.0	7.611	7.611	0.0	1.039	2961538		6.82(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00085	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

Report Date: 29-Sep-2016 11:41:38 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028100.d

Injection Date: 28-Sep-2016 23:56:36 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

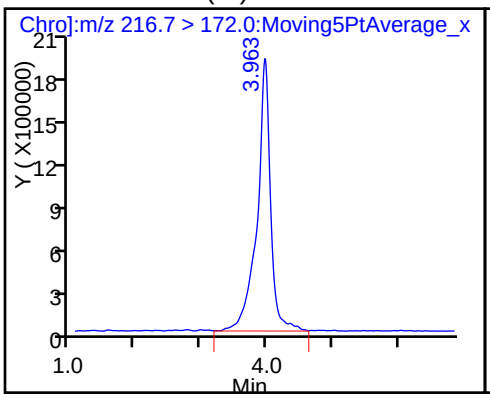
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 24

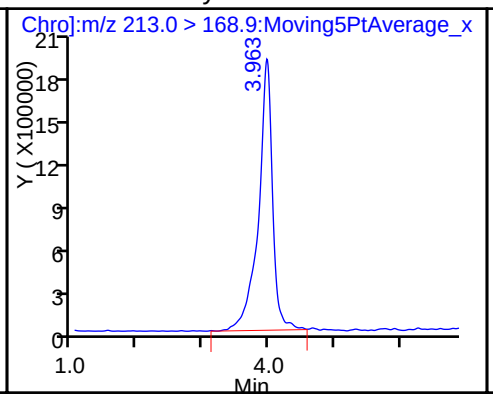
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

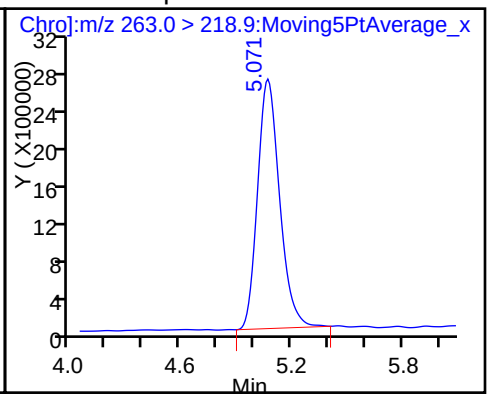
* 1 13C4 PFBA (IS)



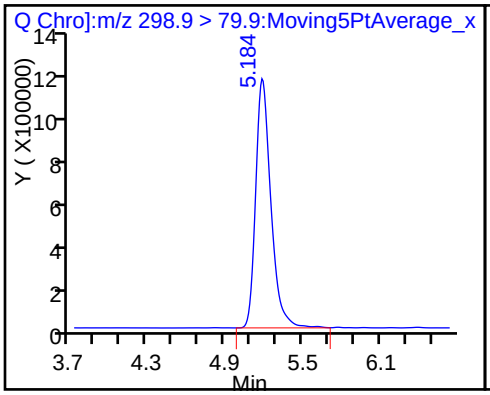
2 Perfluorobutyric acid



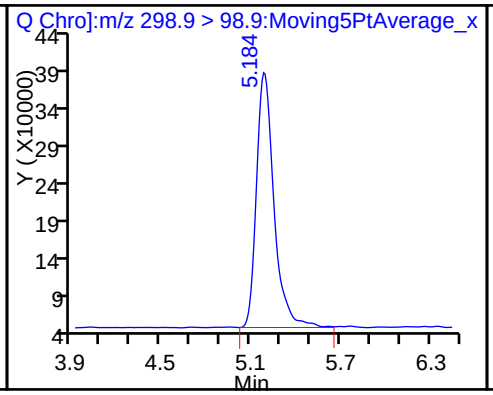
3 Perfluoropentanoic acid



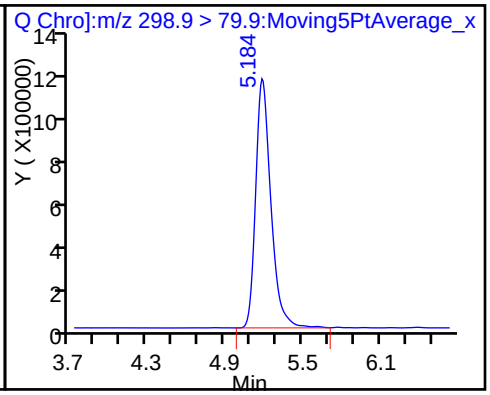
5 Perfluorobutanesulfonic acid



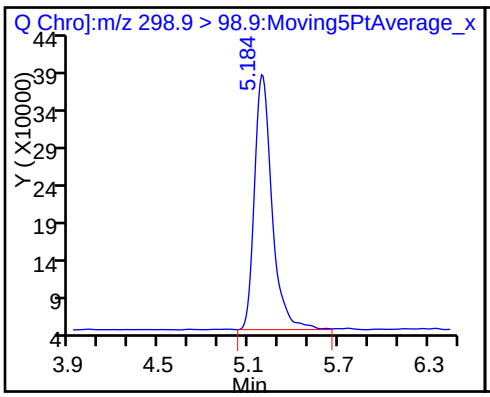
5 Perfluorobutanesulfonic acid



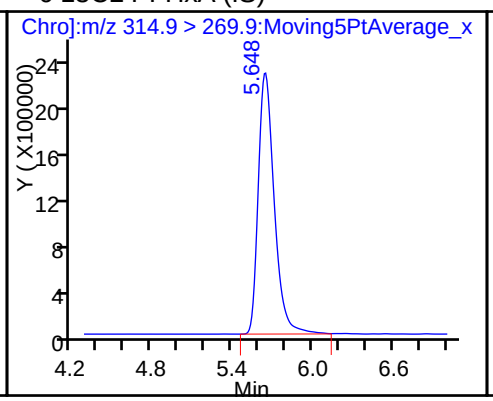
4 Perfluorobutane Sulfonate



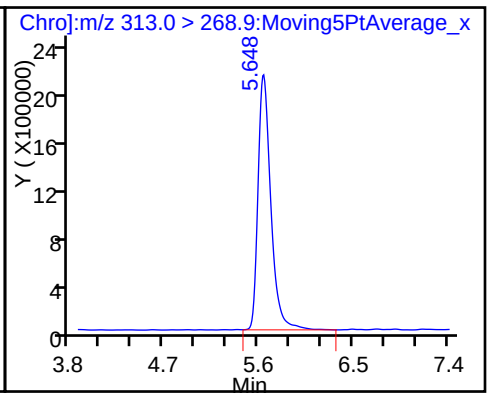
4 Perfluorobutane Sulfonate



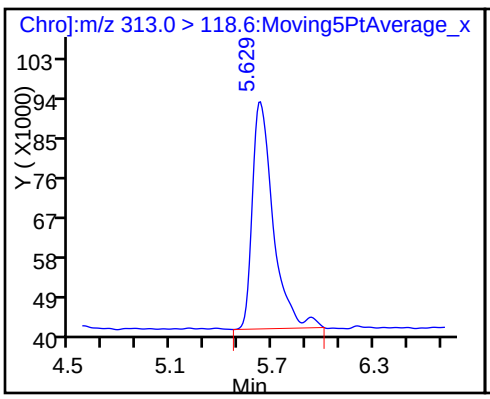
* 6 13C2 PFHxA (IS)



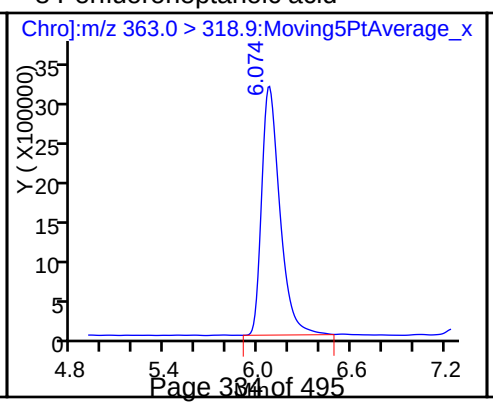
7 Perfluorohexanoic acid



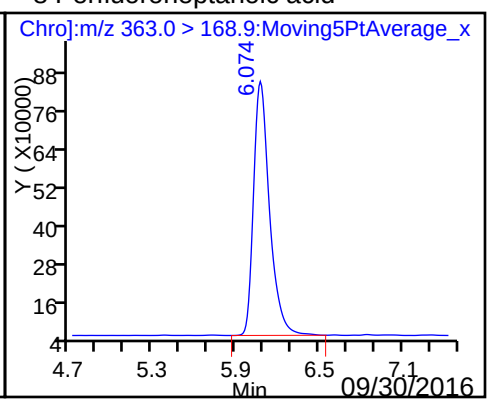
7 Perfluorohexanoic acid



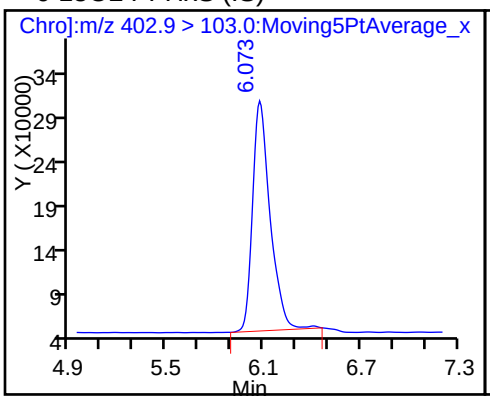
8 Perfluoroheptanoic acid



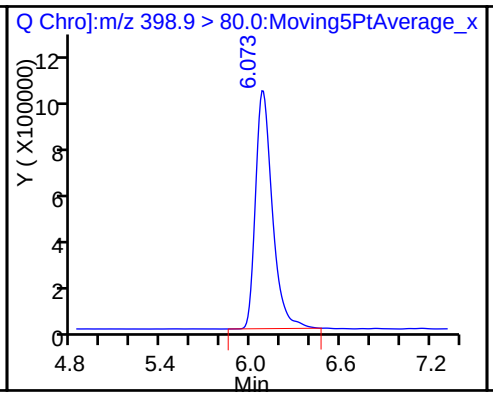
8 Perfluoroheptanoic acid



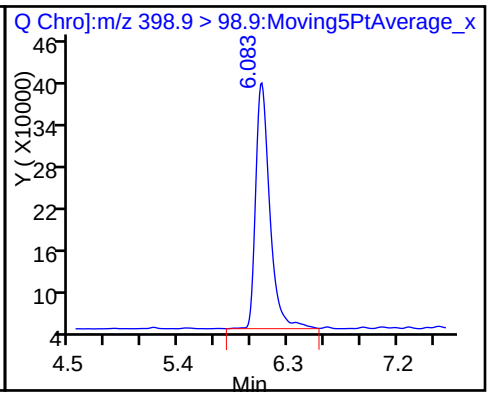
* 9 18O2 PFHxS (IS)



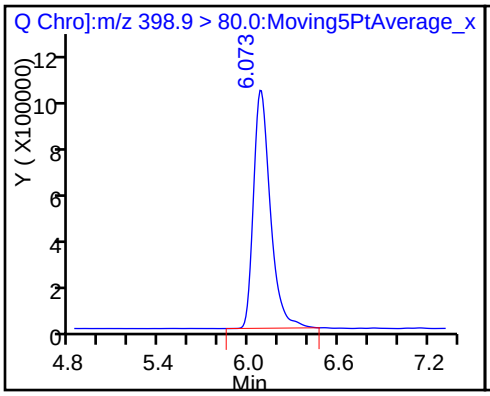
10 Perfluorohexane Sulfonate



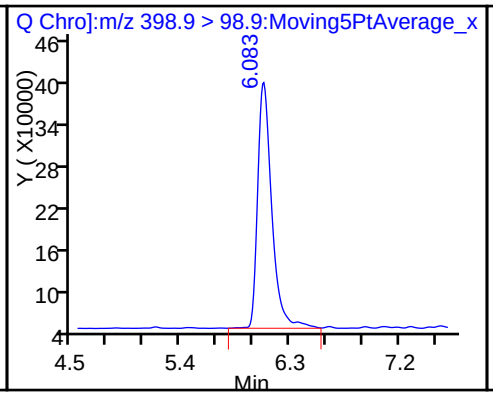
10 Perfluorohexane Sulfonate



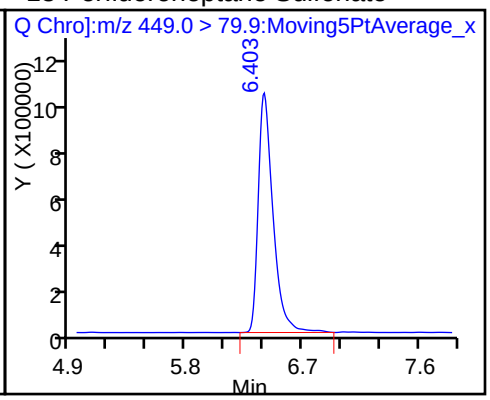
11 Perfluorohexanesulfonic acid



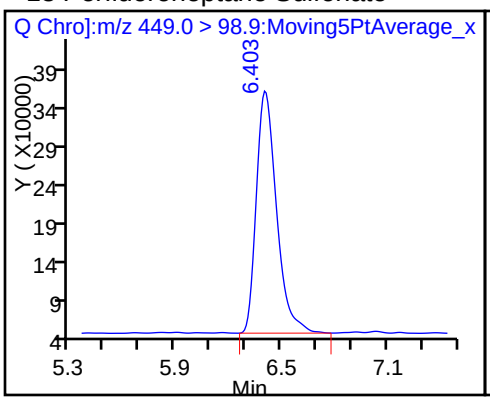
11 Perfluorohexanesulfonic acid



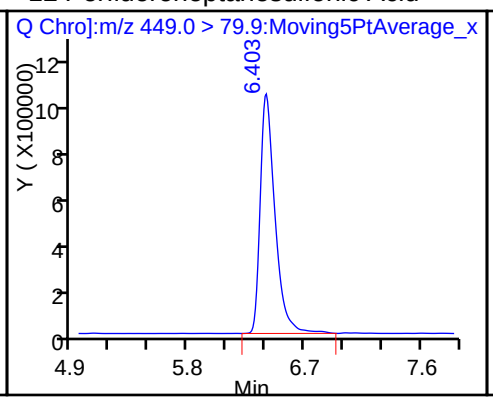
13 Perfluoroheptane Sulfonate



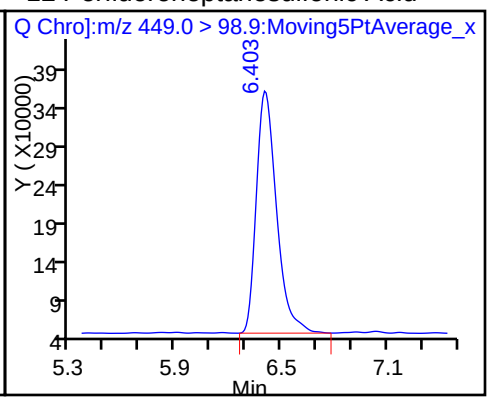
13 Perfluoroheptane Sulfonate



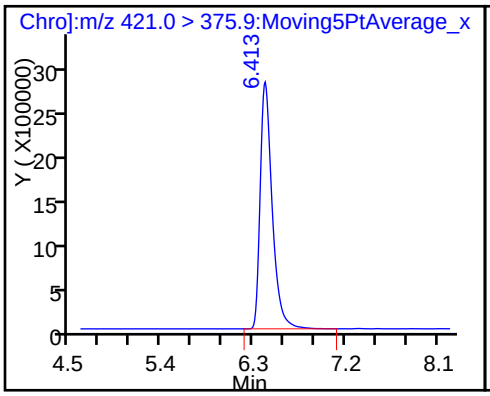
12 Perfluoroheptanesulfonic Acid



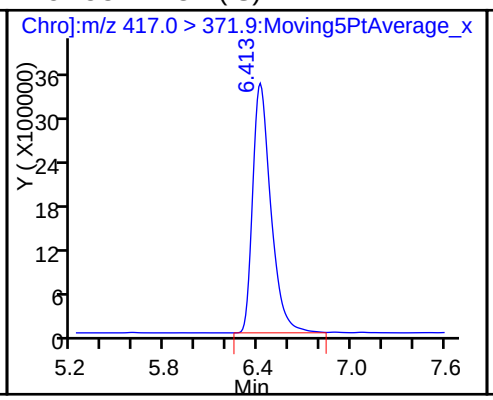
12 Perfluoroheptanesulfonic Acid



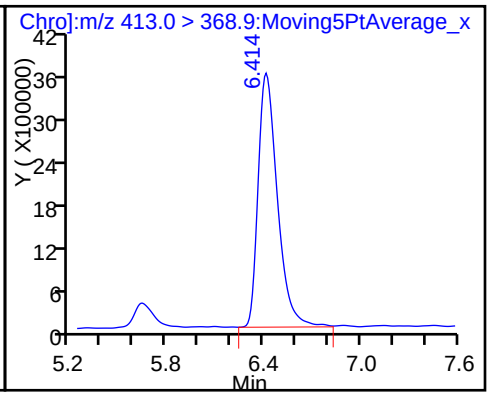
$ 14 13C8 PFOA



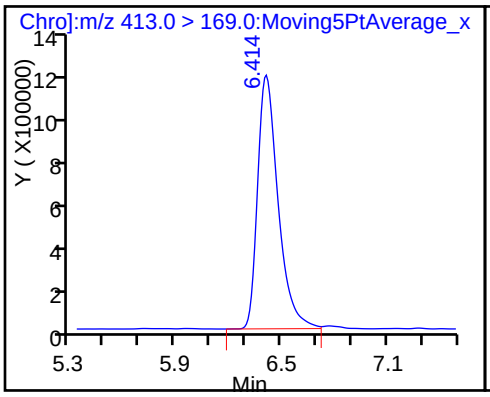
* 15 13C4 PFOA (IS)



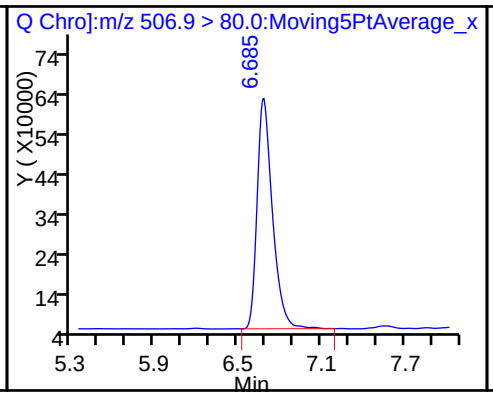
16 Perfluorooctanoic acid



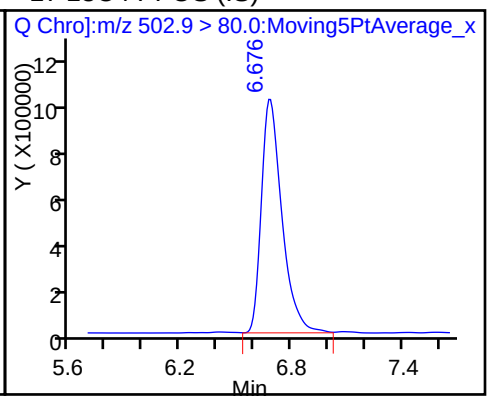
16 Perfluorooctanoic acid



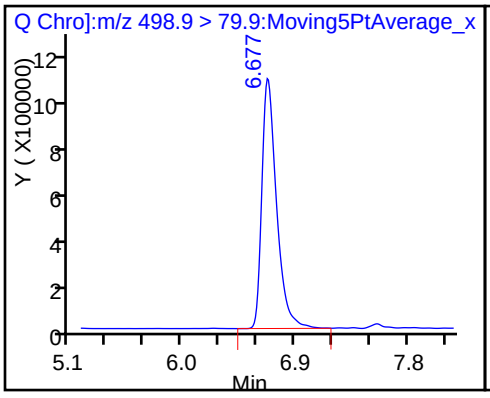
$ 18 13C8 PFOS



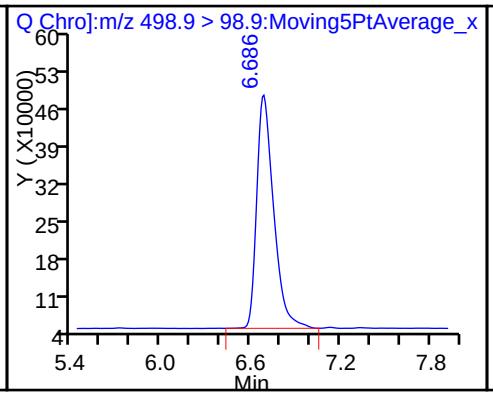
* 17 13C4 PFOS (IS)



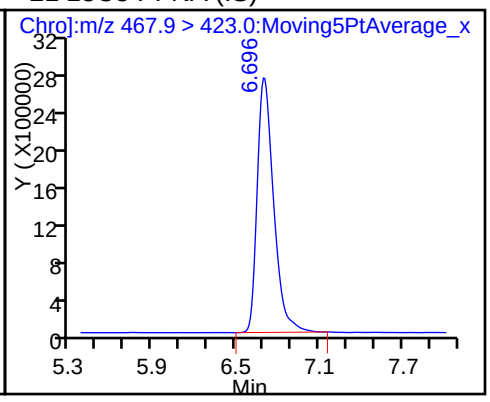
19 Perfluorooctane sulfonic acid



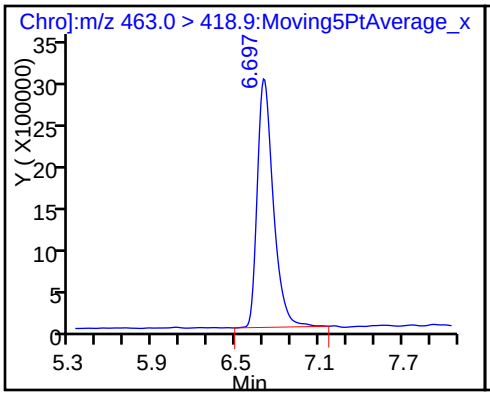
19 Perfluorooctane sulfonic acid



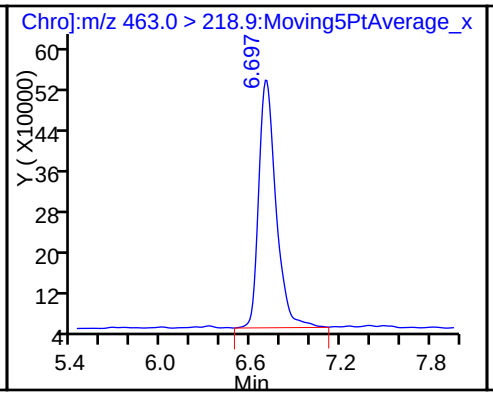
* 21 13C5 PFNA (IS)



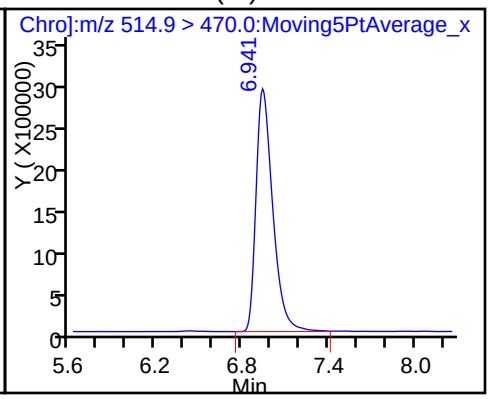
20 Perfluorononanoic acid



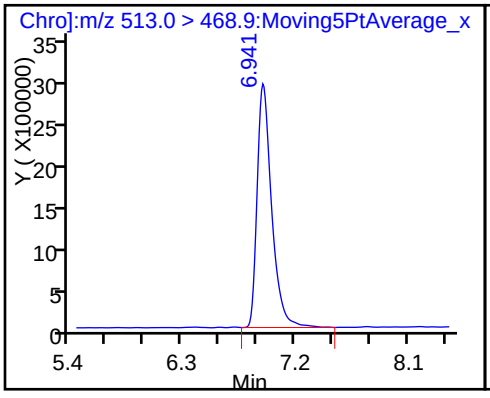
20 Perfluorononanoic acid



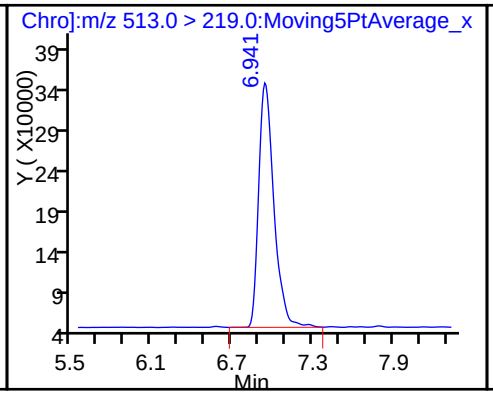
* 22 13C2 PFDA (IS)



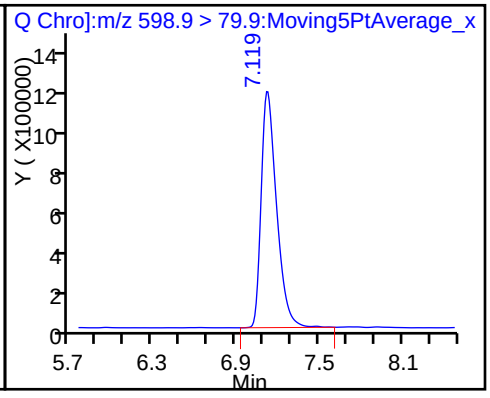
23 Perfluorodecanoic acid



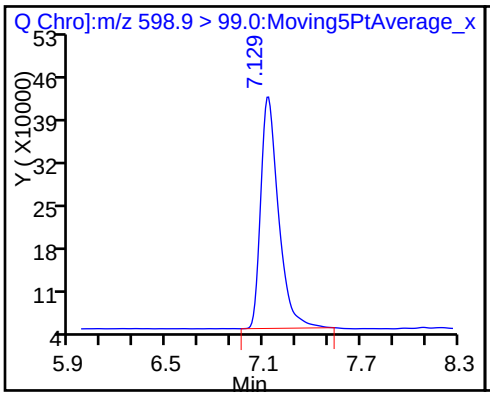
23 Perfluorodecanoic acid



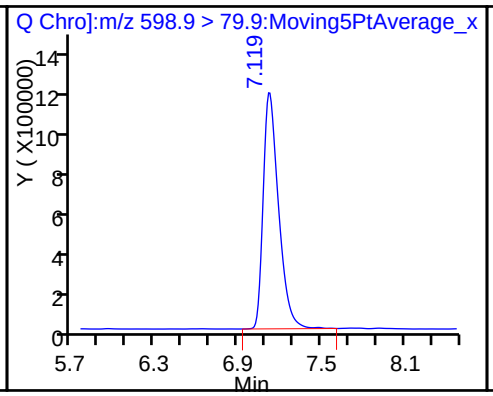
25 Perfluorodecane Sulfonate



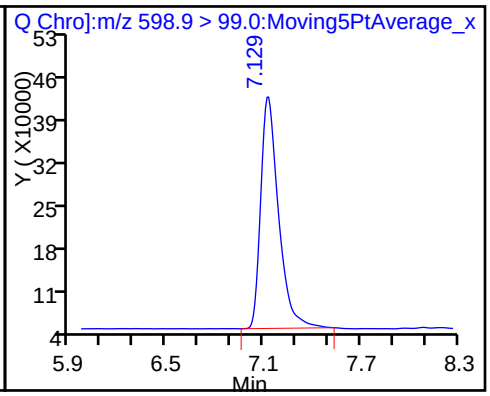
25 Perfluorodecane Sulfonate



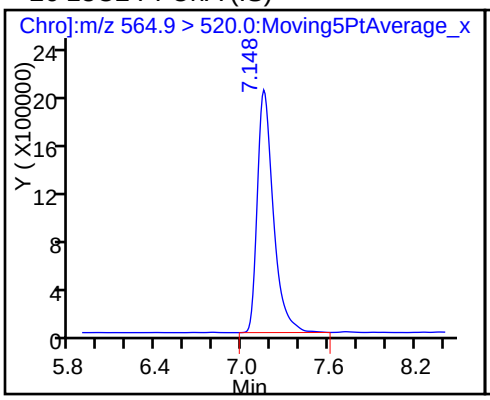
24 Perfluorodecane Sulfonic acid



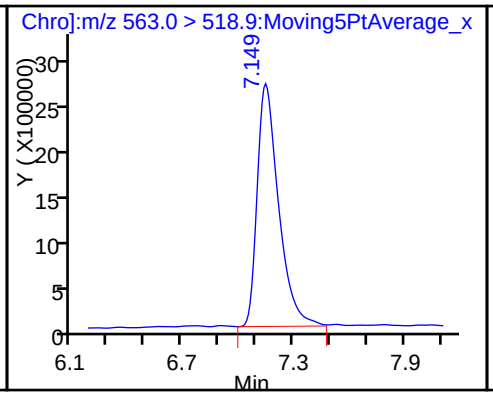
24 Perfluorodecane Sulfonic acid



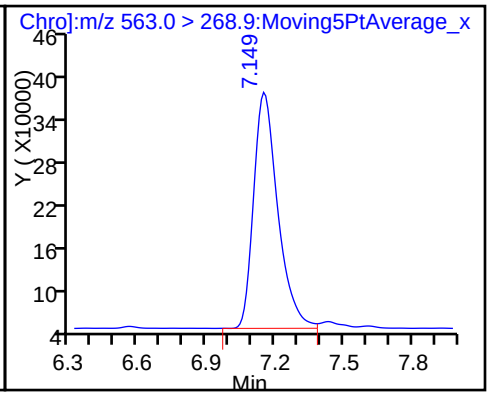
* 26 13C2 PFUnA (IS)



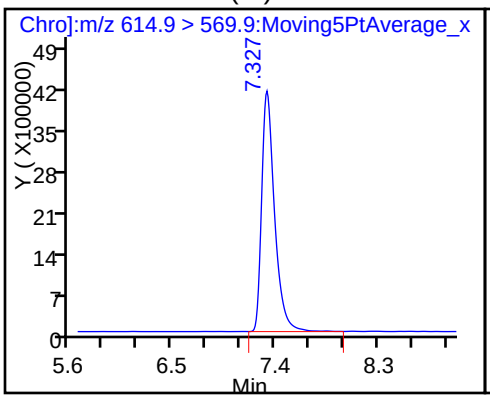
27 Perfluoroundecanoic acid



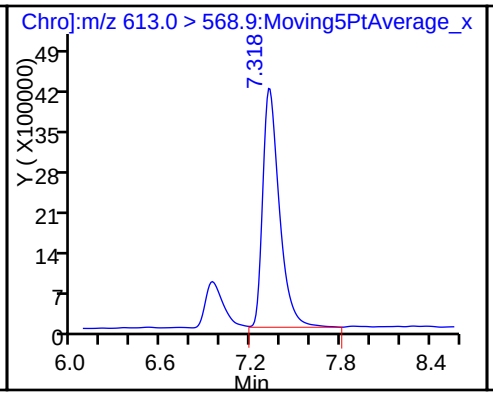
27 Perfluoroundecanoic acid



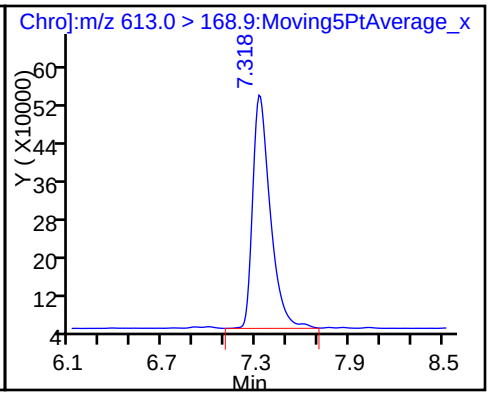
* 28 13C2 PFDoA (IS)



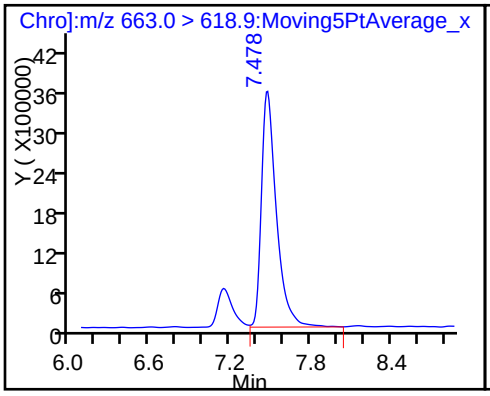
29 Perfluorododecanoic acid



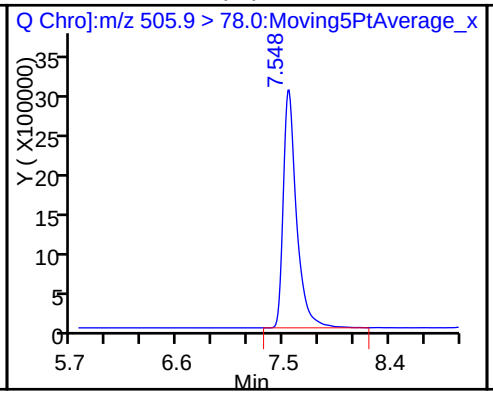
29 Perfluorododecanoic acid



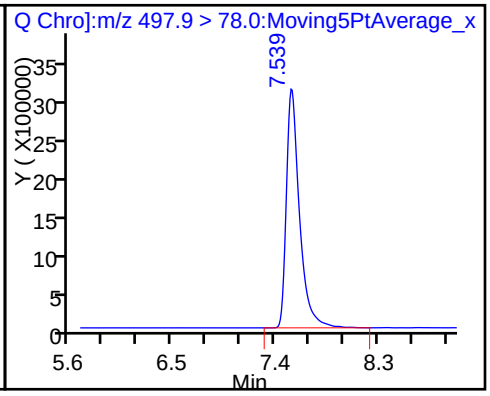
30 Perfluorotridecanoic acid



* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



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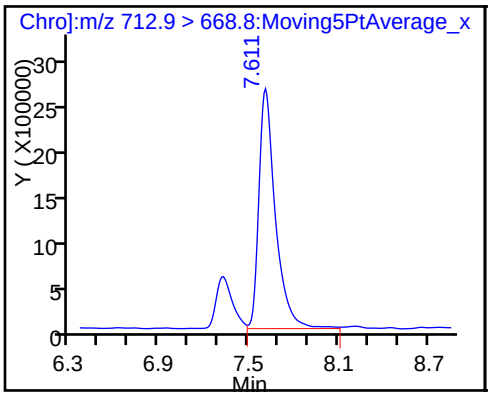
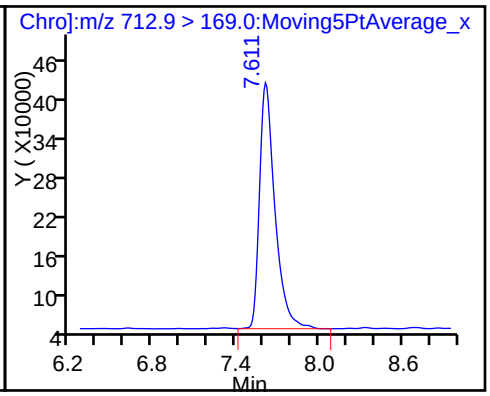


33 Perfluorotetradecanoic acid



Report Date: 29-Sep-2016 11:41:39 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

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Injection Date: 28-Sep-2016 23:56:36 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

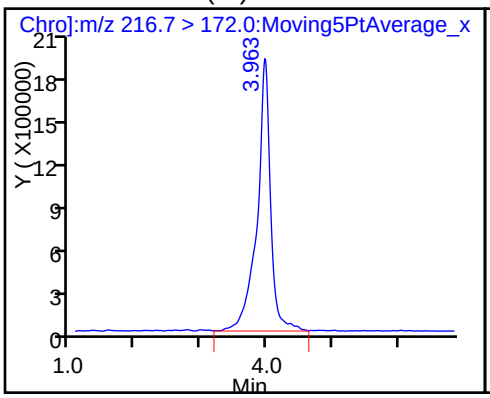
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 24

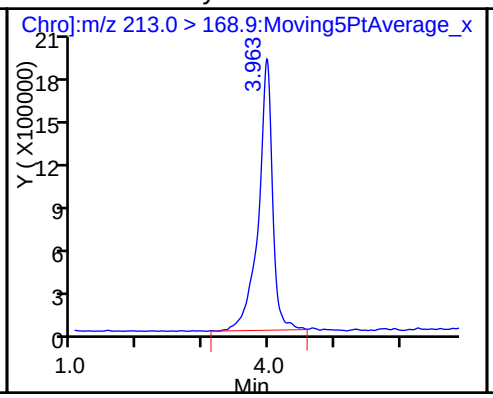
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

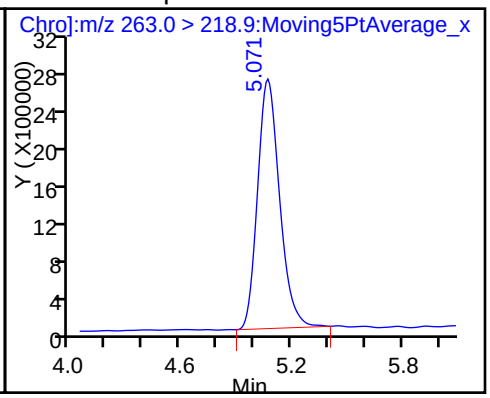
* 1 13C4 PFBA (IS)



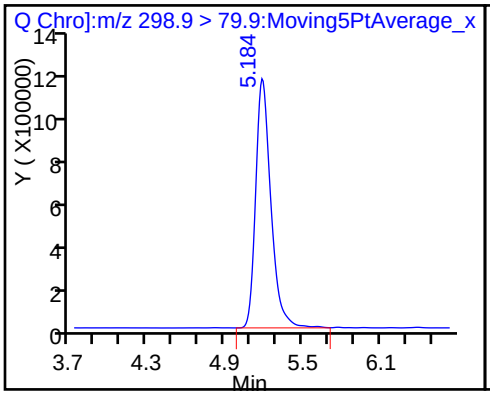
2 Perfluorobutyric acid



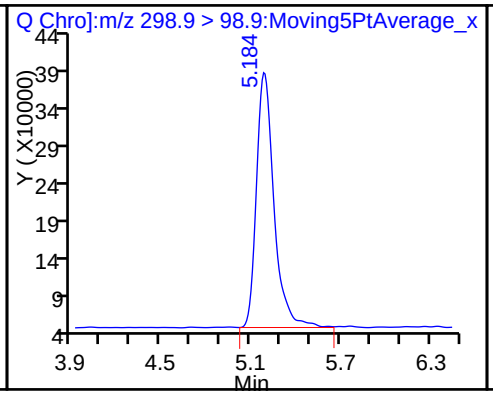
3 Perfluoropentanoic acid



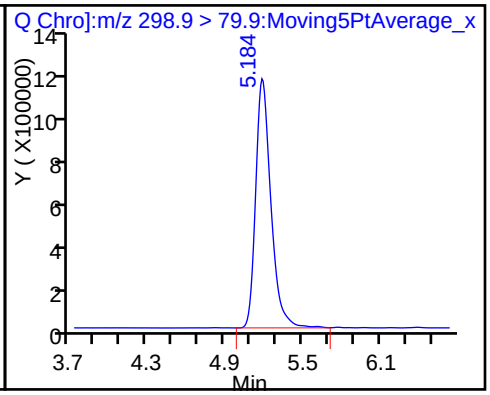
5 Perfluorobutanesulfonic acid



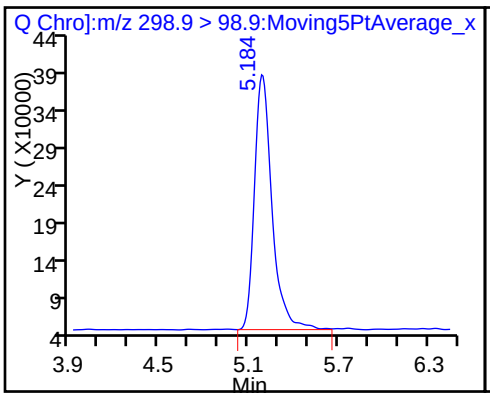
5 Perfluorobutanesulfonic acid



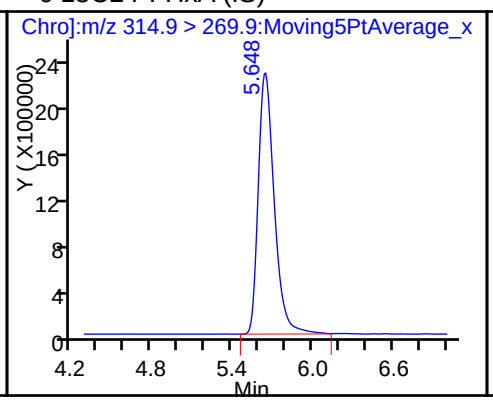
4 Perfluorobutane Sulfonate



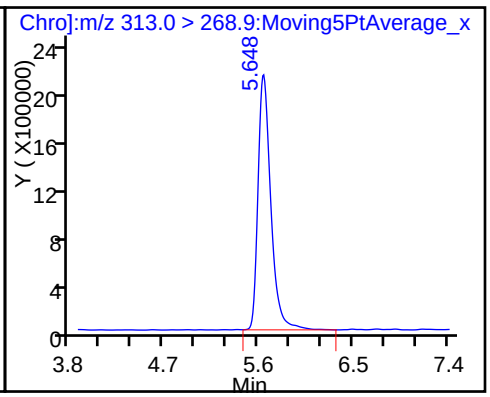
4 Perfluorobutane Sulfonate



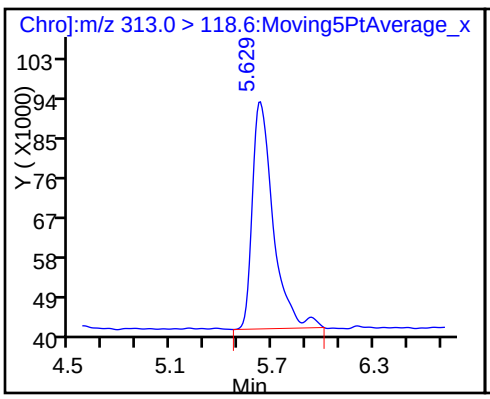
* 6 13C2 PFHxA (IS)



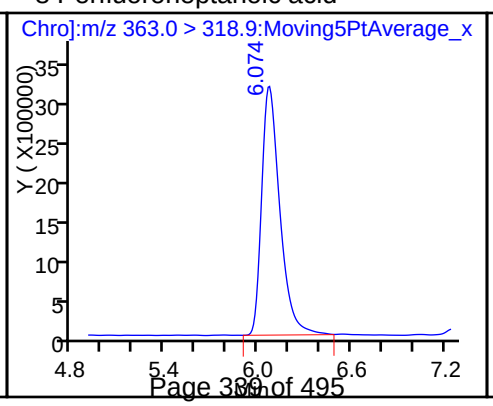
7 Perfluorohexanoic acid



7 Perfluorohexanoic acid



8 Perfluoroheptanoic acid



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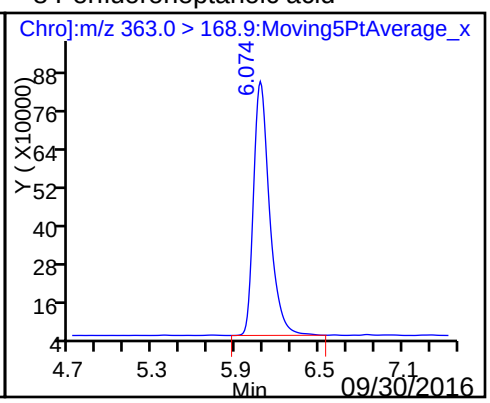
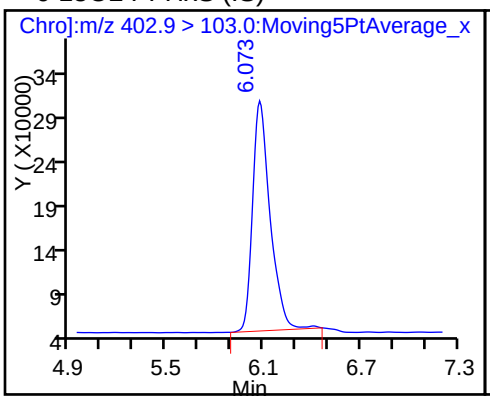
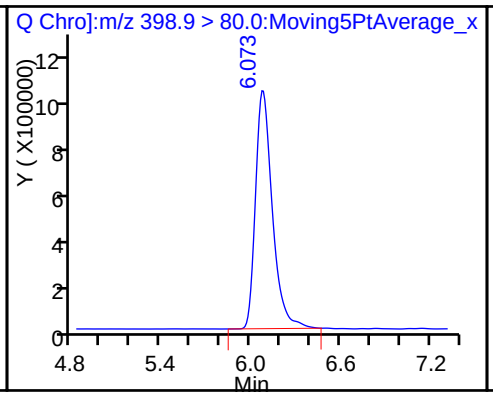


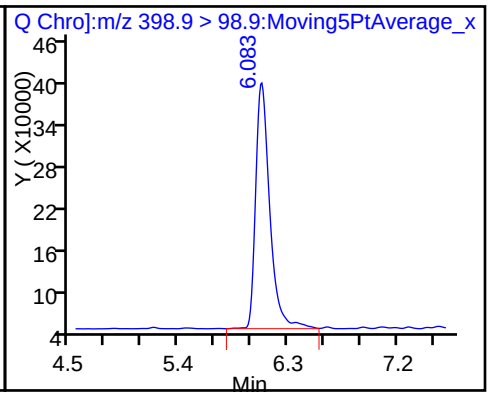
* 9 18O2 PFHxS (IS)



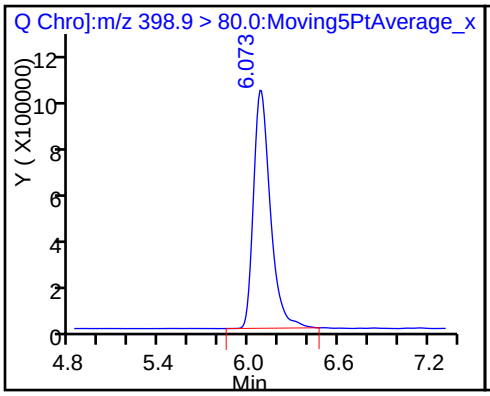
10 Perfluorohexane Sulfonate



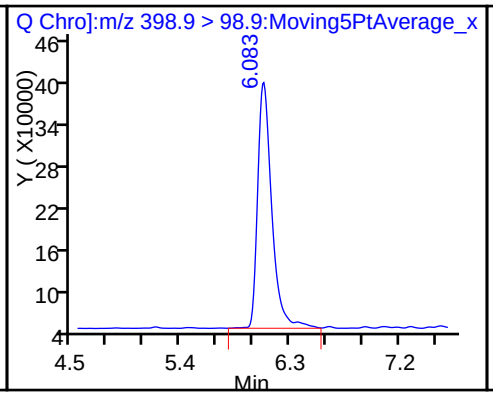
10 Perfluorohexane Sulfonate



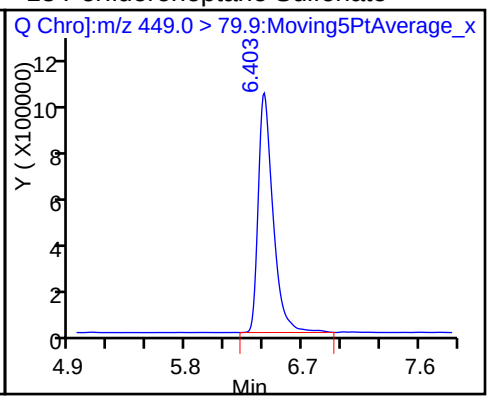
11 Perfluorohexanesulfonic acid



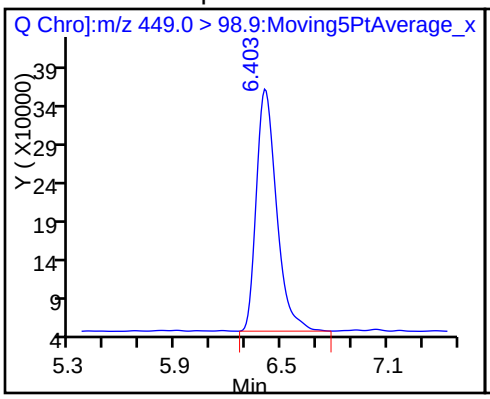
11 Perfluorohexanesulfonic acid



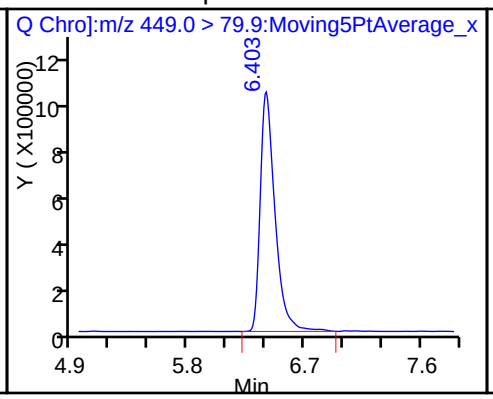
13 Perfluoroheptane Sulfonate



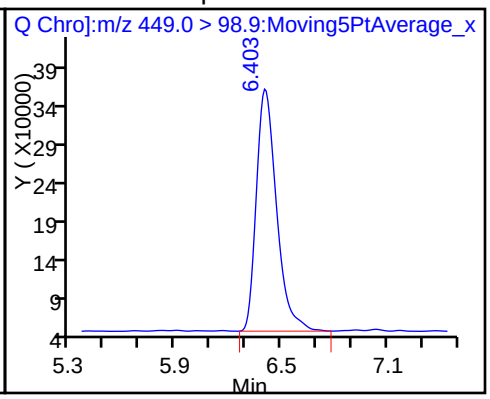
13 Perfluoroheptane Sulfonate



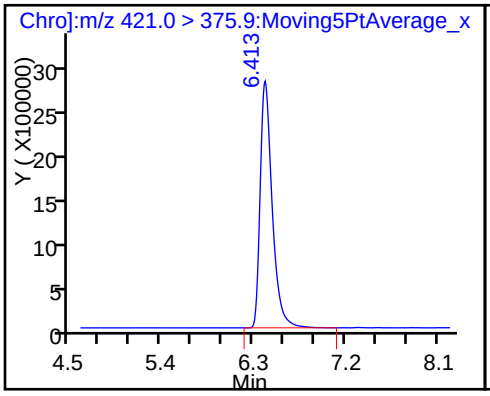
12 Perfluoroheptanesulfonic Acid



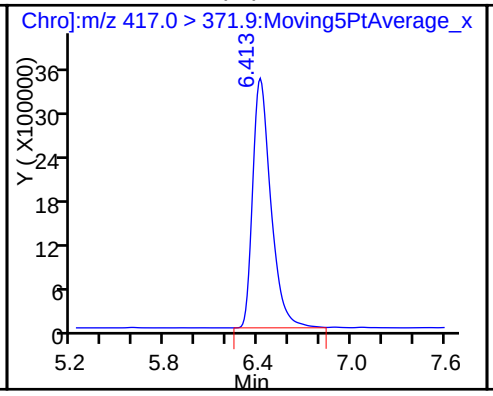
12 Perfluoroheptanesulfonic Acid



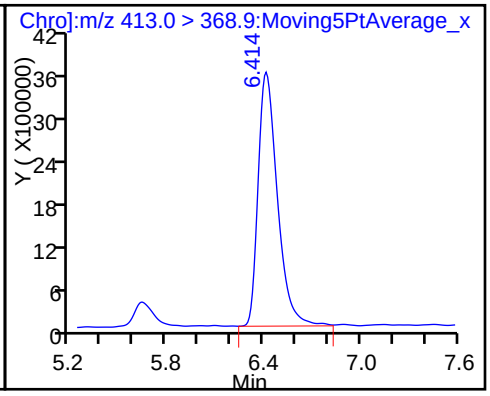
$ 14 13C8 PFOA



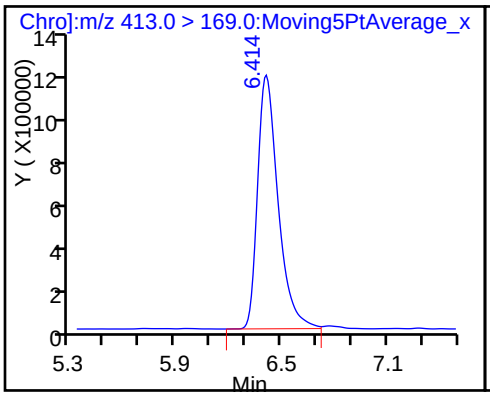
* 15 13C4 PFOA (IS)



16 Perfluorooctanoic acid



16 Perfluorooctanoic acid



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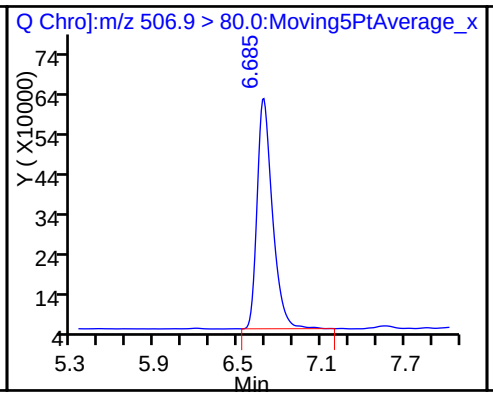

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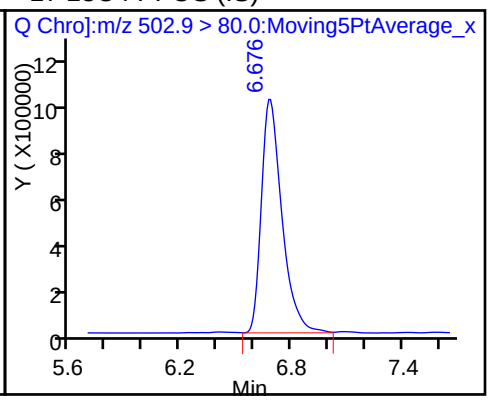
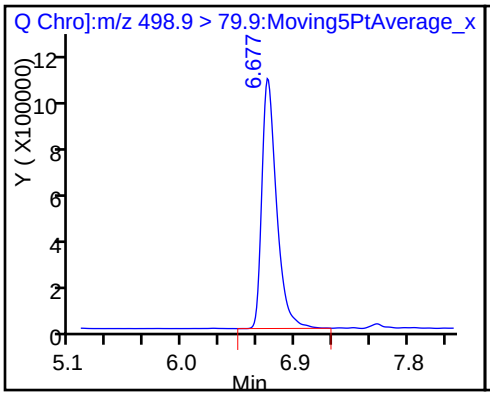
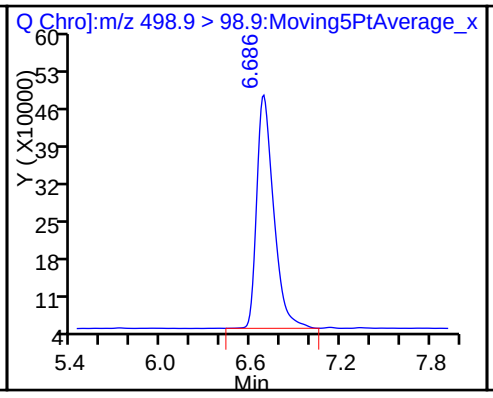


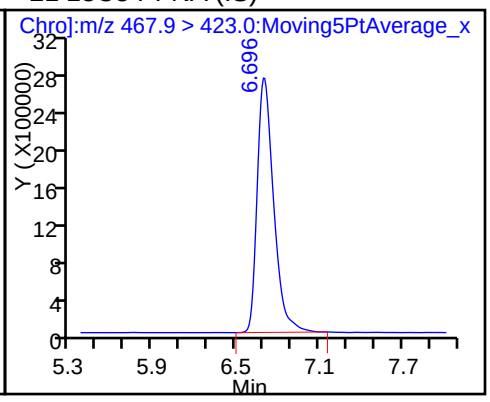
19 Perfluorooctane sulfonic acid



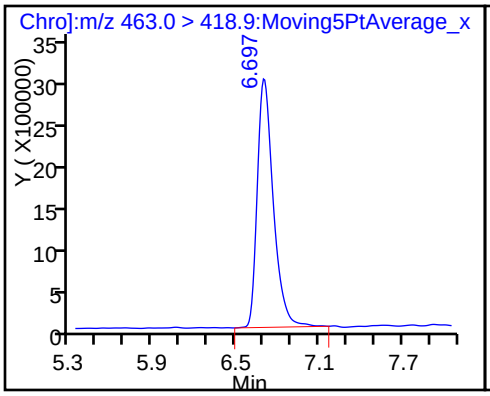
19 Perfluorooctane sulfonic acid



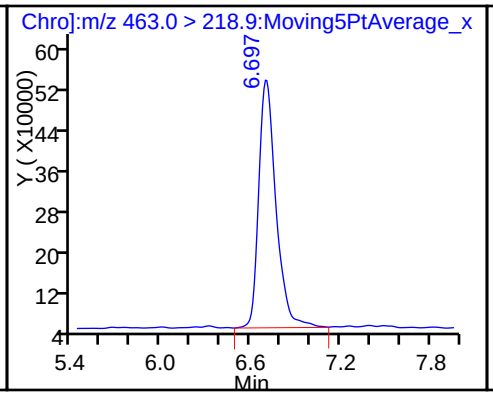
* 21 13C5 PFNA (IS)



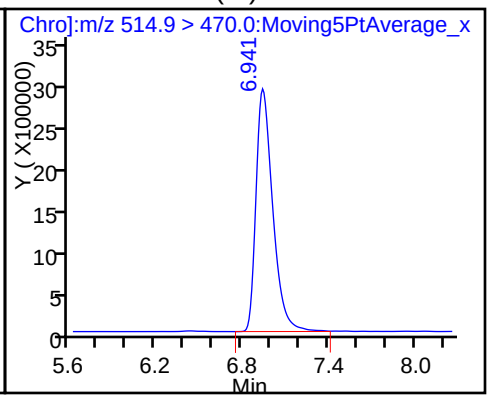
20 Perfluorononanoic acid



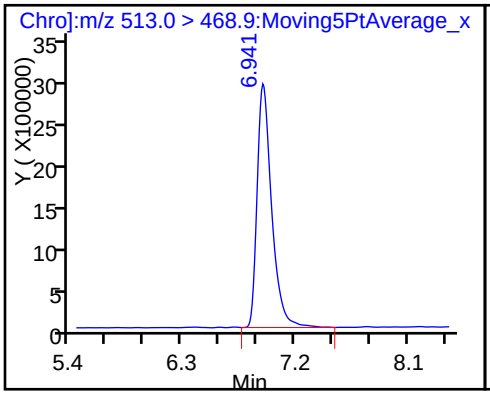
20 Perfluorononanoic acid



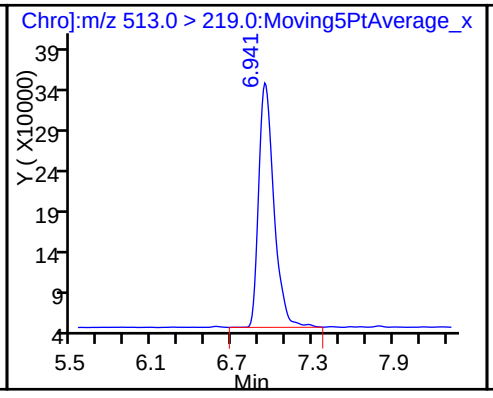
* 22 13C2 PFDA (IS)



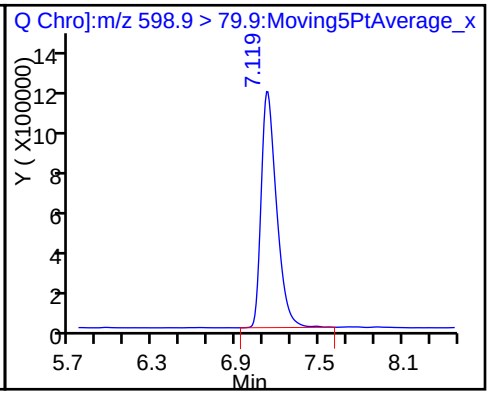
23 Perfluorodecanoic acid



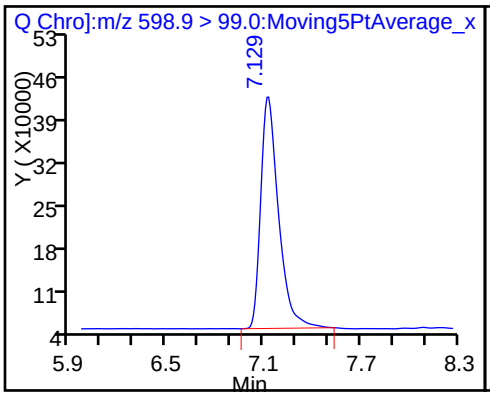
23 Perfluorodecanoic acid



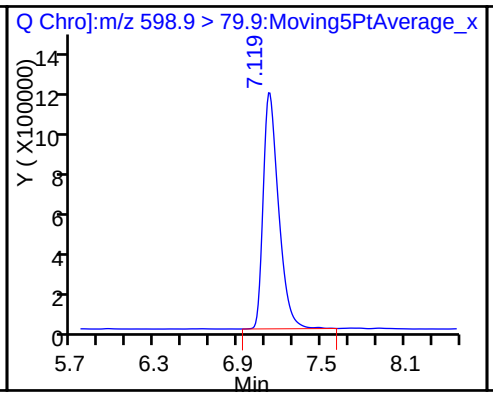
25 Perfluorodecane Sulfonate



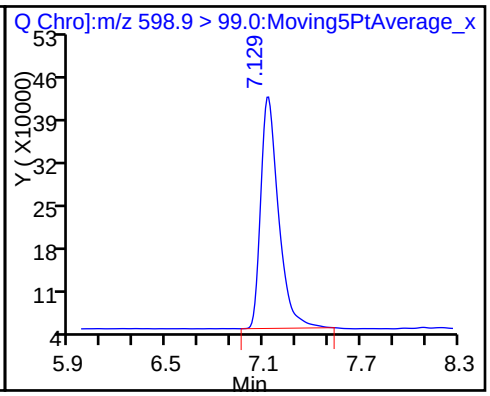
25 Perfluorodecane Sulfonate



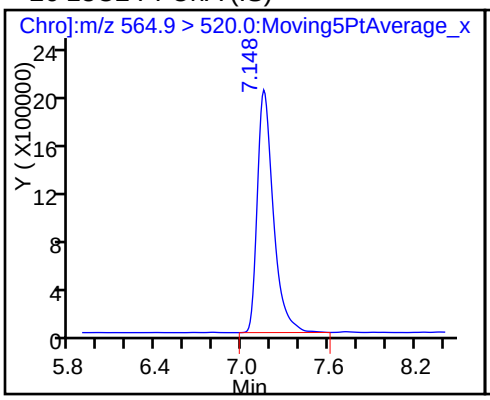
24 Perfluorodecane Sulfonic acid



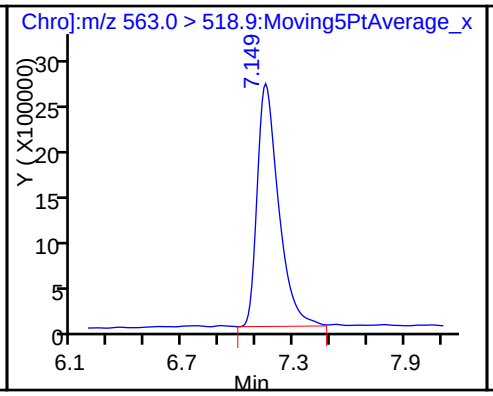
24 Perfluorodecane Sulfonic acid



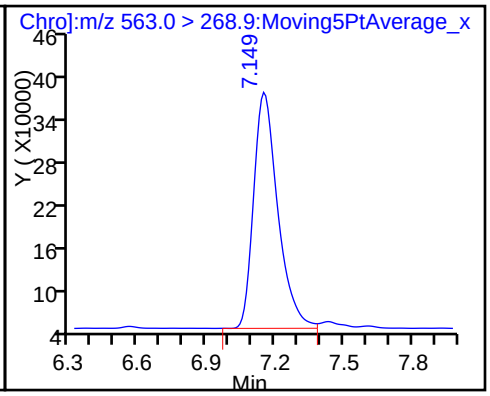
* 26 13C2 PFUnA (IS)



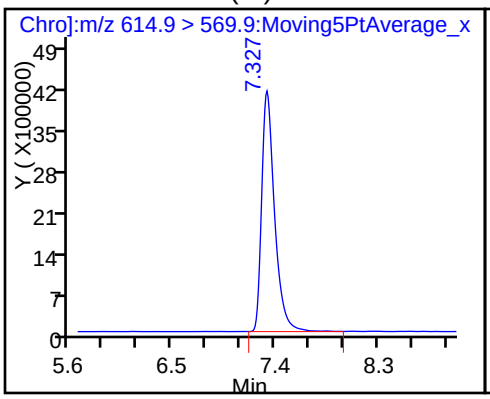
27 Perfluoroundecanoic acid



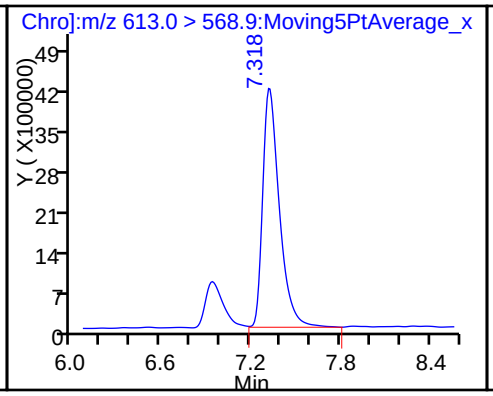
27 Perfluoroundecanoic acid



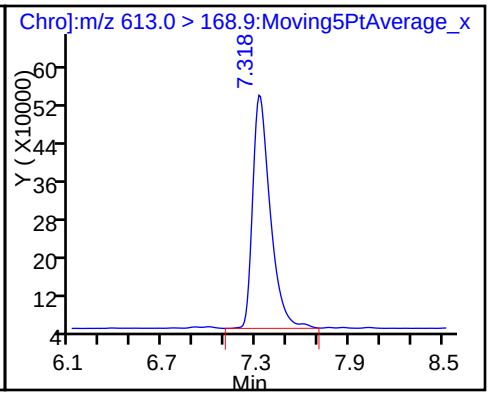
* 28 13C2 PFDoA (IS)



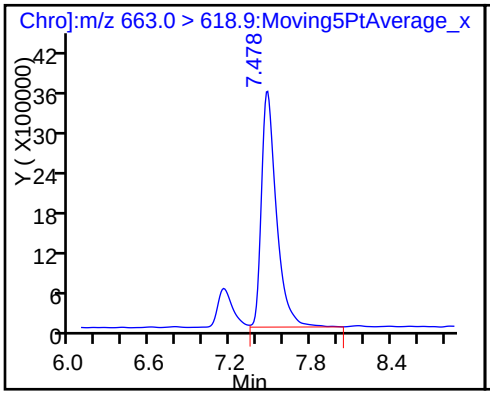
29 Perfluorododecanoic acid



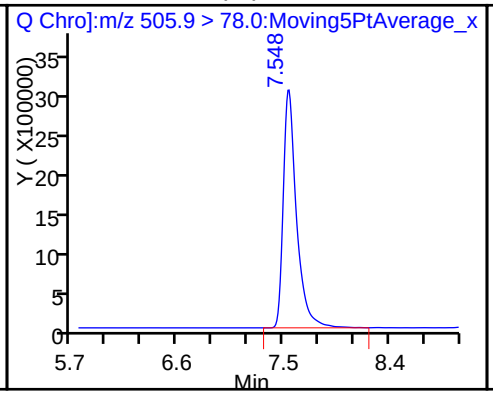
29 Perfluorododecanoic acid



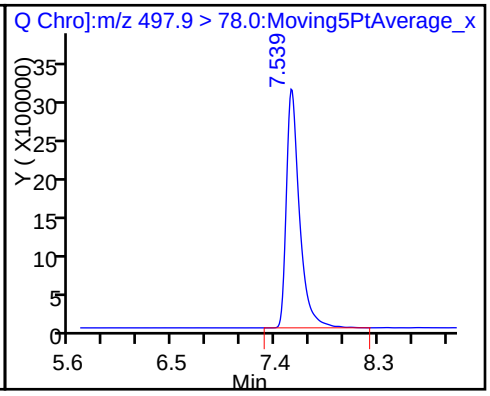
30 Perfluorotridecanoic acid



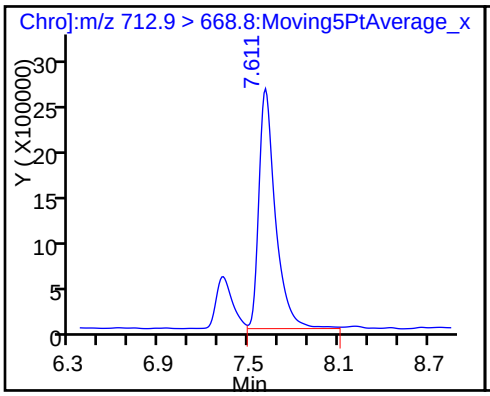
* 31 13C8 FOSA (IS)



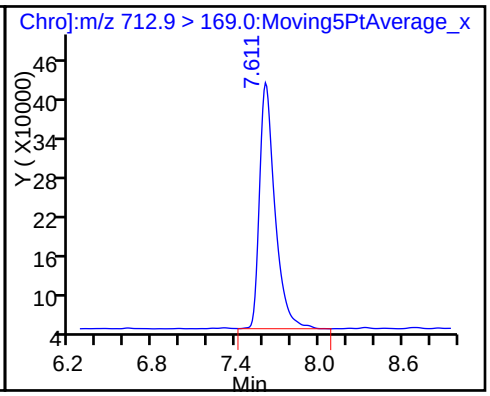
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab Sample ID: CCV 280-344280/35 Calibration Date: 09/29/2016 02:12

Instrument ID: LC_LCMS5 Calib Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calib End Date: 09/20/2016 17:57

Lab File ID: PC516I028111.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.022		4.54	5.00	-9.2	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.270		5.82	5.00	16.4	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.562		4.10	4.43	-7.4	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.562		4.10	4.43	-7.4	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9762		5.20	5.00	4.0	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.668		4.61	4.73	-2.5	30.0
Perfluorohexanesulfonic acid	Lin2		3.668		4.61	4.73	-2.5	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9221		4.68	5.00	-6.4	30.0
Perfluoroheptane Sulfonate	Lin2		1.086		4.37	4.76	-8.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.086		4.37	4.76	-8.3	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.174		5.60	5.00	12.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.100		4.21	4.78	-11.8	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.137		4.91	5.00	-1.8	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.025		4.93	5.00	-1.3	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.143		4.39	4.83	-8.9	30.0
Perfluorodecane Sulfonic acid	Lin2		1.143		4.39	4.83	-8.9	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.452		5.04	5.00	0.8	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.039		5.12	5.00	2.3	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9303		5.42	5.00	8.3	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.162		5.47	5.00	9.3	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6681		4.83	5.00	-3.4	30.0
13C8 PFOA	Lin2		0.7335		4.80	5.00	-4.0	30.0
13C8 PFOS	Lin2		0.4917		4.50	4.78	-6.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028111.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 29-Sep-2016 02:12:11 ALS Bottle#: 0 Worklist Smp#: 35
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:31:16

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.029	4.029	0.0		28643288	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.030	4.030	0.0	1.000	14631713	4.54			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.119	5.119	0.0	0.900	13064451	5.82			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.232	5.232	0.0	0.856	5055345	4.10			
298.9 > 98.9	5.232	5.232	0.0	0.856	1528526		3.31(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.232	5.232	0.0	0.856	5055345	4.10			
298.9 > 98.9	5.232	5.232	0.0	0.856	1528526		3.31(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.686	5.686	0.0		20577205	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.686	5.686	0.0	1.000	10043878	5.20			
313.0 > 118.6	5.686	5.686	0.0	1.000	256140		39.21(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.111	6.111	0.0		2369124	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.111	0.0	1.000	4340379	4.61			R
398.9 > 98.9	6.111	6.111	0.0	1.000	1669457		2.60(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.111	6.111	0.0	1.000	4340379	4.61			
398.9 > 98.9	6.111	6.111	0.0	1.000	1669457		2.60(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.112	6.112	0.0	0.949	13843780	4.68			
363.0 > 168.9	6.112	6.112	0.0	0.949	3566125		3.88(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.441	6.441	0.0	0.961	4523605	4.37			
449.0 > 98.9	6.441	6.441	0.0	0.961	1378478		3.28(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.441	6.441	0.0	0.961	4523605	4.37			
449.0 > 98.9	6.441	6.441	0.0	0.961	1378478		3.28(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.442	6.442	0.0	1.000	11011964	4.80			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.442	6.442	0.0		30027673	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.442	6.442	0.0	1.000	17620391	5.60			
413.0 > 169.0	6.442	6.442	0.0	1.000	5412253		3.26(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.705	6.705	0.0		8362115	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.705	6.705	0.0	1.000	4594924	4.21			R
498.9 > 98.9	6.705	6.705	0.0	1.000	1754639		2.62(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.704	6.704	0.0	1.000	2055843	4.49			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.725	6.725	0.0		24487380	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.725	6.725	0.0	1.000	13920012	4.91			
463.0 > 218.9	6.725	6.725	0.0	1.000	2221568		6.27(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.960	6.960	0.0		26906658	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.960	6.960	0.0	1.000	13792763	4.93			R
513.0 > 219.0	6.960	6.960	0.0	1.000	1346338		10.24(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.138	7.138	0.0	1.065	4823043	4.39			
598.9 > 99.0	7.138	7.138	0.0	1.065	1427574		3.38(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.138	7.138	0.0	1.065	4823043	4.39			
598.9 > 99.0	7.138	7.138	0.0	1.065	1427574		3.38(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.167	7.167	0.0		16926053	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.167	7.167	0.0	1.000	12285450	5.04			R
563.0 > 268.9	7.167	7.167	0.0	1.000	1564954		7.85(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.346	7.346	0.0		35183810	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.346	7.346	0.0	1.000	18273278	5.12			
613.0 > 168.9	7.346	7.346	0.0	1.000	2201003		8.30(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.497	7.497	0.0	1.021	16366001	5.42			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.567	7.567	0.0		24960653	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.568	7.568	0.0	1.000	14499988	5.47			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.630	7.630	0.0	1.039	11752773	4.83			
712.9 > 169.0	7.630	7.630	0.0	1.039	1839330		6.39(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 10.00	Units: uL
PFC-LCS_00085	Amount Added: 10.00	Units: uL

Report Date: 29-Sep-2016 11:42:15 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028111.d

Injection Date: 29-Sep-2016 02:12:11 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

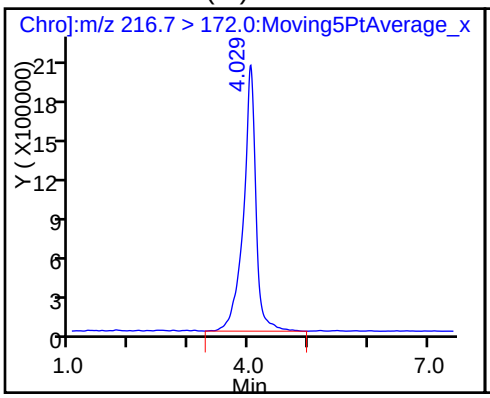
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 35

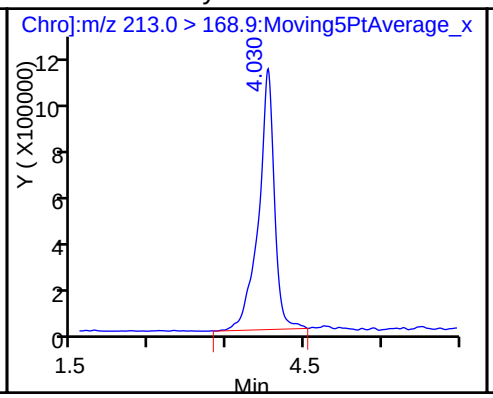
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

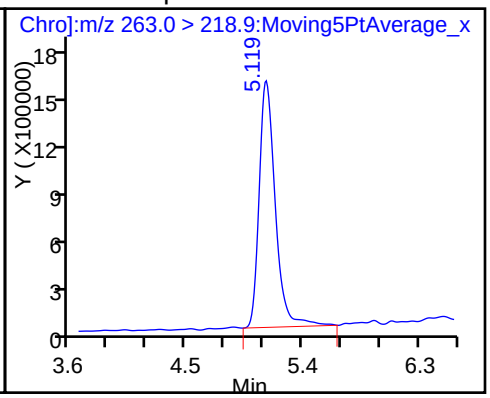
* 1 13C4 PFBA (IS)



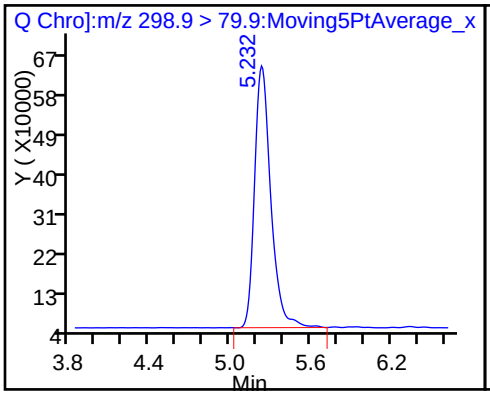
2 Perfluorobutyric acid



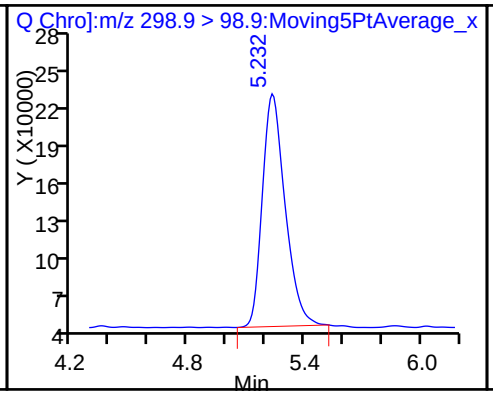
3 Perfluoropentanoic acid



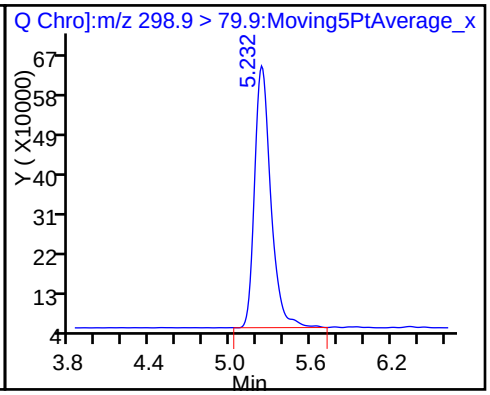
5 Perfluorobutanesulfonic acid



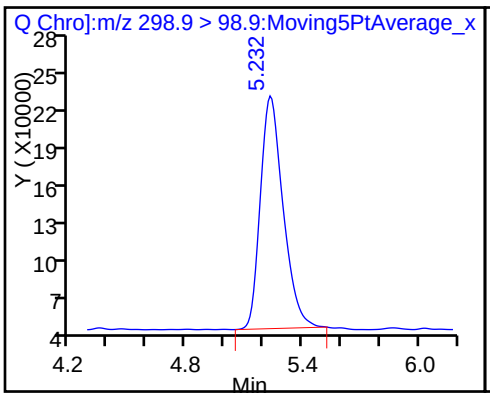
5 Perfluorobutanesulfonic acid



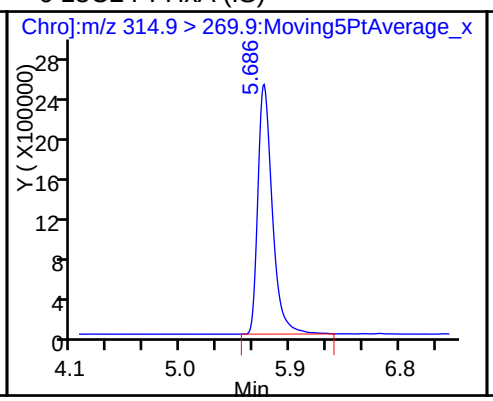
4 Perfluorobutane Sulfonate



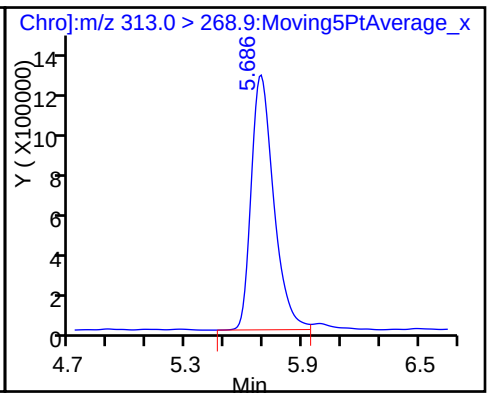
4 Perfluorobutane Sulfonate



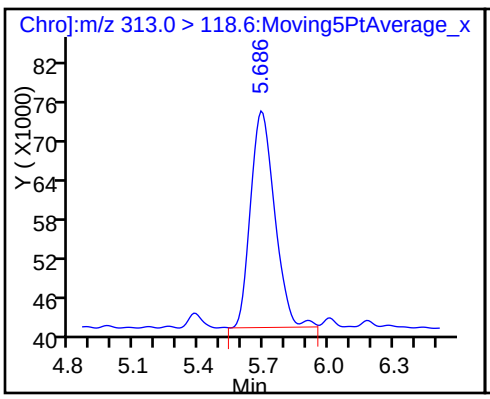
* 6 13C2 PFHxA (IS)



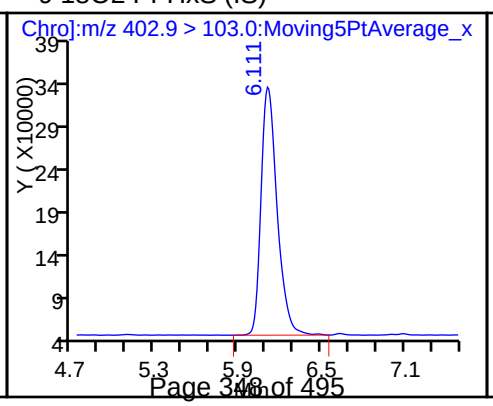
7 Perfluorohexanoic acid



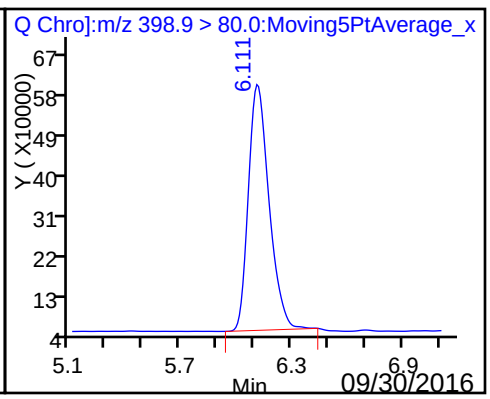
7 Perfluorohexanoic acid



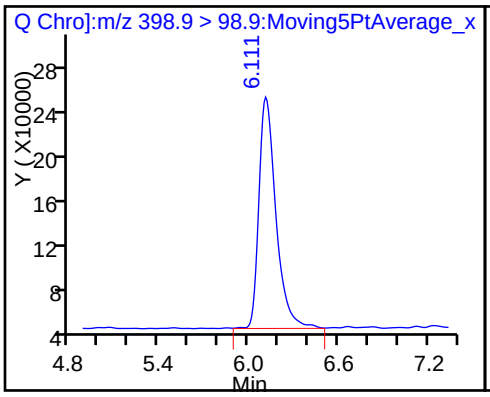
* 9 18O2 PFHxS (IS)



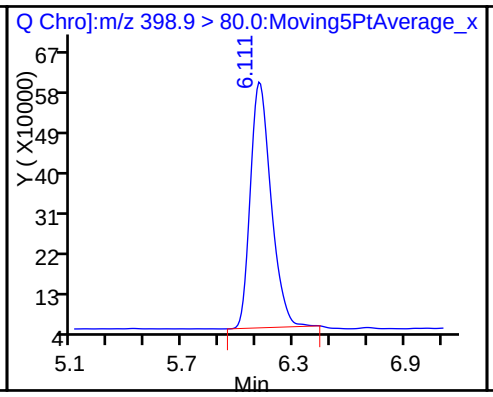
10 Perfluorohexane Sulfonate



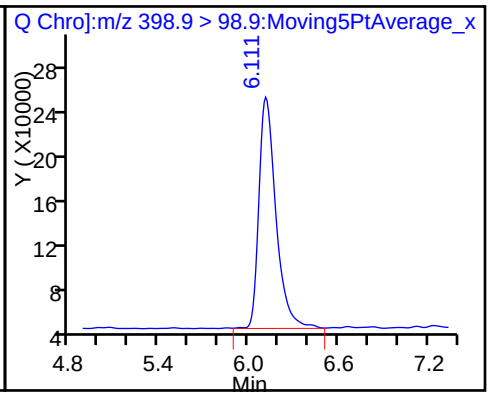
10 Perfluorohexane Sulfonate



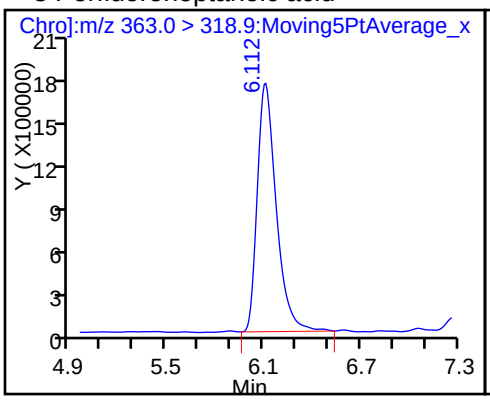
11 Perfluorohexanesulfonic acid



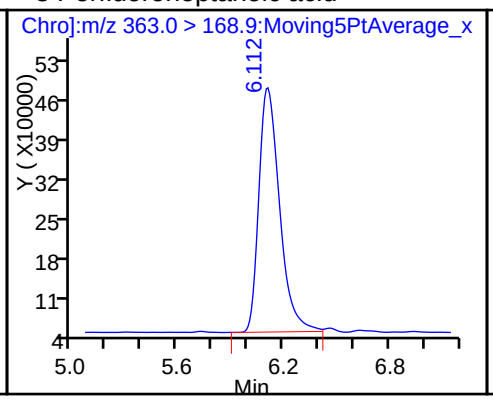
11 Perfluorohexanesulfonic acid



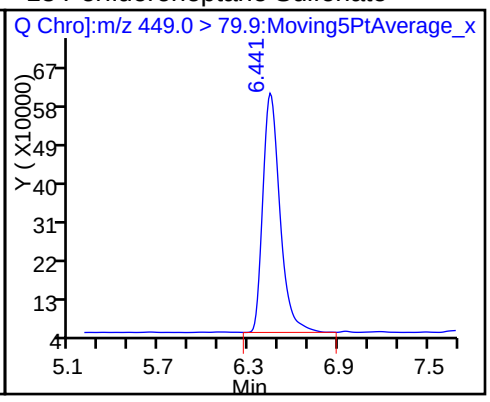
8 Perfluoroheptanoic acid



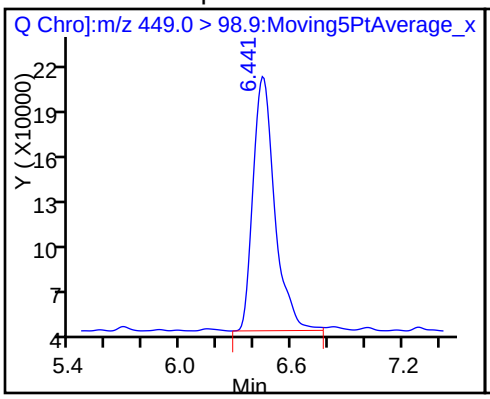
8 Perfluoroheptanoic acid



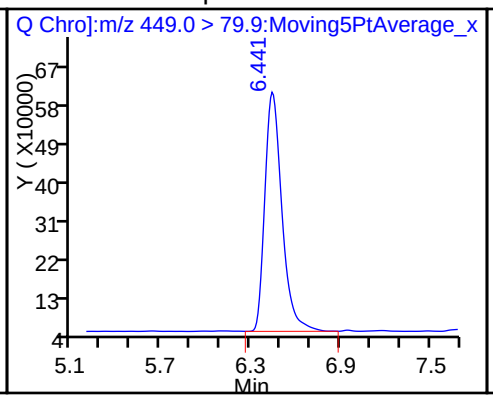
13 Perfluoroheptane Sulfonate



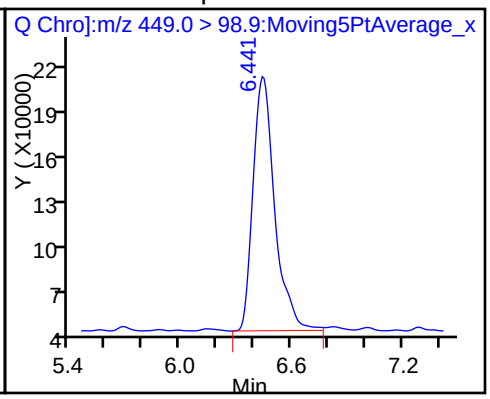
13 Perfluoroheptane Sulfonate



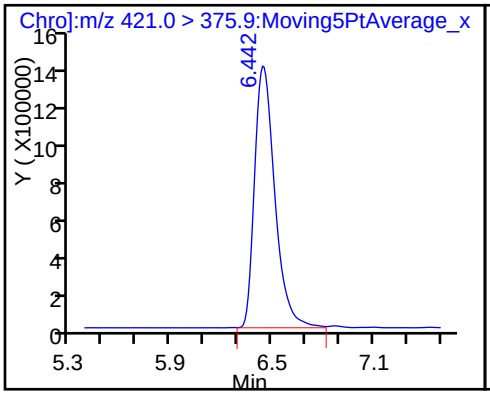
12 Perfluoroheptanesulfonic Acid



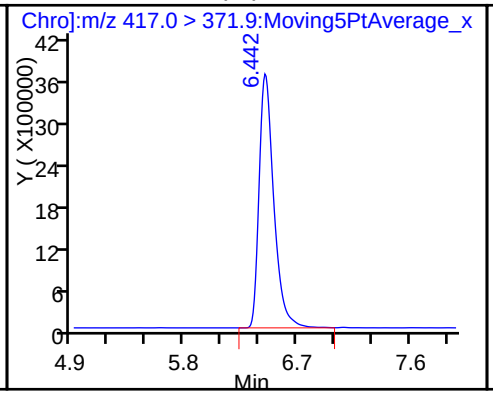
12 Perfluoroheptanesulfonic Acid



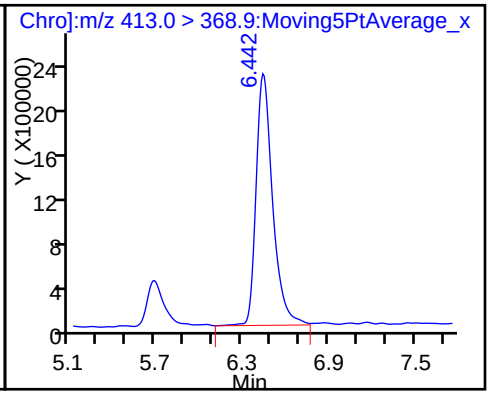
$ 14 13C8 PFOA



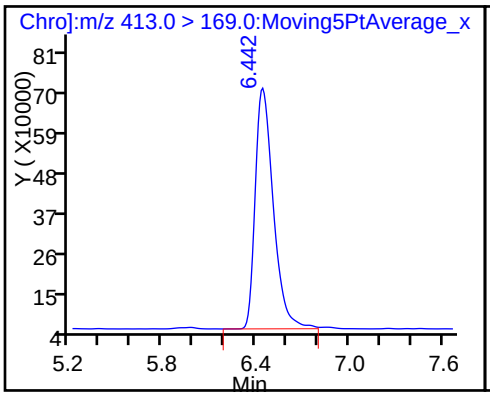
* 15 13C4 PFOA (IS)



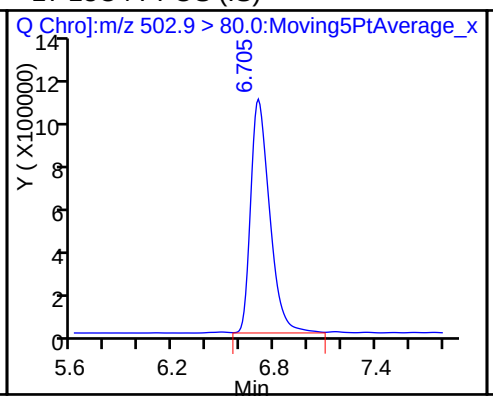
16 Perfluorooctanoic acid



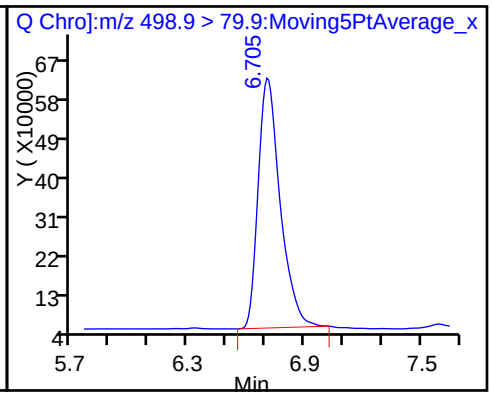
16 Perfluorooctanoic acid



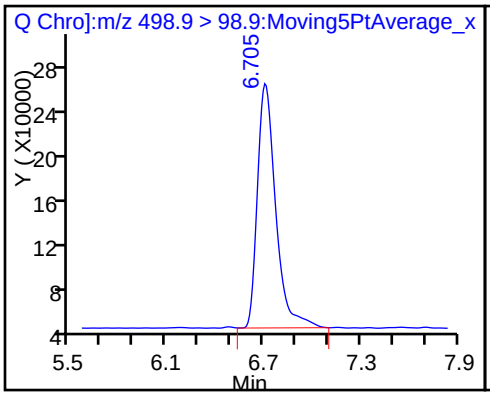
* 17 13C4 PFOS (IS)



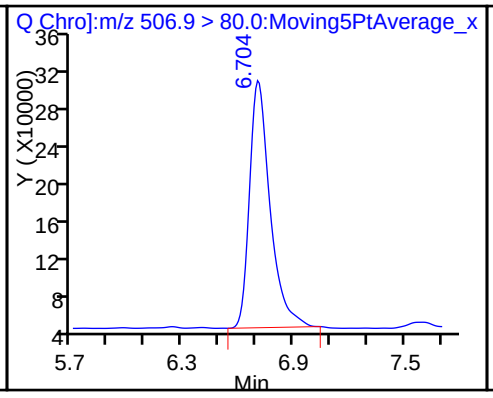
19 Perfluorooctane sulfonic acid



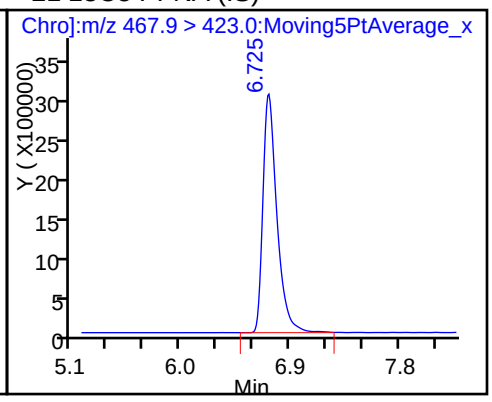
19 Perfluorooctane sulfonic acid



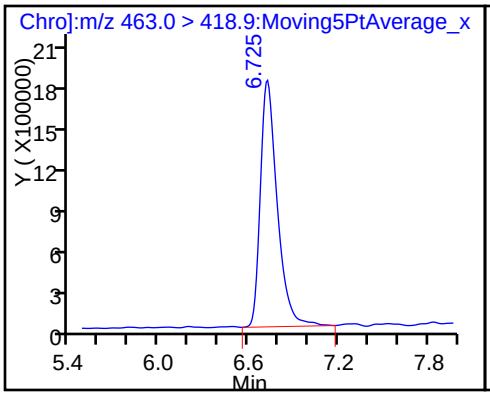
$ 18 13C8 PFOS



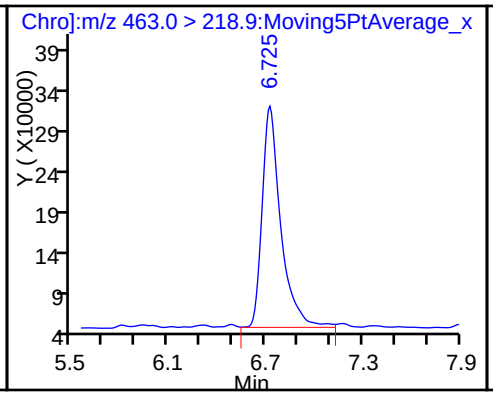
* 21 13C5 PFNA (IS)



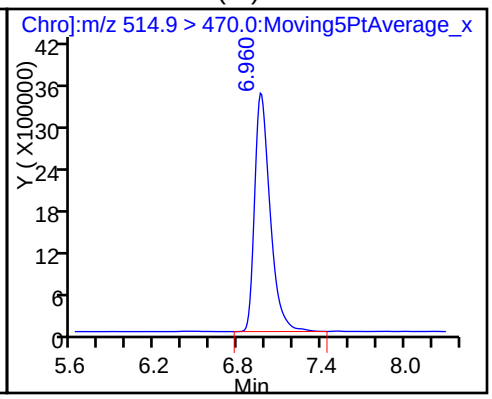
20 Perfluorononanoic acid



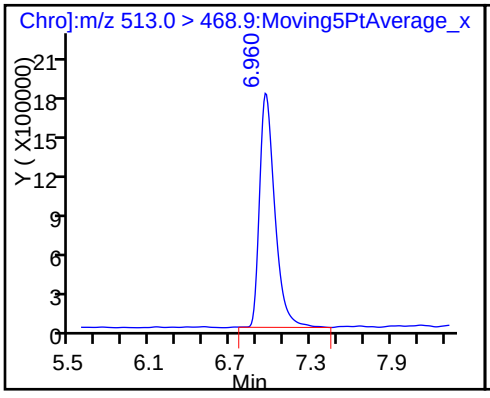
20 Perfluorononanoic acid



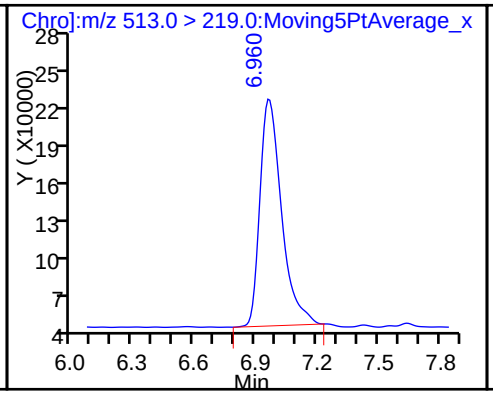
* 22 13C2 PFDA (IS)



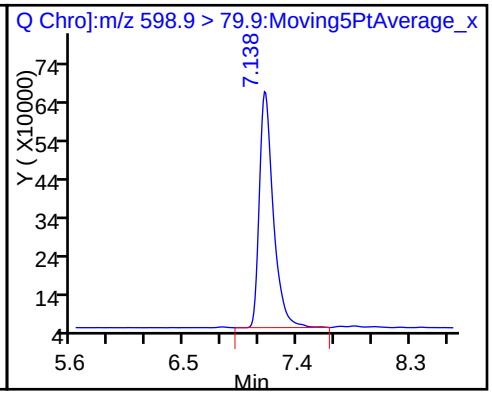
23 Perfluorodecanoic acid



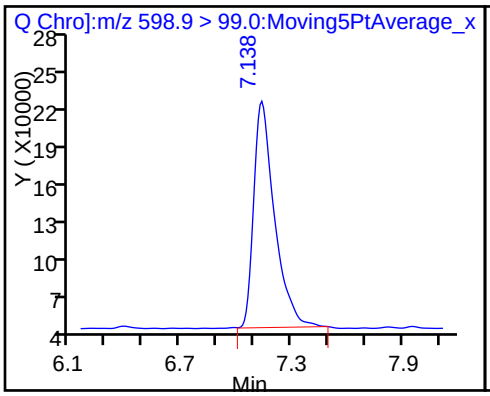
23 Perfluorodecanoic acid



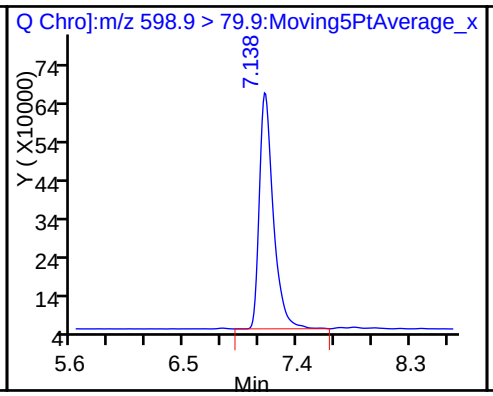
25 Perfluorodecane Sulfonate



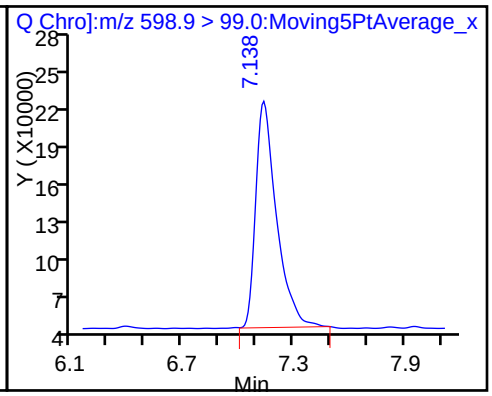
25 Perfluorodecane Sulfonate



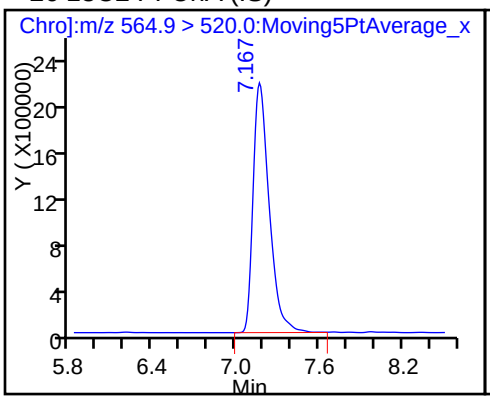
24 Perfluorodecane Sulfonic acid



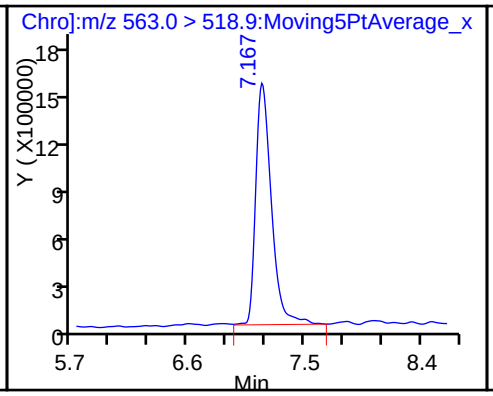
24 Perfluorodecane Sulfonic acid



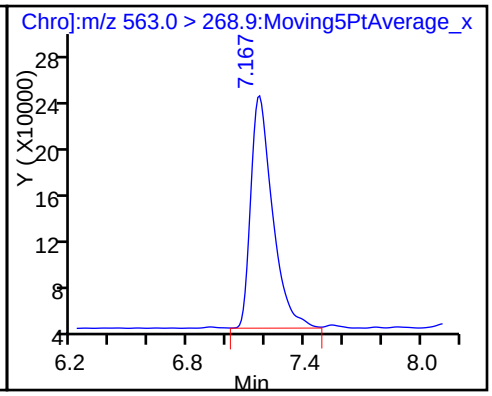
* 26 13C2 PFUnA (IS)



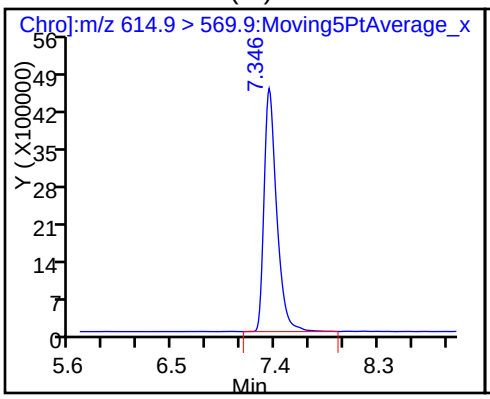
27 Perfluoroundecanoic acid



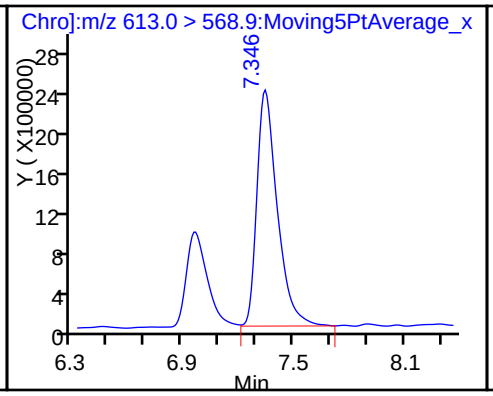
27 Perfluoroundecanoic acid



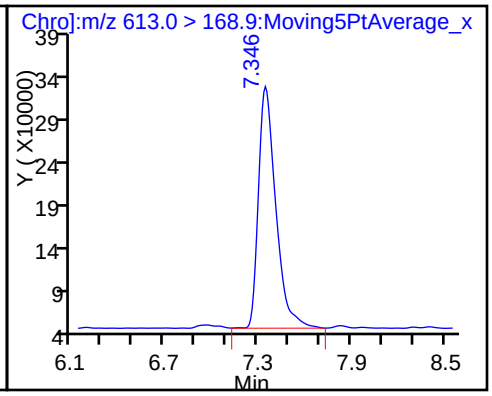
* 28 13C2 PFDoA (IS)



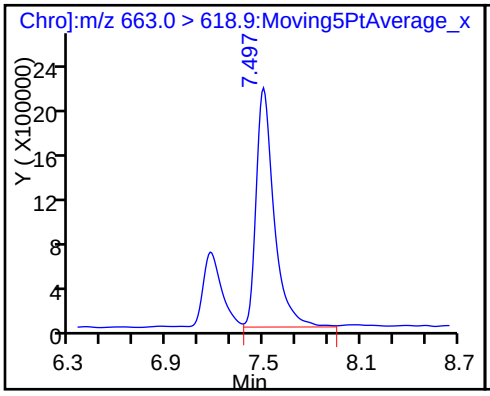
29 Perfluorododecanoic acid



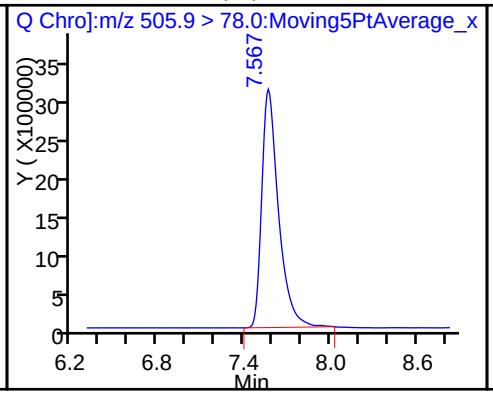
29 Perfluorododecanoic acid



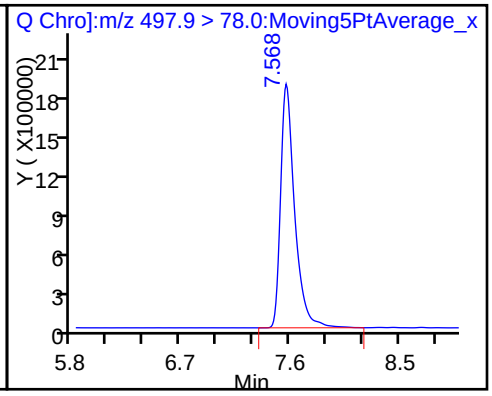
30 Perfluorotridecanoic acid



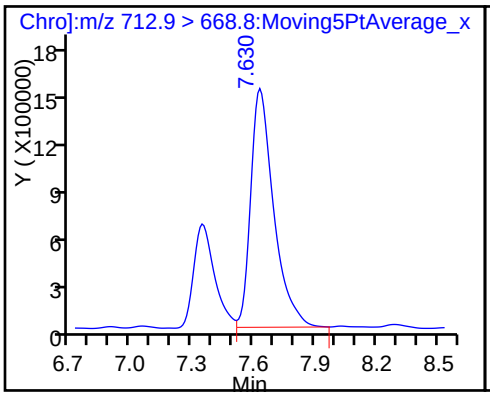
* 31 13C8 FOSA (IS)



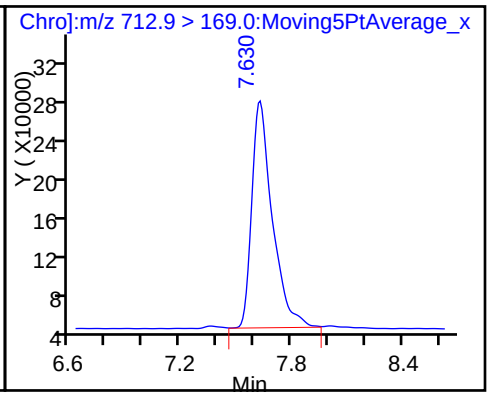
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab Sample ID: CCV 280-344280/46 Calibration Date: 09/29/2016 04:27

Instrument ID: LC_LCMS5 Calib Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calib End Date: 09/20/2016 17:57

Lab File ID: PC516I028122.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.030		9.13	10.0	-8.7	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.127		10.3	10.0	3.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.408		7.89	8.85	-10.8	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.408		7.89	8.85	-10.8	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9054		9.66	10.0	-3.4	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8989		9.11	10.0	-8.9	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.695		9.28	9.45	-1.8	30.0
Perfluorohexanesulfonic acid	Lin2		3.695		9.28	9.45	-1.8	30.0
Perfluoroheptane Sulfonate	Lin2		1.053		8.43	9.52	-11.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.053		8.43	9.52	-11.5	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.068		10.3	10.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.204		9.19	9.55	-3.8	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.044		8.97	10.0	-10.3	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9704		9.32	10.0	-6.8	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.140		8.76	9.65	-9.2	30.0
Perfluorodecane Sulfonic acid	Lin2		1.140		8.76	9.65	-9.2	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.406		9.78	10.0	-2.2	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.010		10.0	10.0	0.0	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8998		10.5	10.0	5.3	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.040		9.78	10.0	-2.2	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6834		9.90	10.0	-1.0	30.0
13C8 PFOA	Lin2		0.8302		10.9	10.0	9.4	30.0
13C8 PFOS	Lin2		0.5889		10.8	9.56	13.2	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028122.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 29-Sep-2016 04:27:39 ALS Bottle#: 0 Worklist Smp#: 46
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:47 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:39:16

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.859	3.859	0.0		26944642	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.859	3.859	0.0	1.000	27748251	9.13			
3 Perfluoropentanoic acid									
263.0 > 218.9	4.976	4.976	0.0	0.896	23457512	10.3			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.099	5.099	0.0	0.850	9314904	7.89			
298.9 > 98.9	5.109	5.099	0.010	0.852	2842204		3.28(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.099	5.099	0.0	0.850	9314904	7.89			
298.9 > 98.9	5.109	5.099	0.010	0.852	2842204		3.28(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.553	5.553	0.0		20817529	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.553	5.553	0.0	1.000	18847439	9.66			
313.0 > 118.6	5.553	5.553	0.0	1.000	595152		31.67(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.997	5.997	0.0		2258904	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	5.998	5.998	0.0	1.000	8338394	9.28			R
398.9 > 98.9	5.998	5.998	0.0	1.000	3274128		2.55(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	5.998	5.998	0.0	1.000	8338394	9.28			
398.9 > 98.9	5.998	5.998	0.0	1.000	3274128		2.55(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	5.979	5.979	0.0	0.945	27543372	9.11			
363.0 > 168.9	5.979	5.979	0.0	0.945	6982610		3.94(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.328	6.328	0.0	0.957	8254475	8.43			
449.0 > 98.9	6.328	6.328	0.0	0.957	2591288		3.19(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.328	6.328	0.0	0.957	8254475	8.43			
449.0 > 98.9	6.328	6.328	0.0	0.957	2591288		3.19(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.328	6.328	0.0	1.000	25439596	10.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.328	6.328	0.0		30641318	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.328	6.328	0.0	1.000	32737954	10.3			
413.0 > 169.0	6.328	6.328	0.0	1.000	9944109		3.29(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.610	6.610	0.0		7870118	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.610	6.610	0.0	1.000	9464554	9.19			R
498.9 > 98.9	6.610	6.610	0.0	1.000	3695579		2.56(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.610	6.610	0.0	1.000	4634849	10.8			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.630	6.630	0.0		24423378	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.630	6.630	0.0	1.000	25490497	8.97			
463.0 > 218.9	6.630	6.630	0.0	1.000	4026630		6.33(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.884	6.884	0.0		26401780	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.884	6.884	0.0	1.000	25620477	9.32			R
513.0 > 219.0	6.874	6.884	-0.010	0.999	2610809		9.81(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.072	7.072	0.0	1.070	9057171	8.76			
598.9 > 99.0	7.072	7.072	0.0	1.070	2853912		3.17(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.072	7.072	0.0	1.070	9057171	8.76			
598.9 > 99.0	7.072	7.072	0.0	1.070	2853912		3.17(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.091	7.091	0.0		16918608	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.092	7.092	0.0	1.000	23782192	9.78			R
563.0 > 268.9	7.092	7.092	0.0	1.000	3148384		7.55(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.280	7.280	0.0	1.000	35032341	10.0			
613.0 > 168.9	7.289	7.280	0.009	1.001	4241733		8.26(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.280	7.280	0.0		34680593	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.441	7.441	0.0	1.022	31205879	10.5			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.482	7.482	0.0	1.000	26099128	9.78			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.481	7.481	0.0		25088644	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.582	7.582	0.0	1.042	23699981	9.90			
712.9 > 169.0	7.582	7.582	0.0	1.042	3704142		6.40(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00085	Amount Added:	20.00	Units: uL
PFC_Surr_00023	Amount Added:	20.00	Units: uL
PFC-IS_00023	Amount Added:	20.00	Units: uL

Report Date: 29-Sep-2016 11:42:48 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028122.d

Injection Date: 29-Sep-2016 04:27:39 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

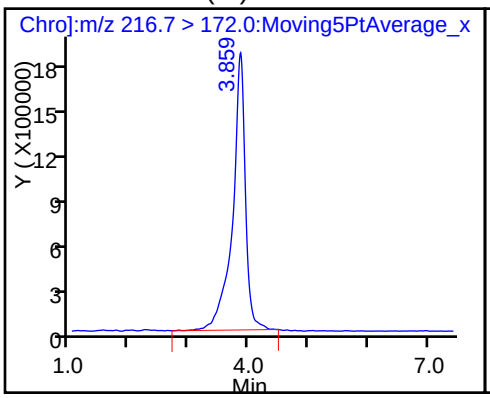
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 46

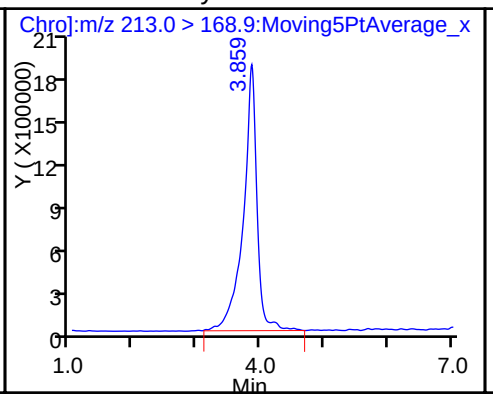
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

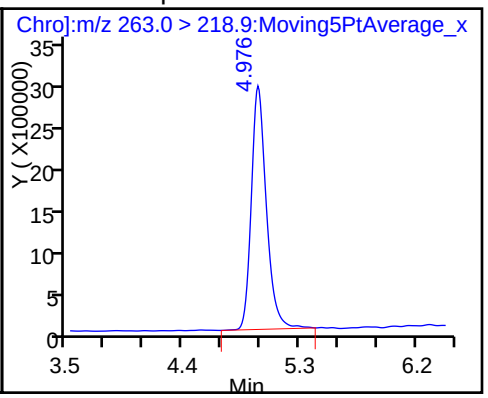
* 1 13C4 PFBA (IS)



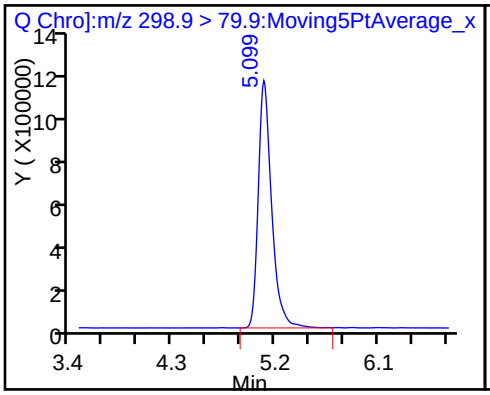
2 Perfluorobutyric acid



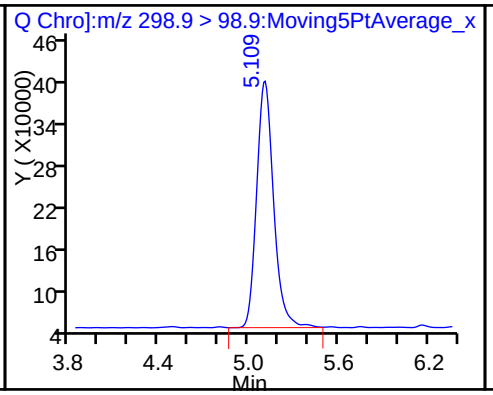
3 Perfluoropentanoic acid



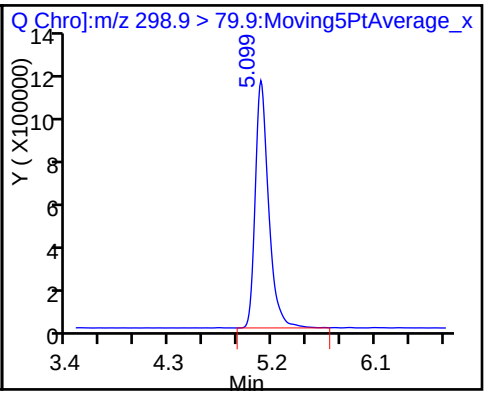
5 Perfluorobutanesulfonic acid



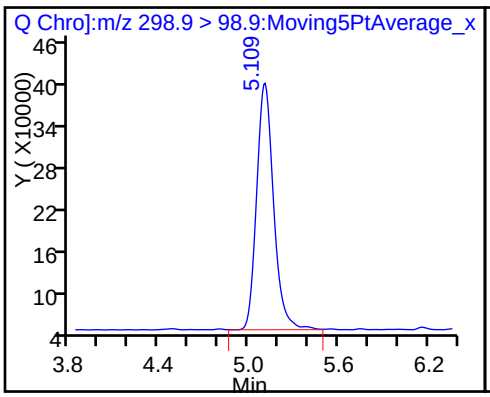
5 Perfluorobutanesulfonic acid



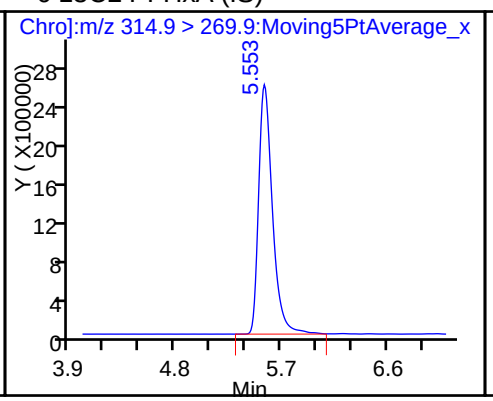
4 Perfluorobutane Sulfonate



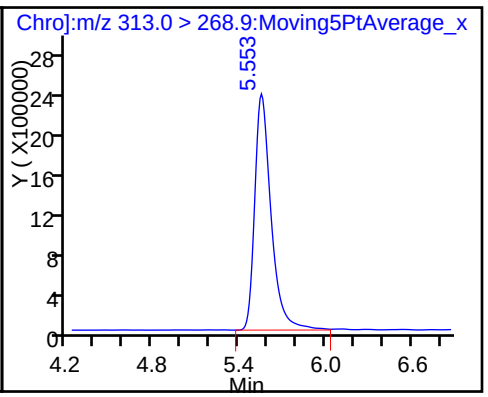
4 Perfluorobutane Sulfonate



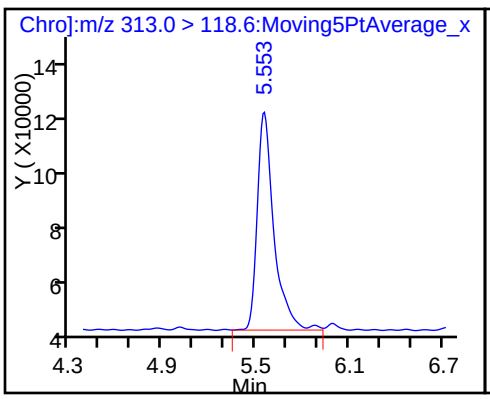
* 6 13C2 PFHxA (IS)



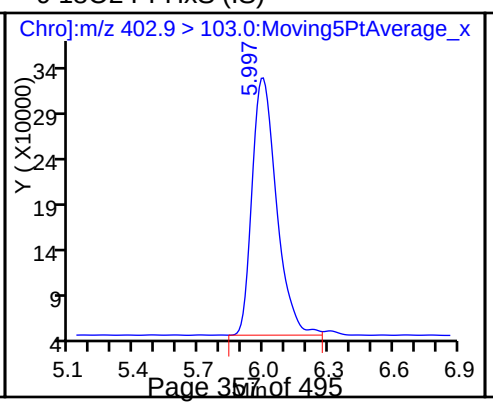
7 Perfluorohexanoic acid



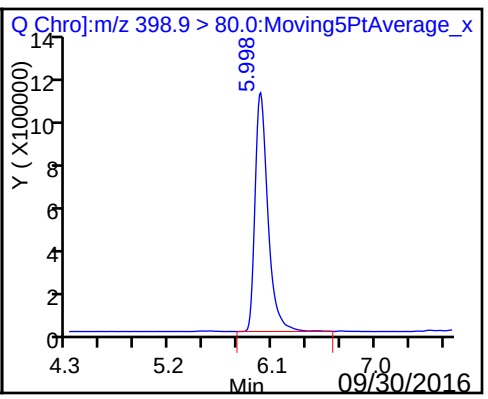
7 Perfluorohexanoic acid



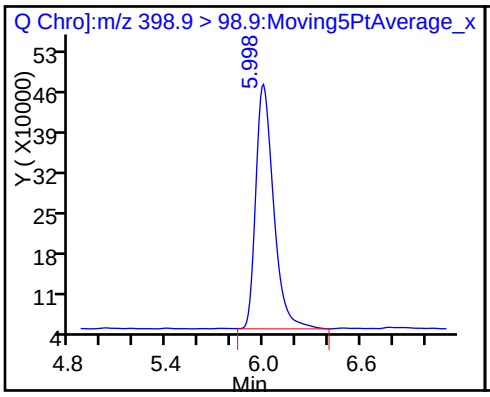
* 9 18O2 PFHxS (IS)



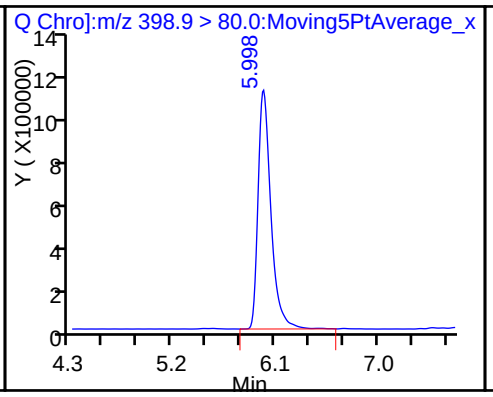
10 Perfluorohexane Sulfonate



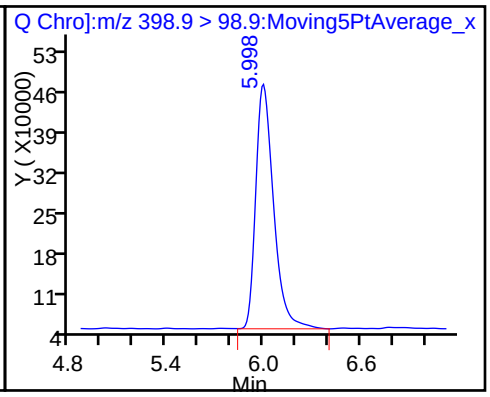
10 Perfluorohexane Sulfonate



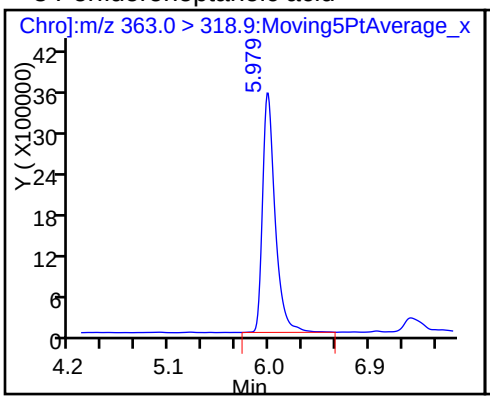
11 Perfluorohexanesulfonic acid



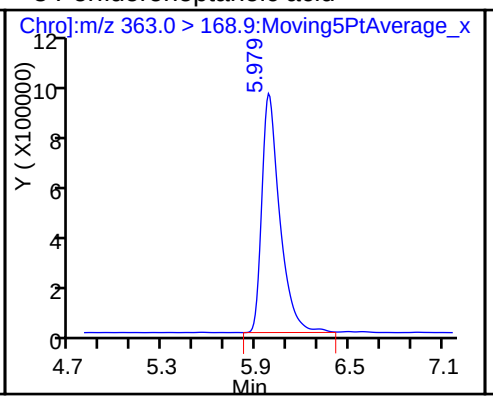
11 Perfluorohexanesulfonic acid



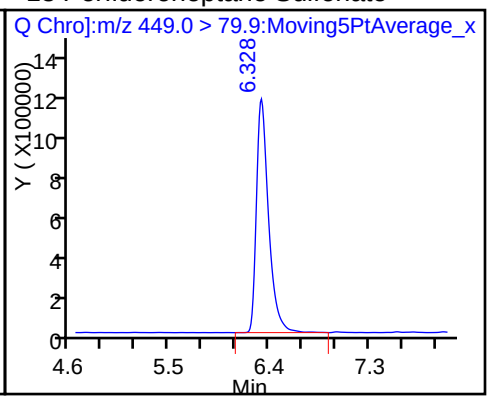
8 Perfluoroheptanoic acid



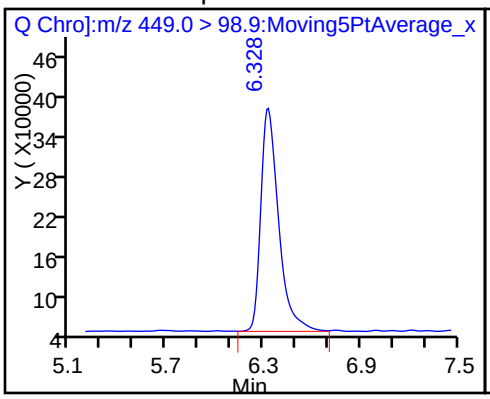
8 Perfluoroheptanoic acid



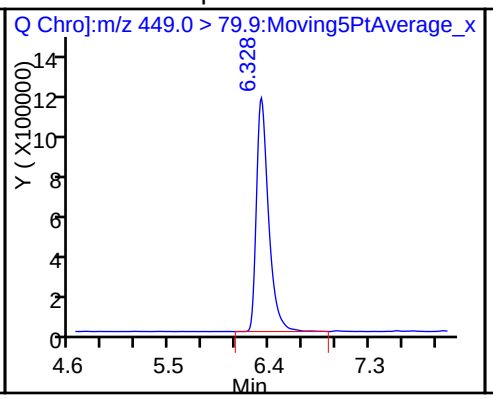
13 Perfluoroheptane Sulfonate



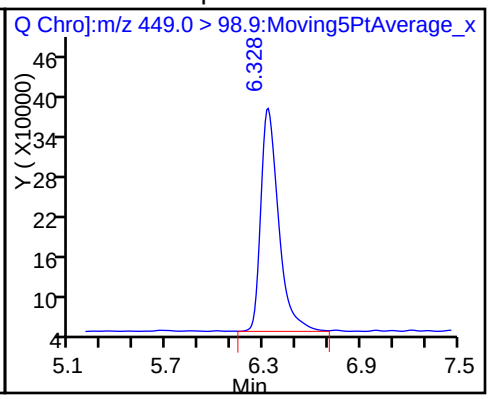
13 Perfluoroheptane Sulfonate



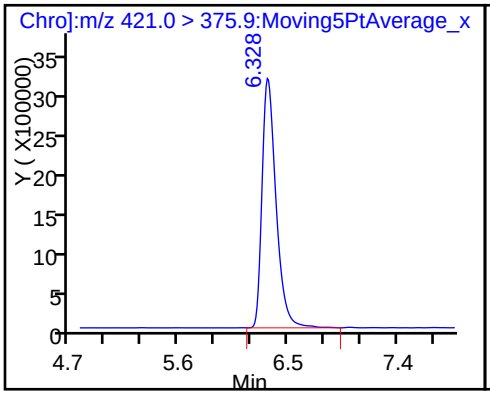
12 Perfluoroheptanesulfonic Acid



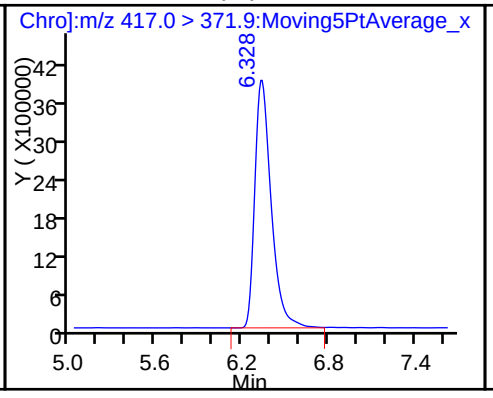
12 Perfluoroheptanesulfonic Acid



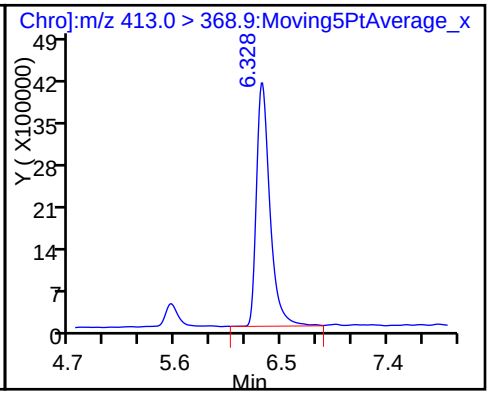
$ 14 13C8 PFOA



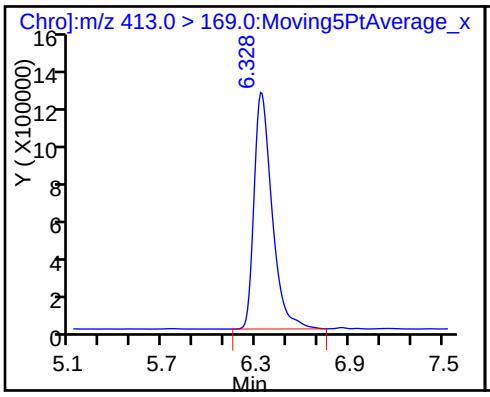
* 15 13C4 PFOA (IS)



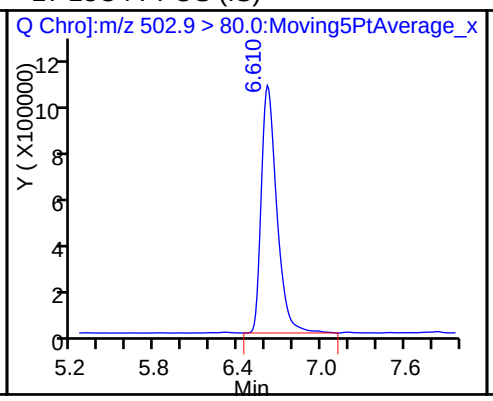
16 Perfluorooctanoic acid



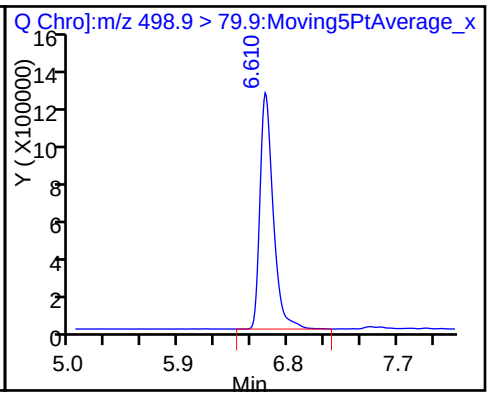
16 Perfluorooctanoic acid



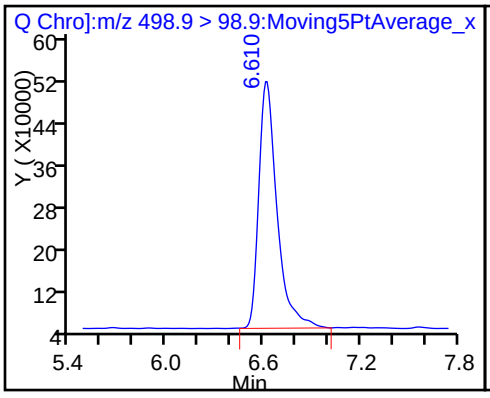
* 17 13C4 PFOS (IS)



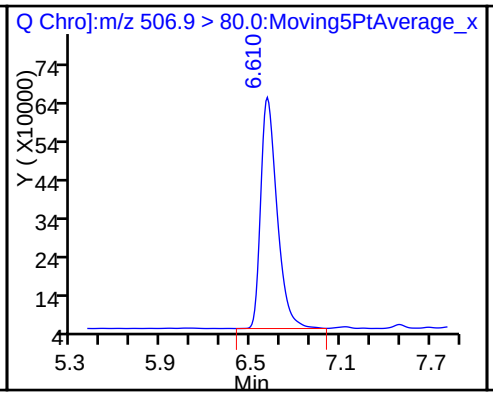
19 Perfluorooctane sulfonic acid



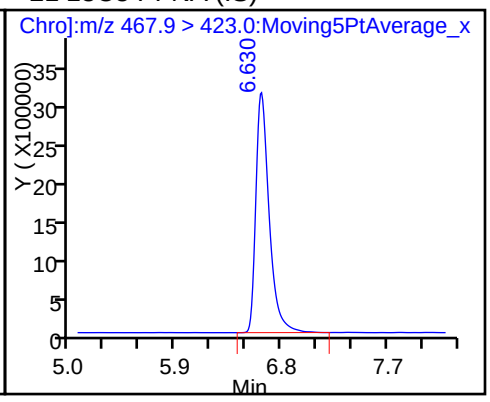
19 Perfluorooctane sulfonic acid



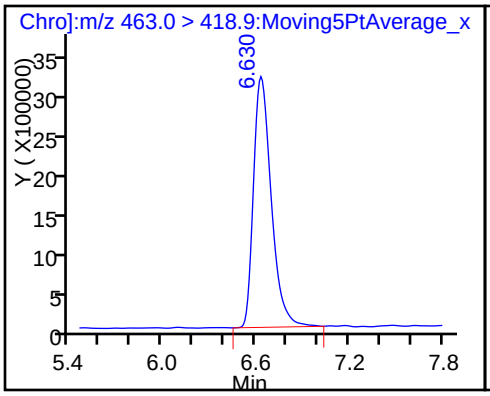
$ 18 13C8 PFOS



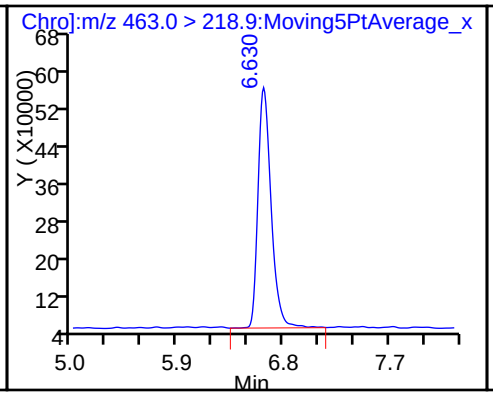
* 21 13C5 PFNA (IS)



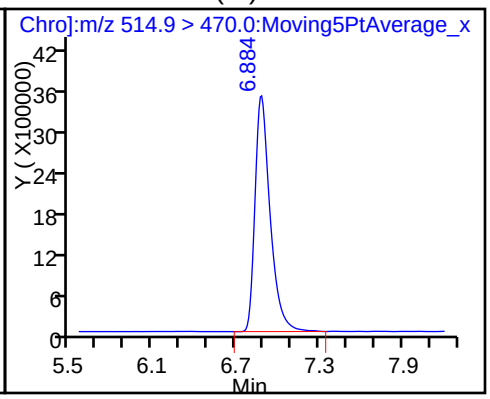
20 Perfluorononanoic acid



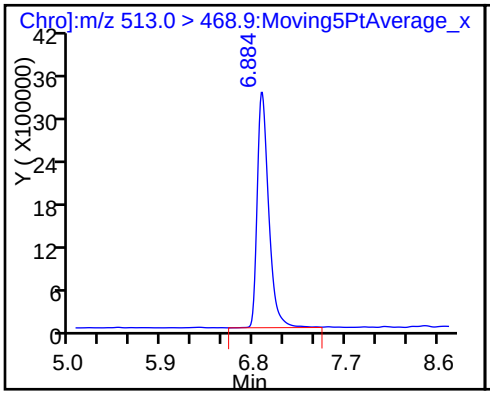
20 Perfluorononanoic acid



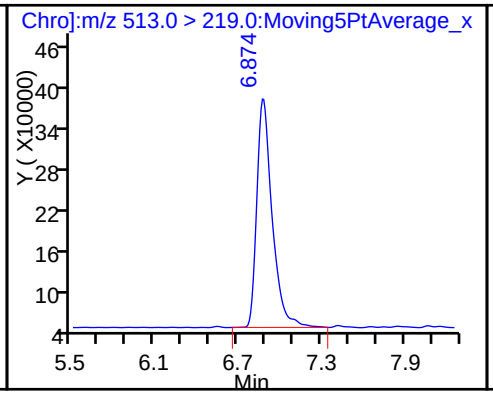
* 22 13C2 PFDA (IS)



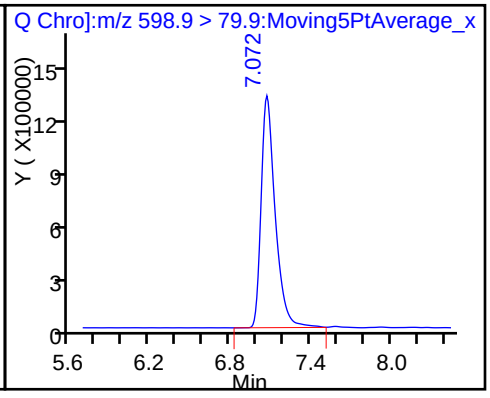
23 Perfluorodecanoic acid



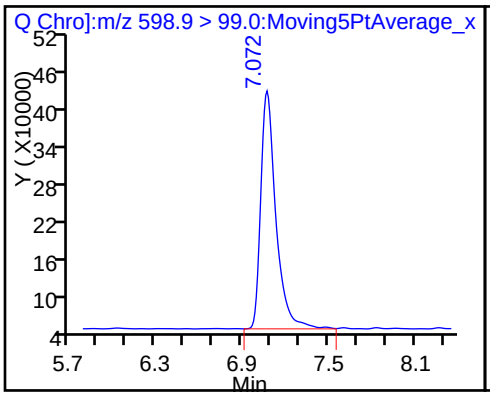
23 Perfluorodecanoic acid



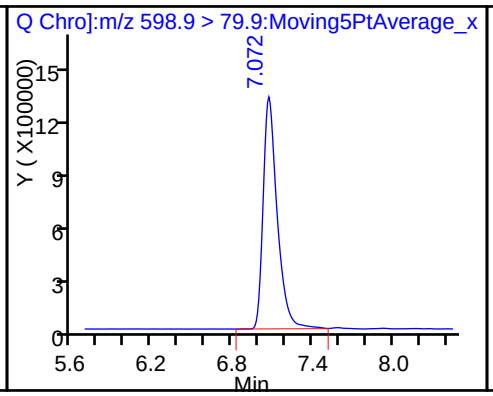
25 Perfluorodecane Sulfonate



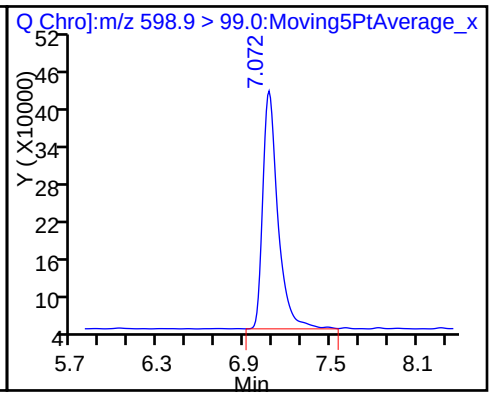
25 Perfluorodecane Sulfonate



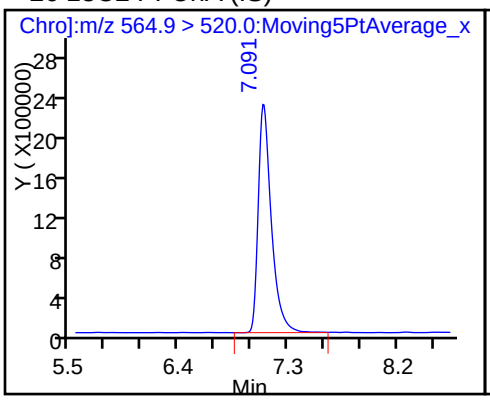
24 Perfluorodecane Sulfonic acid



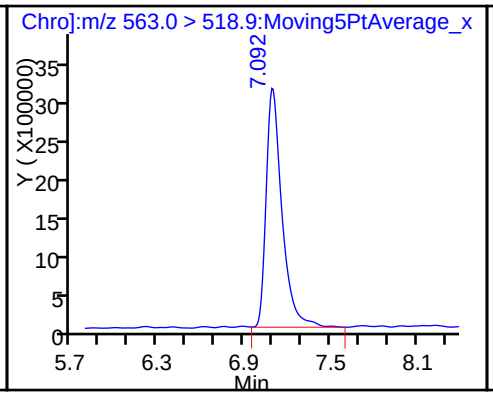
24 Perfluorodecane Sulfonic acid



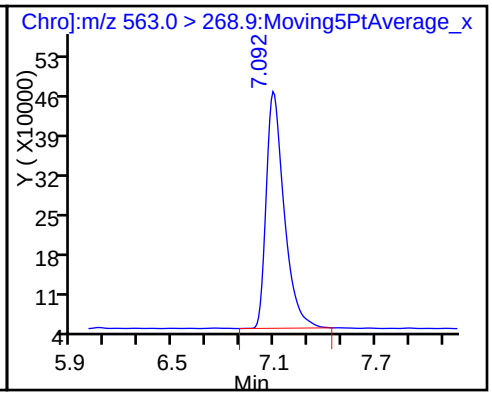
* 26 13C2 PFUnA (IS)



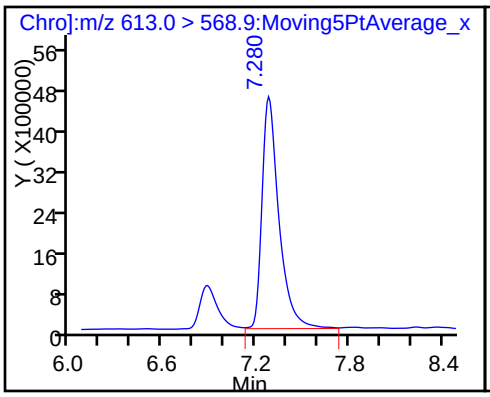
27 Perfluoroundecanoic acid



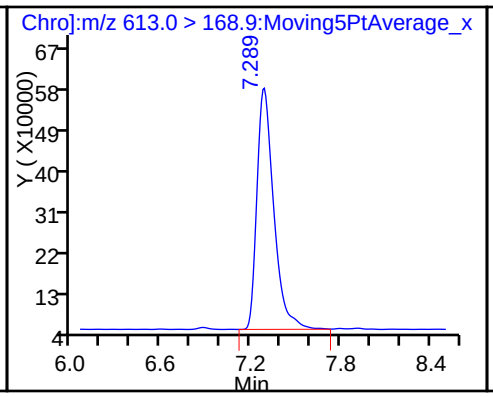
27 Perfluoroundecanoic acid



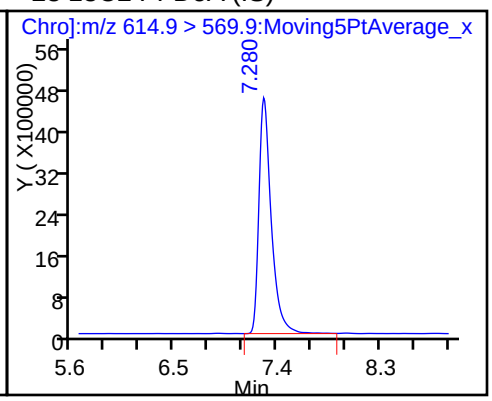
29 Perfluorododecanoic acid



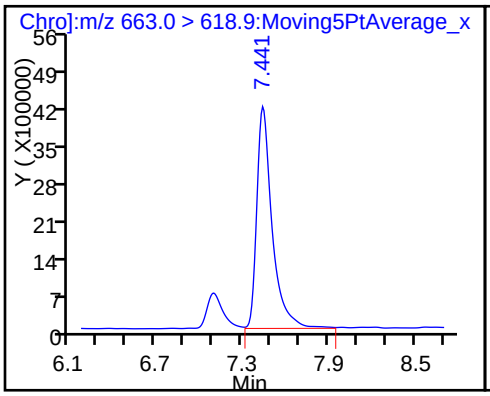
29 Perfluorododecanoic acid



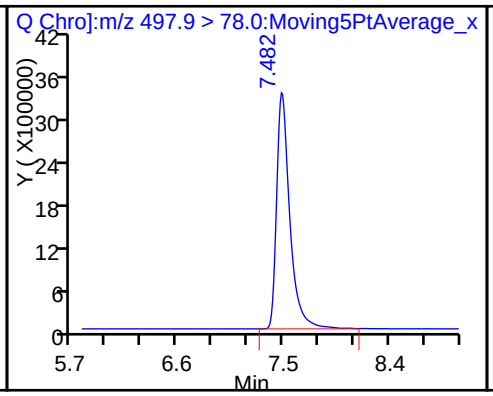
* 28 13C2 PFDoA (IS)



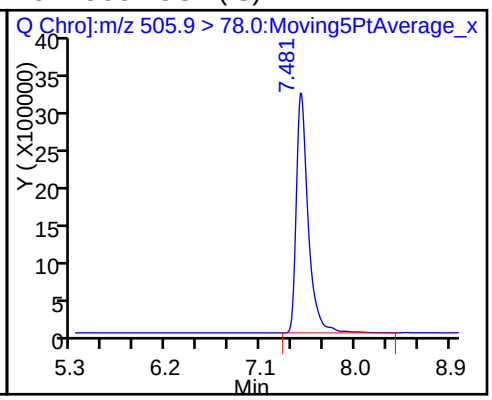
30 Perfluorotridecanoic acid



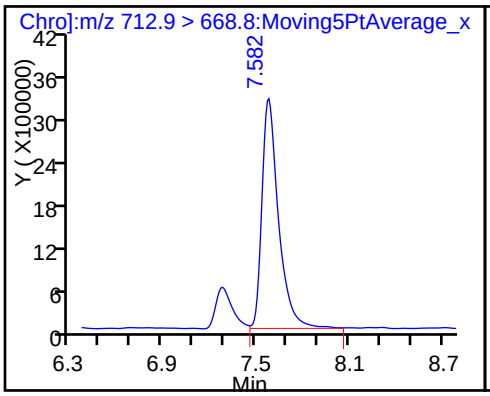
32 Perfluorooctane Sulfonamide



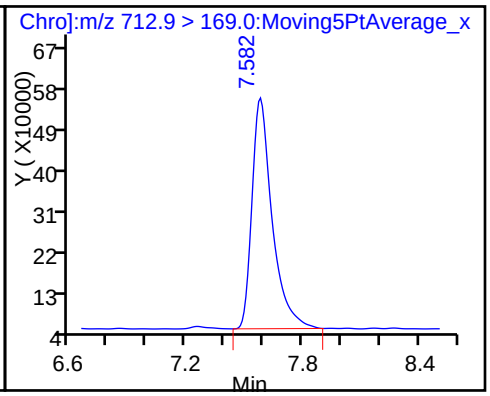
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab Sample ID: CCV 280-344348/3 Calibration Date: 09/29/2016 13:53

Instrument ID: LC_LCMS5 Calib Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calib End Date: 09/20/2016 17:57

Lab File ID: PC516I029039.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.090		9.66	10.0	-3.4	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.147		10.5	10.0	5.2	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.481		8.02	8.85	-9.3	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.481		8.02	8.85	-9.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9318		9.94	10.0	-0.6	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.576		8.98	9.45	-5.0	30.0
Perfluorohexanesulfonic acid	Lin2		3.576		8.98	9.45	-5.0	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8973		9.09	10.0	-9.1	30.0
Perfluoroheptane Sulfonate	Lin2		1.091		8.73	9.52	-8.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.091		8.73	9.52	-8.3	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.099		10.6	10.0	5.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.192		9.10	9.55	-4.7	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.117		9.60	10.0	-4.0	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9850		9.46	10.0	-5.4	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.257		9.66	9.65	0.0	30.0
Perfluorodecane Sulfonic acid	Lin2		1.257		9.66	9.65	0.0	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.351		9.40	10.0	-6.0	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9864		9.77	10.0	-2.3	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8165		9.55	10.0	-4.5	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.053		9.91	10.0	-1.0	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6216		9.01	10.0	-9.9	30.0
13C8 PFOA	Lin2		0.8312		11.0	10.0	9.5	30.0
13C8 PFOS	Lin2		0.5670		10.4	9.56	9.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51395.b\PC516I029039.d
Lims ID: CCV PFC L6
Client ID:
Sample Type: CCV
Inject. Date: 29-Sep-2016 13:53:01 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L6, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51395.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 14:34:19 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 14:33:26

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.115	4.115	0.0		28413751	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.115	4.115	0.0	1.000	30983765	9.66			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.175	5.175	0.0	0.898	23362976	10.5			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.298	5.298	0.0	0.855	9559977	8.02			
298.9 > 98.9	5.308	5.298	0.010	0.857	3135349		3.05(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.298	5.298	0.0	0.855	9559977	8.02			
298.9 > 98.9	5.308	5.298	0.010	0.857	3135349		3.05(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.762	5.762	0.0		20365516	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.771	5.771	0.0	1.002	18976703	9.94			
313.0 > 118.6	5.781	5.771	0.010	1.003	516941		36.71(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.196	6.196	0.0		2280516	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.196	6.196	0.0	1.000	8145652	8.98			R
398.9 > 98.9	6.196	6.196	0.0	1.000	2944791		2.77(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.196	6.196	0.0	1.000	8145652	8.98			
398.9 > 98.9	6.196	6.196	0.0	1.000	2944791		2.77(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.197	6.197	0.0	0.948	25913643	9.09			
363.0 > 168.9	6.187	6.197	-0.010	0.947	6985302		3.71(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.526	6.526	0.0	0.958	8124867	8.73			
449.0 > 98.9	6.526	6.526	0.0	0.958	2472589		3.29(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.526	6.526	0.0	0.958	8124867	8.73			
449.0 > 98.9	6.526	6.526	0.0	0.958	2472589		3.29(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.536	6.536	0.0	1.000	24006242	10.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.537	6.537	0.0		28879996	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.537	6.537	0.0	1.000	31751452	10.6			
413.0 > 169.0	6.537	6.537	0.0	1.000	9045250		3.51(2.86-5.31)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.809	6.809	0.0	1.000	4242144	10.4			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.809	6.809	0.0		7481792	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.809	6.809	0.0	1.000	8907343	9.10			R
498.9 > 98.9	6.809	6.809	0.0	1.000	3543872		2.51(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.829	6.829	0.0		21424398	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.829	6.829	0.0	1.000	23935310	9.60			
463.0 > 218.9	6.829	6.829	0.0	1.000	3837958		6.24(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.073	7.073	0.0		23573713	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.073	7.073	0.0	1.000	23219202	9.46			
513.0 > 219.0	7.073	7.073	0.0	1.000	2135405		10.87(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.252	7.252	0.0	1.065	9494120	9.66			
598.9 > 99.0	7.262	7.252	0.010	1.066	2724291		3.48(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.252	7.252	0.0	1.065	9494120	9.66			
598.9 > 99.0	7.262	7.252	0.010	1.066	2724291		3.48(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.281	0.0		15599201	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.281	7.281	0.0	1.000	21070570	9.40			R
563.0 > 268.9	7.291	7.281	0.010	1.001	2817538		7.48(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.460	7.460	0.0		31843783	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.460	7.460	0.0	1.000	31411652	9.77			
613.0 > 168.9	7.460	7.460	0.0	1.000	3967567		7.92(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.611	7.611	0.0	1.020	25999750	9.55			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.642	7.642	0.0		23474761	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.643	7.643	0.0	1.000	24725161	9.90			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.743	7.743	0.0	1.038	19792675	9.01			
712.9 > 169.0	7.743	7.743	0.0	1.038	2986766		6.63(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00085	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 20.00	Units: uL
PFC-IS_00023	Amount Added: 20.00	Units: uL

Report Date: 29-Sep-2016 14:34:20 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51395.b\PC516I029039.d

Injection Date: 29-Sep-2016 13:53:01 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

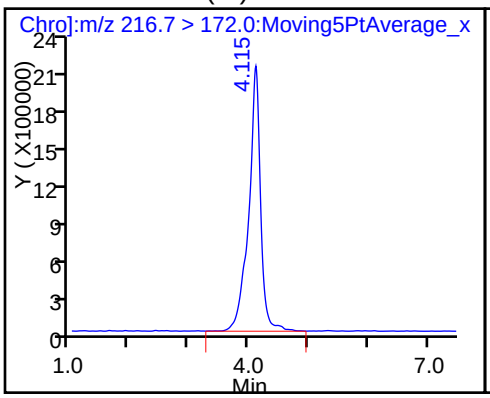
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 3

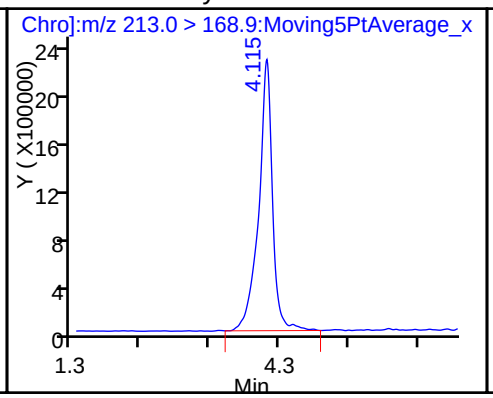
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

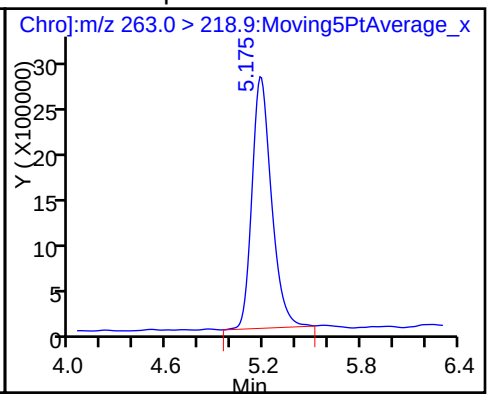
* 1 13C4 PFBA (IS)



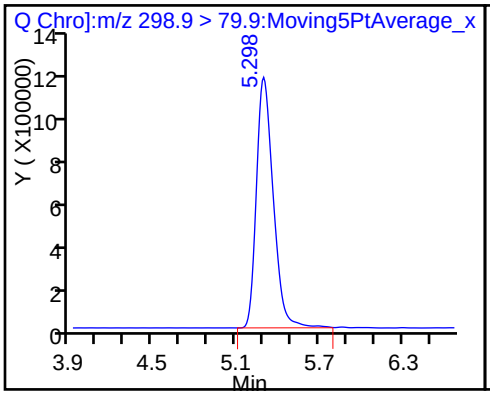
2 Perfluorobutyric acid



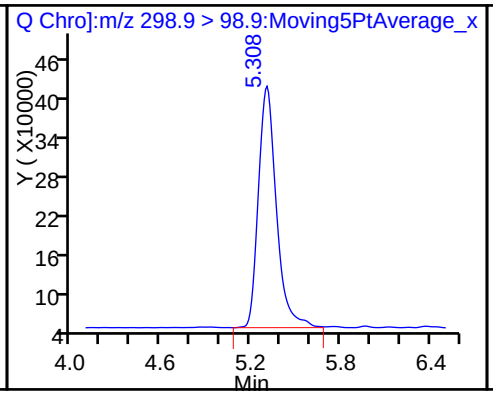
3 Perfluoropentanoic acid



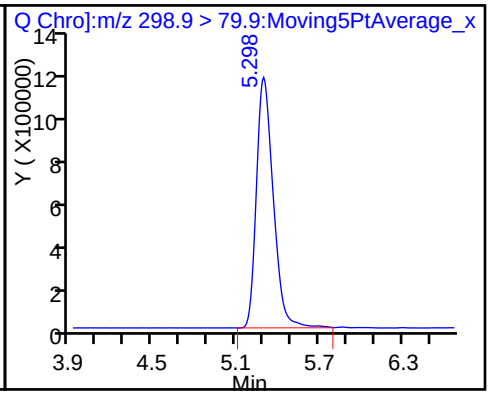
5 Perfluorobutanesulfonic acid



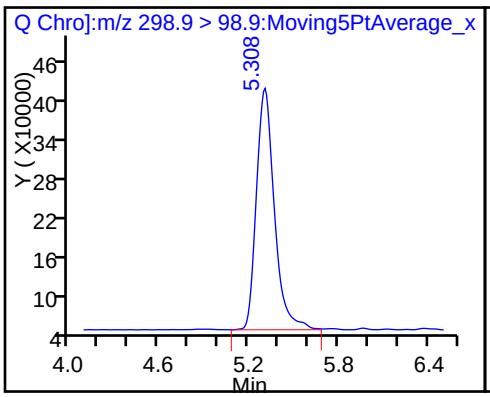
5 Perfluorobutanesulfonic acid



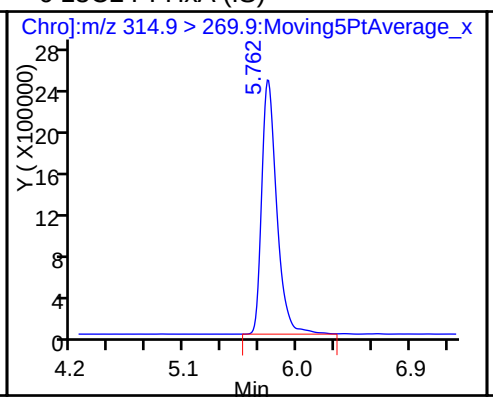
4 Perfluorobutane Sulfonate



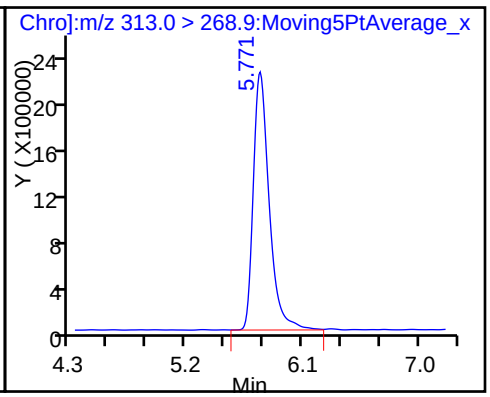
4 Perfluorobutane Sulfonate



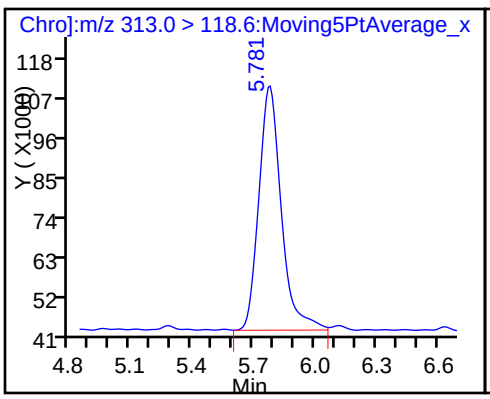
* 6 13C2 PFHxA (IS)



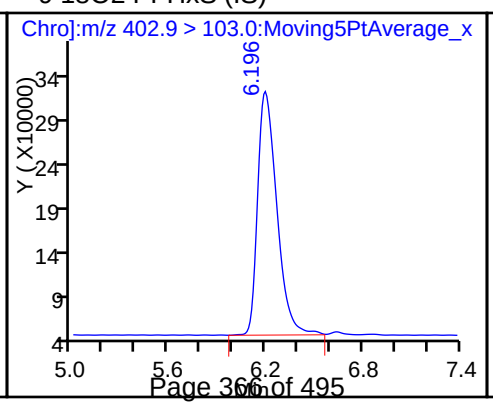
7 Perfluorohexanoic acid



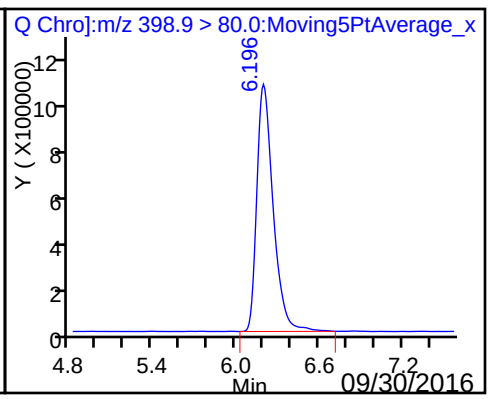
7 Perfluorohexanoic acid



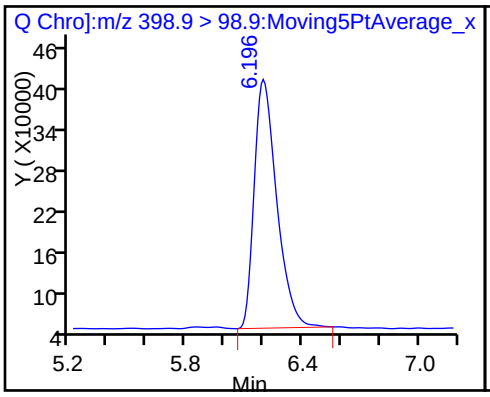
* 9 18O2 PFHxS (IS)



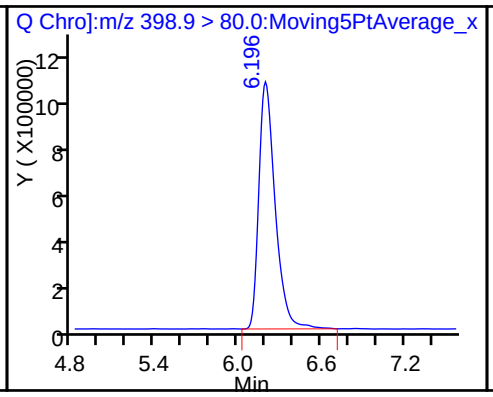
10 Perfluorohexane Sulfonate



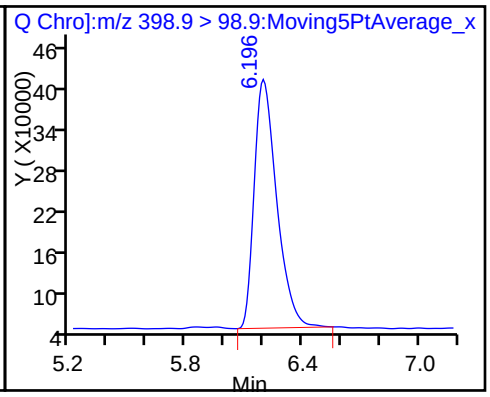
10 Perfluorohexane Sulfonate



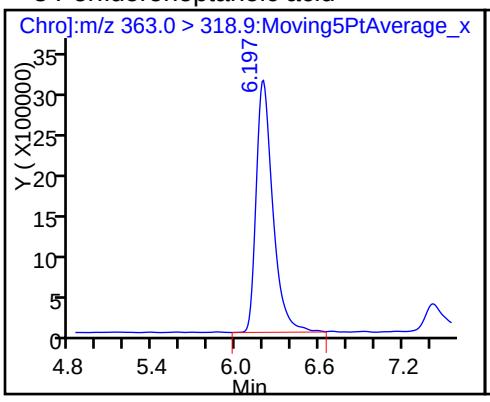
11 Perfluorohexanesulfonic acid



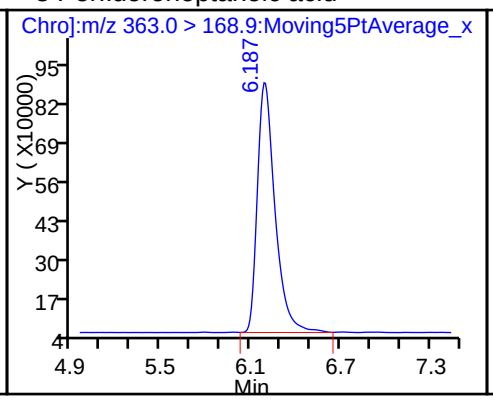
11 Perfluorohexanesulfonic acid



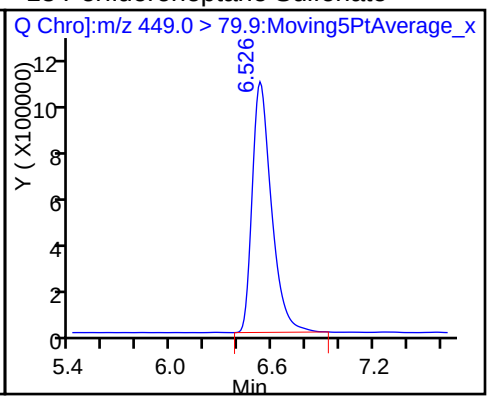
8 Perfluoroheptanoic acid



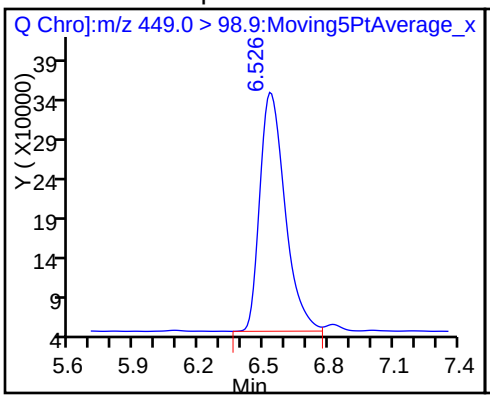
8 Perfluoroheptanoic acid



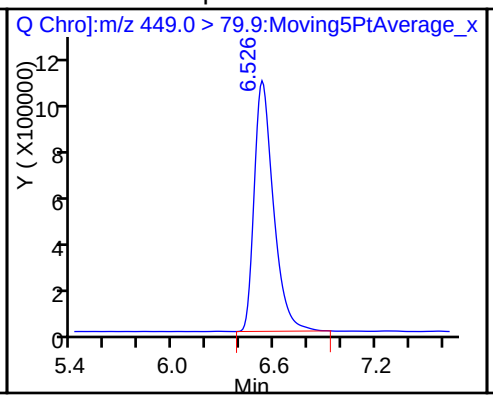
13 Perfluoroheptane Sulfonate



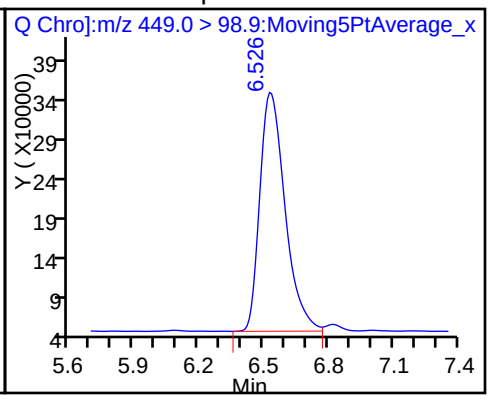
13 Perfluoroheptane Sulfonate



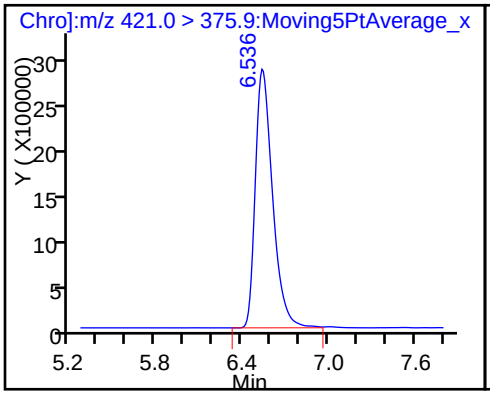
12 Perfluoroheptanesulfonic Acid



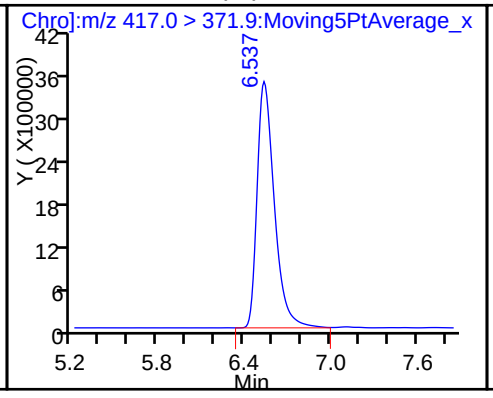
12 Perfluoroheptanesulfonic Acid



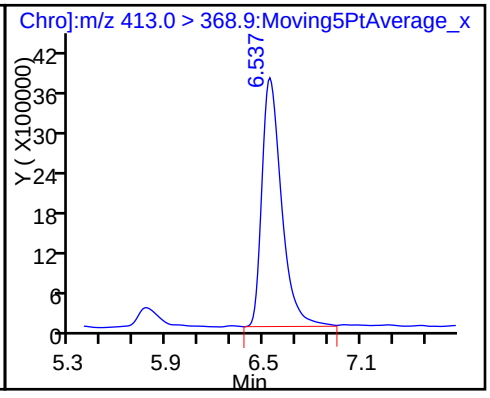
$ 14 13C8 PFOA



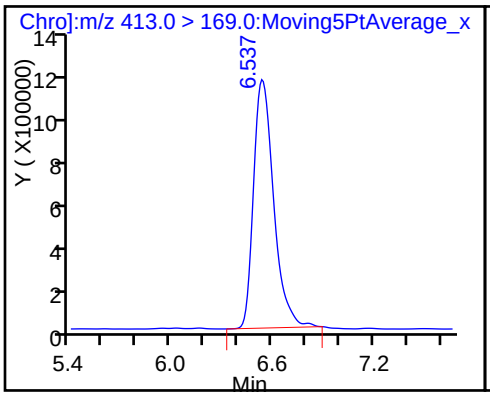
* 15 13C4 PFOA (IS)



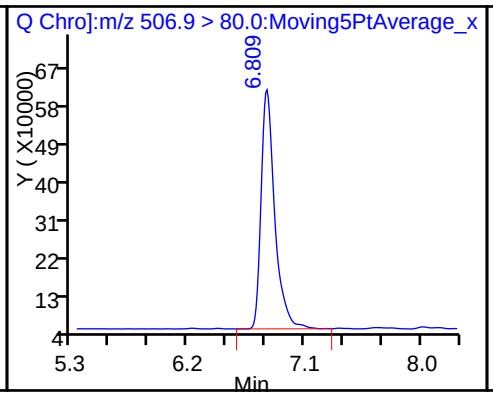
16 Perfluorooctanoic acid



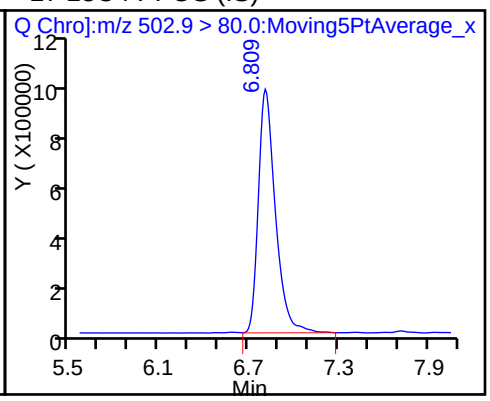
16 Perfluorooctanoic acid



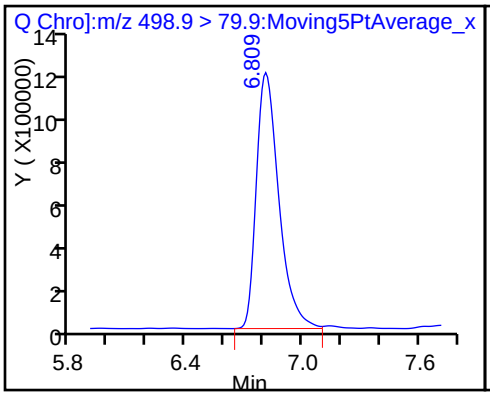
$ 18 13C8 PFOS



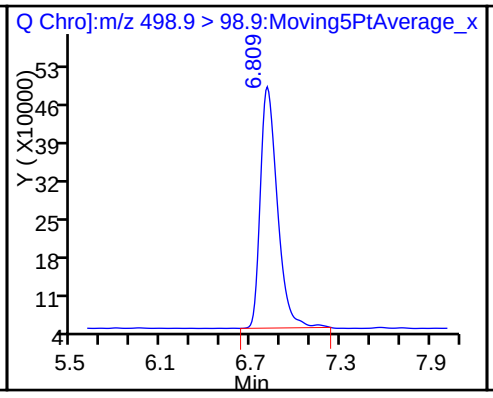
* 17 13C4 PFOS (IS)



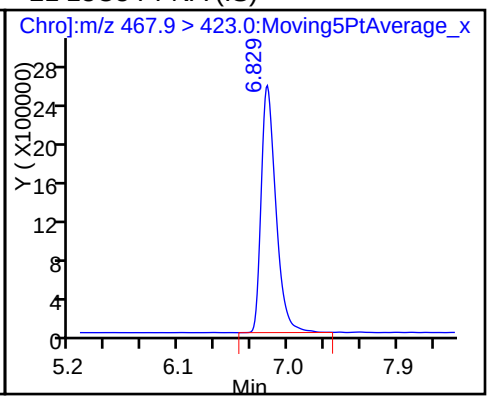
19 Perfluorooctane sulfonic acid



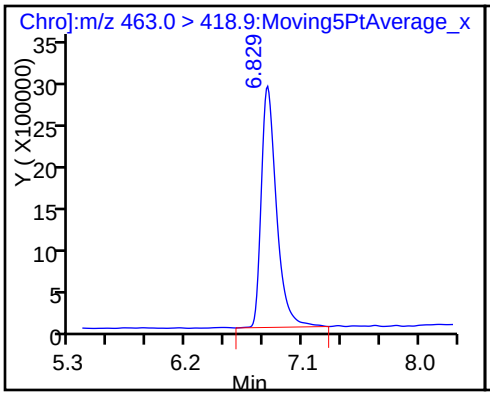
19 Perfluorooctane sulfonic acid



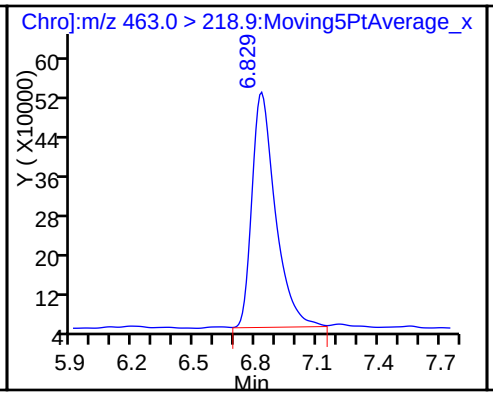
* 21 13C5 PFNA (IS)



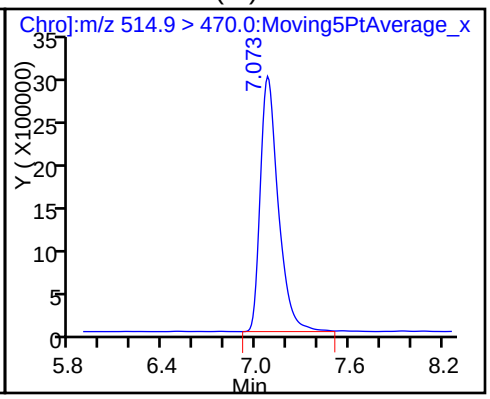
20 Perfluorononanoic acid



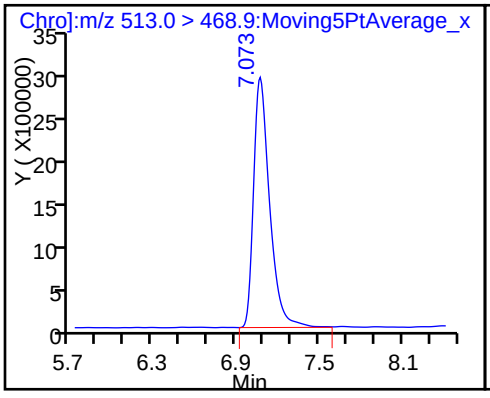
20 Perfluorononanoic acid



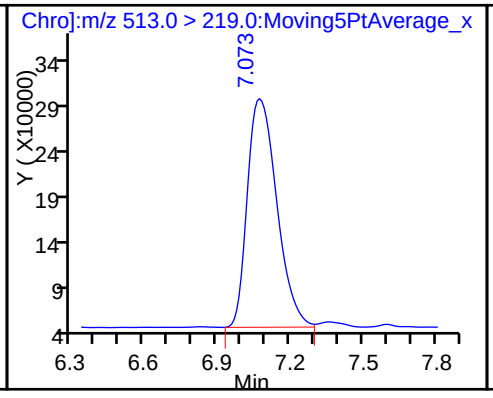
* 22 13C2 PFDA (IS)



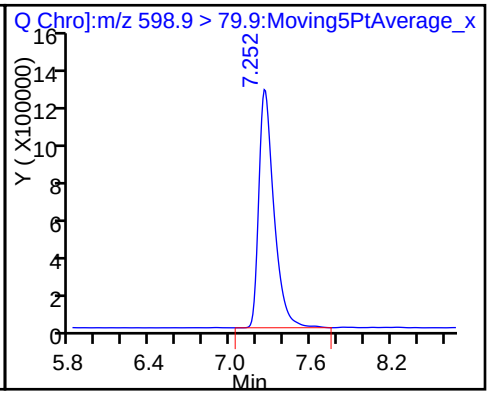
23 Perfluorodecanoic acid



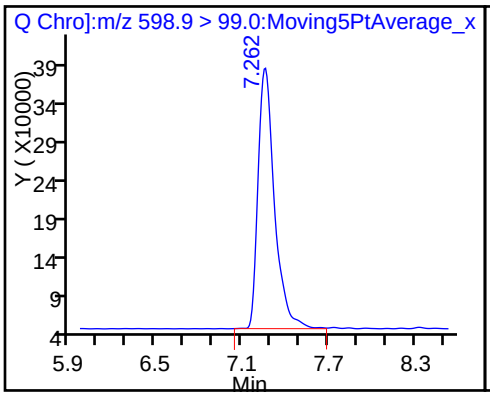
23 Perfluorodecanoic acid



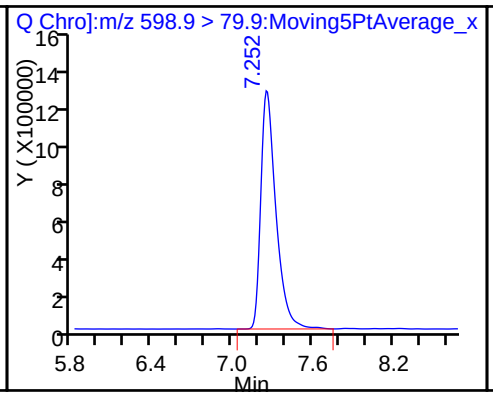
25 Perfluorodecane Sulfonate



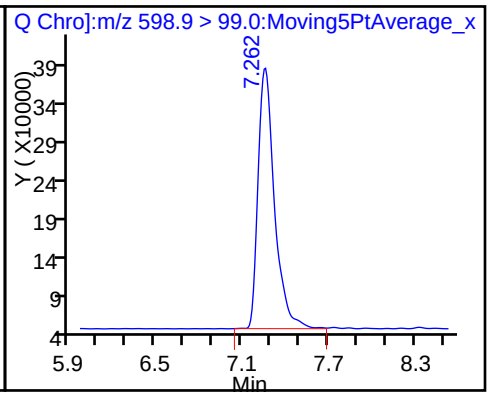
25 Perfluorodecane Sulfonate



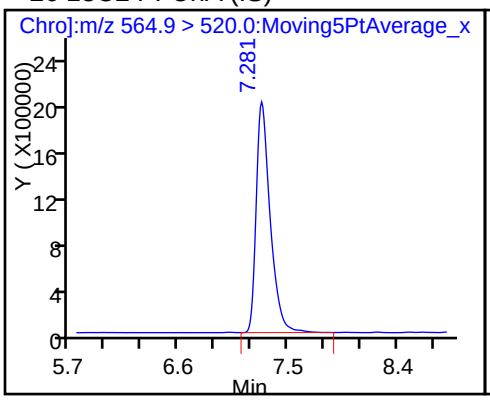
24 Perfluorodecane Sulfonic acid



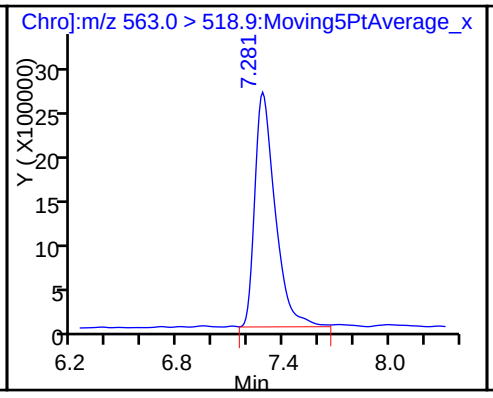
24 Perfluorodecane Sulfonic acid



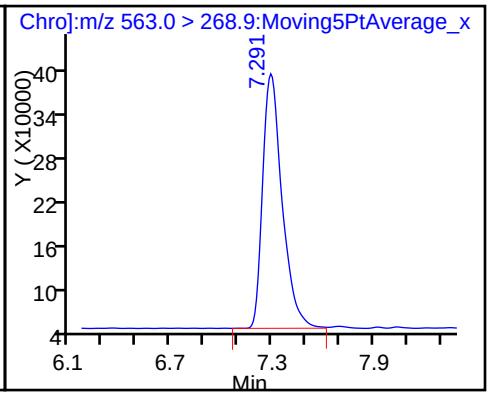
* 26 13C2 PFUnA (IS)



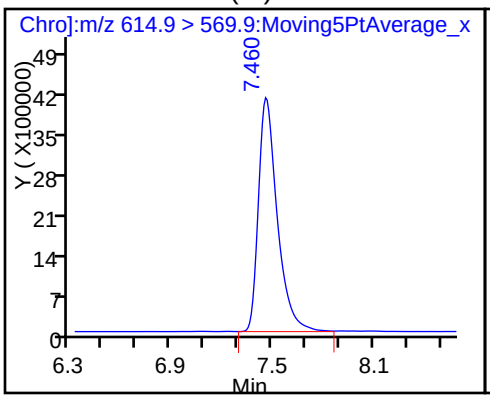
27 Perfluoroundecanoic acid



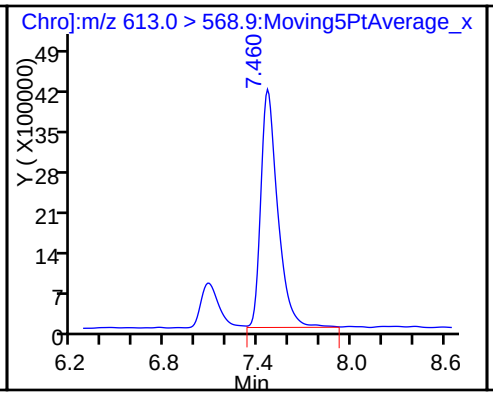
27 Perfluoroundecanoic acid



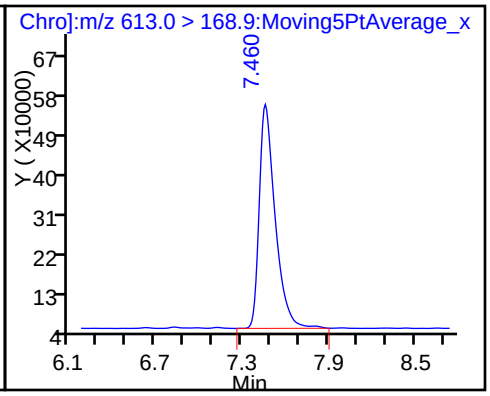
* 28 13C2 PFDoA (IS)



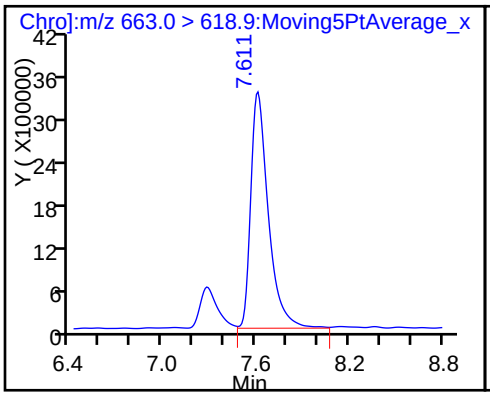
29 Perfluorododecanoic acid



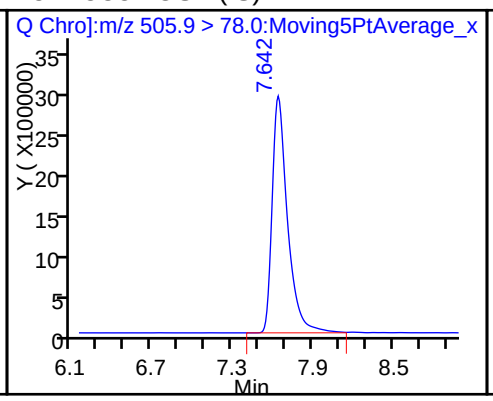
29 Perfluorododecanoic acid



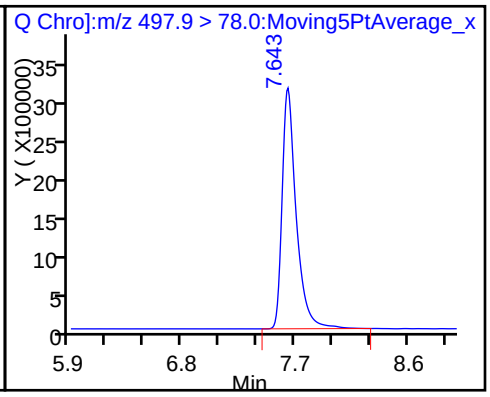
30 Perfluorotridecanoic acid



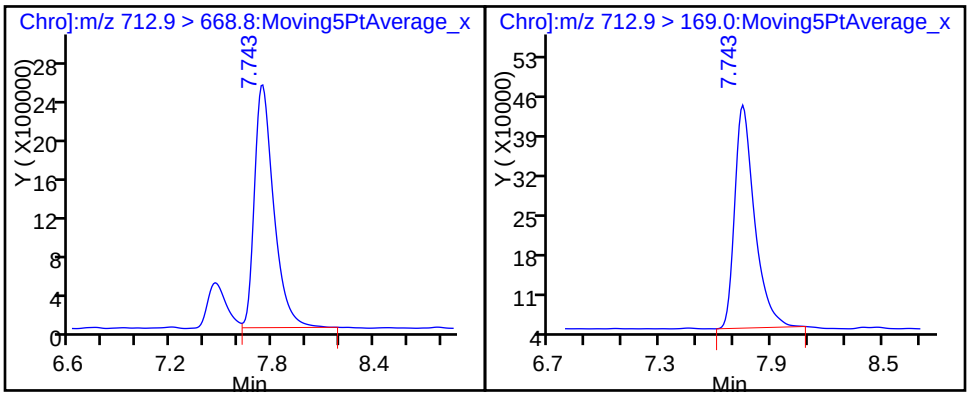
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Lab Sample ID: CCV 280-344348/5 Calibration Date: 09/29/2016 14:17

Instrument ID: LC_LCMS5 Calib Start Date: 09/20/2016 16:19

GC Column: Gemini-NX ID: Calib End Date: 09/20/2016 17:57

Lab File ID: PC516I029041.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.105		4.91	5.00	-1.8	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.221		5.59	5.00	11.9	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.951		4.44	4.43	0.4	30.0
Perfluorobutanesulfonic acid (PFBS)	Lin2		4.951		4.44	4.43	0.4	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9595		5.11	5.00	2.2	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9527		4.84	5.00	-3.3	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.845		4.83	4.73	2.2	30.0
Perfluorohexanesulfonic acid	Lin2		3.845		4.83	4.73	2.2	30.0
Perfluoroheptane Sulfonate	Lin2		1.115		4.48	4.76	-5.8	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.115		4.48	4.76	-5.8	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.123		5.36	5.00	7.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.159		4.44	4.78	-7.1	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.114		4.81	5.00	-3.7	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.021		4.91	5.00	-1.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.280		4.92	4.83	2.0	30.0
Perfluorodecane Sulfonic acid	Lin2		1.280		4.92	4.83	2.0	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.504		5.22	5.00	4.5	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.998		4.91	5.00	-1.7	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9068		5.28	5.00	5.6	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.122		5.28	5.00	5.6	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6854		4.96	5.00	-0.9	30.0
13C8 PFOA	Lin2		0.7226		4.73	5.00	-5.4	30.0
13C8 PFOS	Lin2		0.5118		4.68	4.78	-2.1	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51395.b\PC516I029041.d
Lims ID: CCV PFC L5
Client ID:
Sample Type: CCV
Inject. Date: 29-Sep-2016 14:17:37 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: CCV PFC L5, Sample
Operator ID: ACM Instrument ID: LC_LCMS5
Sublist: chrom-8321_PFC*sub14

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51395.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 14:34:28 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 14:34:01

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
2 Perfluorobutyric acid									
213.0 > 168.9	4.115	4.115	0.0	0.998	15551100	4.91			
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.124	4.124	0.0		28149808	10.0			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.185	5.185	0.0	0.898	12271113	5.59			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.308	5.308	0.0	0.857	4993595	4.44			
298.9 > 98.9	5.308	5.308	0.0	0.857	1397113		3.57(2.57-2.57)		
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.308	5.308	0.0	0.857	4993595	4.44			R
298.9 > 98.9	5.308	5.308	0.0	0.857	1397113		3.57(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.771	5.771	0.0		20106378	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.771	5.771	0.0	1.000	9645809	5.11			
313.0 > 118.6	5.762	5.771	-0.009	0.998	265663		36.31(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.187	6.187	0.0	0.947	14100695	4.84			
363.0 > 168.9	6.197	6.187	0.010	0.948	3603845		3.91(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.196	6.196	0.0		2156121	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.196	6.196	0.0	1.000	4140606	4.83			R
398.9 > 98.9	6.187	6.196	-0.009	0.999	1591104		2.60(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.196	6.196	0.0	1.000	4140606	4.83			
398.9 > 98.9	6.187	6.196	-0.009	0.999	1591104		2.60(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.526	6.526	0.0	0.960	4401782	4.48			
449.0 > 98.9	6.526	6.526	0.0	0.960	1303793		3.38(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.526	6.526	0.0	0.960	4401782	4.48			
449.0 > 98.9	6.526	6.526	0.0	0.960	1303793		3.38(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.536	6.536	0.0	1.000	10695288	4.73			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.537	6.537	0.0		29600755	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.537	6.537	0.0	1.000	16620519	5.36			
413.0 > 169.0	6.537	6.537	0.0	1.000	4971520		3.34(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.800	6.800	0.0		7927196	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.800	6.800	0.0	1.000	4590956	4.44			
498.9 > 98.9	6.800	6.800	0.0	1.000	1935901		2.37(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.809	6.809	0.0	1.001	2028491	4.68			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.819	6.819	0.0		23220502	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.820	6.820	0.0	1.000	12938019	4.81			
463.0 > 218.9	6.820	6.820	0.0	1.000	2104758		6.15(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.064	7.064	0.0		24011943	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	7.064	7.064	0.0	1.000	12260303	4.91			R
513.0 > 219.0	7.073	7.064	0.009	1.001	1227390		9.99(10.49-19.48)		
25 Perfluorodecane Sulfonate									R
598.9 > 79.9	7.252	7.252	0.0	1.067	5120154	4.92			R
598.9 > 99.0	7.252	7.252	0.0	1.067	1289733		3.97(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.252	7.252	0.0	1.067	5120154	4.92			
598.9 > 99.0	7.252	7.252	0.0	1.067	1289733		3.97(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.281	0.0		15502226	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.281	7.281	0.0	1.000	11660374	5.22			R
563.0 > 268.9	7.281	7.281	0.0	1.000	1463291		7.97(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.450	0.0		32026206	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.460	7.460	0.0	1.001	15985848	4.91			
613.0 > 168.9	7.460	7.460	0.0	1.001	2079616		7.69(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.602	0.0	1.020	14520333	5.28			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.642	7.642	0.0		24346835	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.643	7.643	0.0	1.000	13655941	5.28			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734	7.734	0.0	1.038	10974863	4.95			
712.9 > 169.0	7.734	7.734	0.0	1.038	1738284		6.31(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00023	Amount Added: 20.00	Units: uL
PFC_Surr_00023	Amount Added: 10.00	Units: uL
PFC-LCS_00085	Amount Added: 10.00	Units: uL

Report Date: 29-Sep-2016 14:34:29 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51395.b\PC516I029041.d

Injection Date: 29-Sep-2016 14:17:37 Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

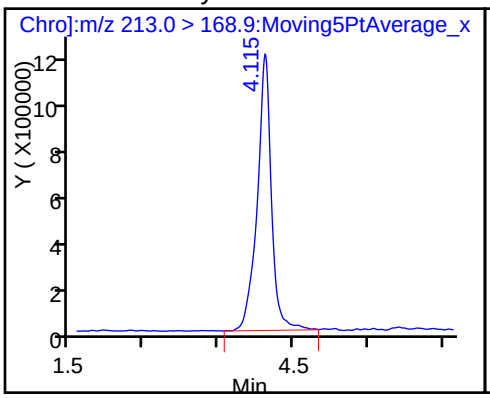
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

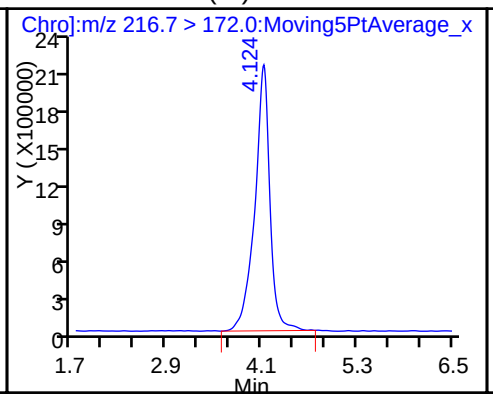
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

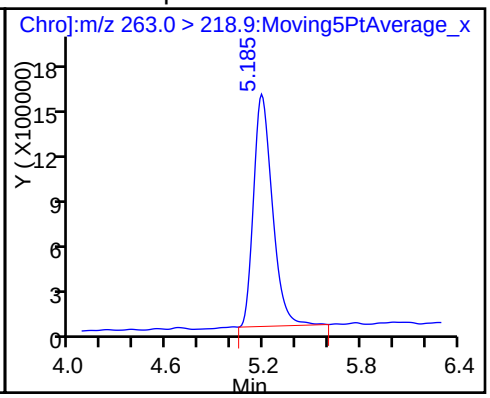
2 Perfluorobutyric acid



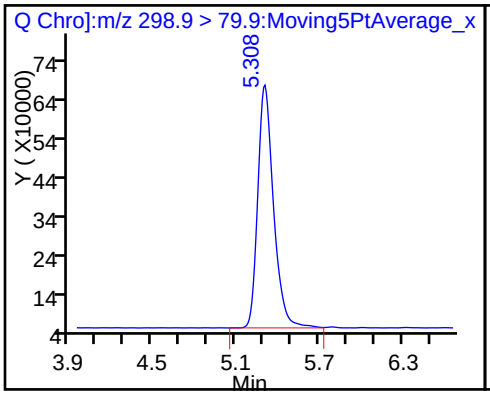
* 1 13C4 PFBA (IS)



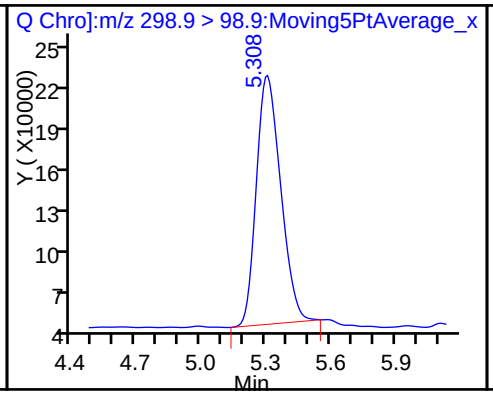
3 Perfluoropentanoic acid



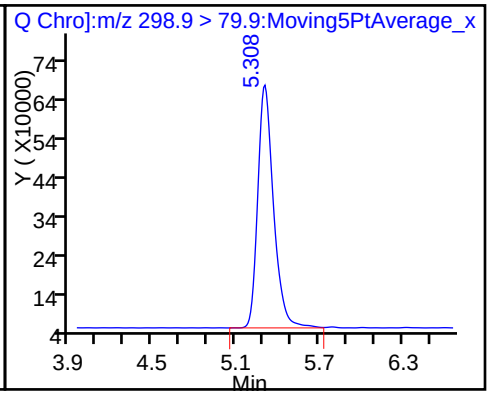
5 Perfluorobutanesulfonic acid



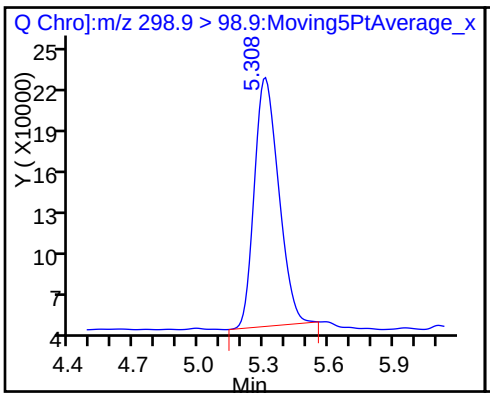
5 Perfluorobutanesulfonic acid



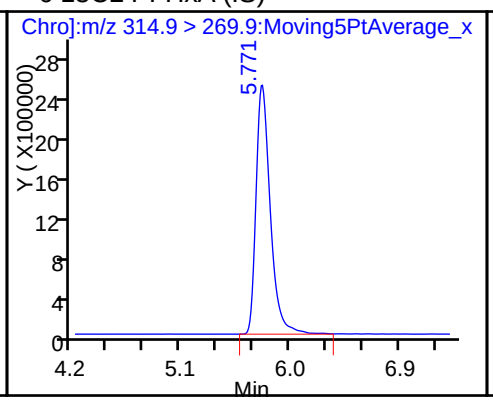
4 Perfluorobutane Sulfonate



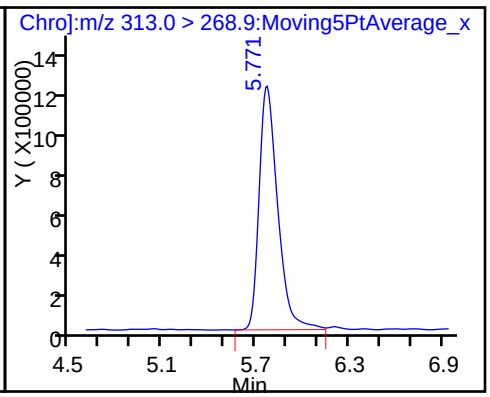
4 Perfluorobutane Sulfonate



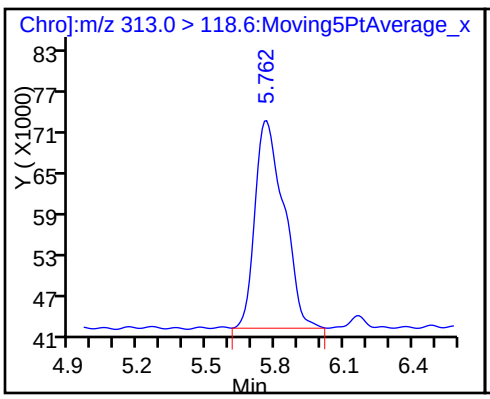
* 6 13C2 PFHxA (IS)



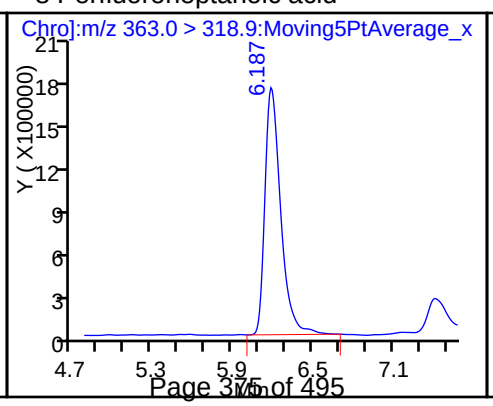
7 Perfluorohexanoic acid



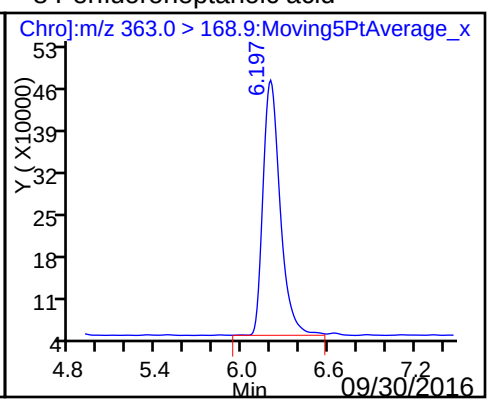
7 Perfluorohexanoic acid



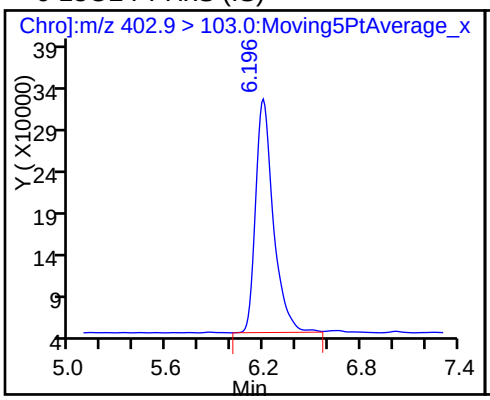
8 Perfluoroheptanoic acid



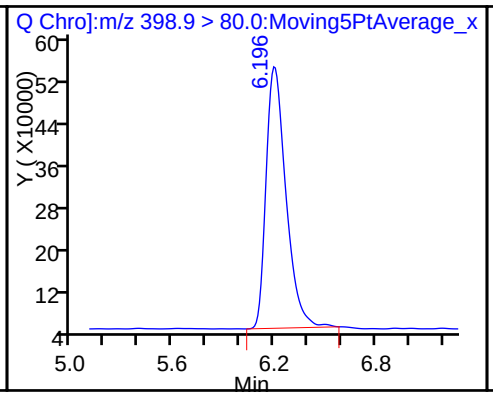
8 Perfluoroheptanoic acid



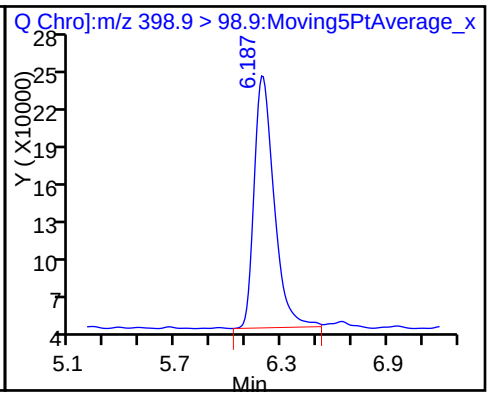
* 9 18O2 PFHxS (IS)



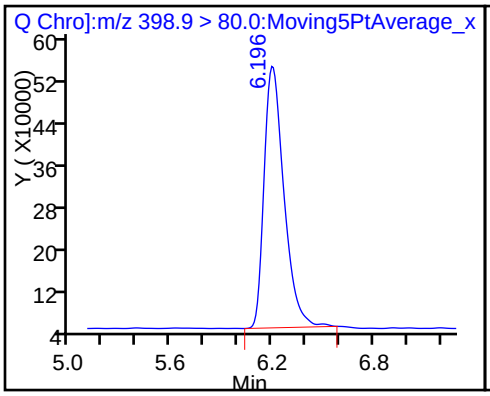
10 Perfluorohexane Sulfonate



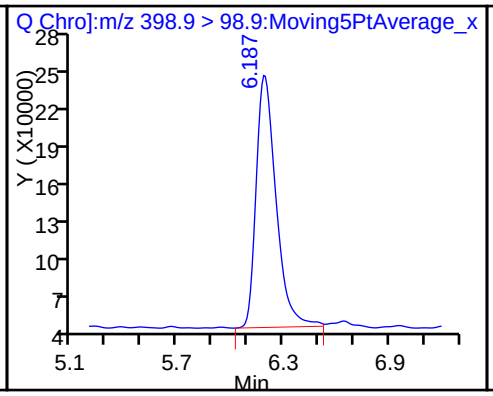
10 Perfluorohexane Sulfonate



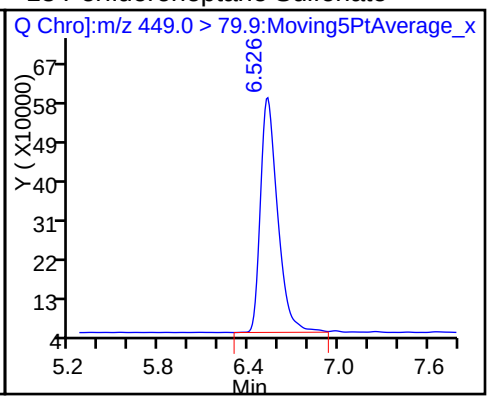
11 Perfluorohexanesulfonic acid



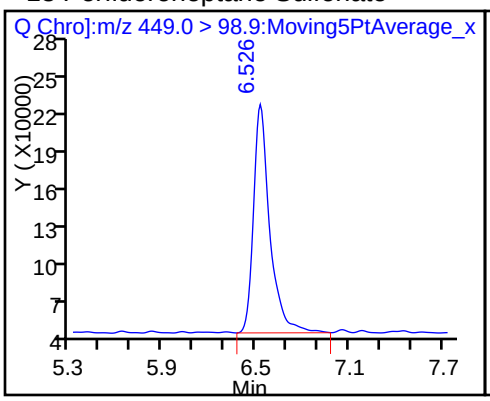
11 Perfluorohexanesulfonic acid



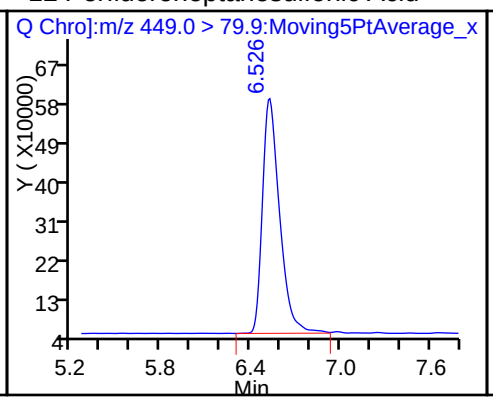
13 Perfluoroheptane Sulfonate



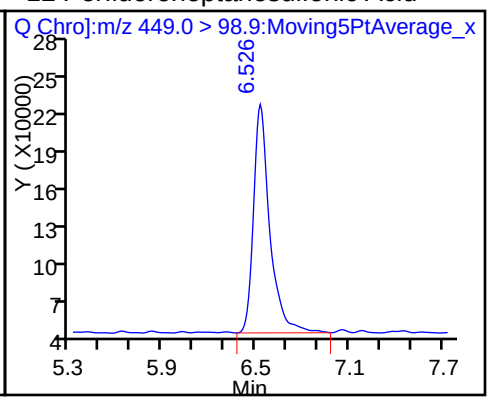
13 Perfluoroheptane Sulfonate



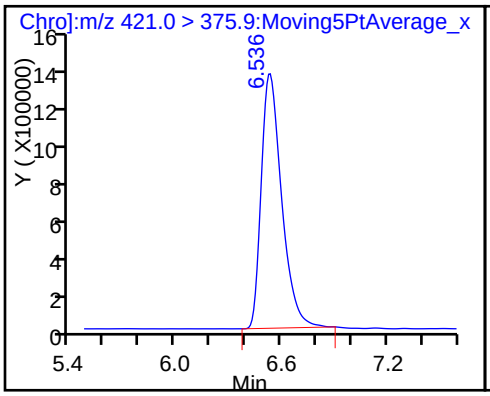
12 Perfluoroheptanesulfonic Acid



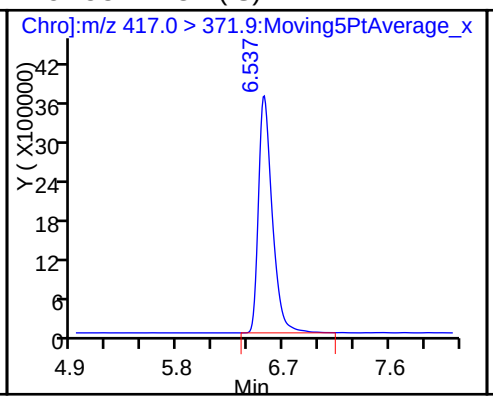
12 Perfluoroheptanesulfonic Acid



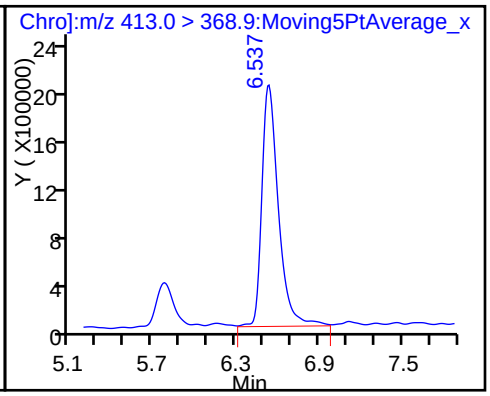
$ 14 13C8 PFOA



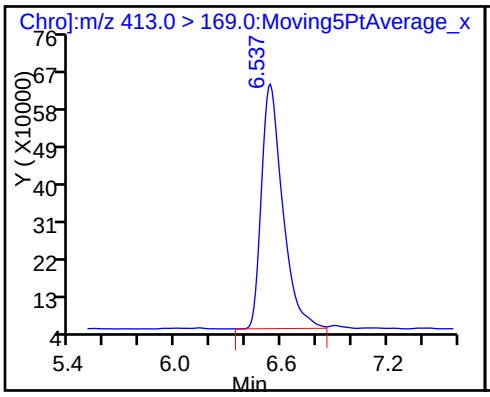
* 15 13C4 PFOA (IS)



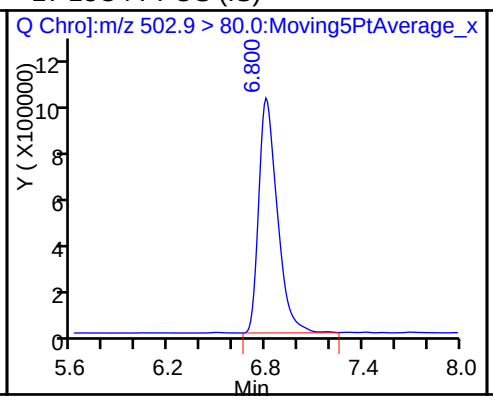
16 Perfluorooctanoic acid



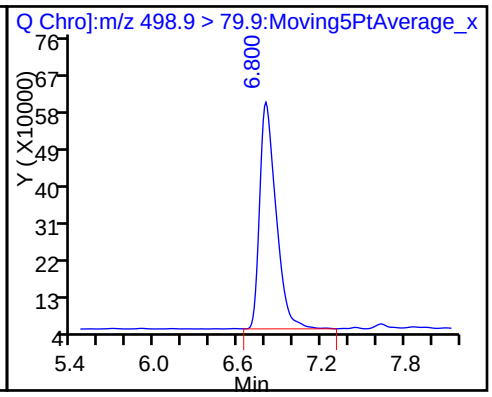
16 Perfluorooctanoic acid



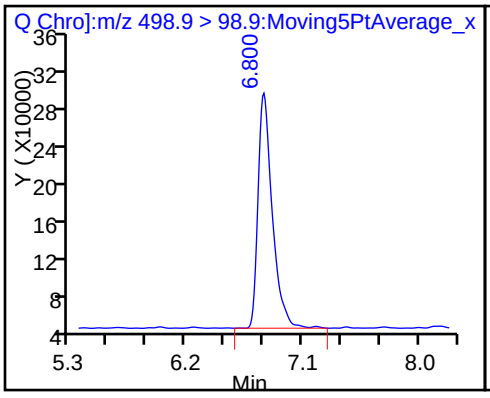
* 17 13C4 PFOS (IS)



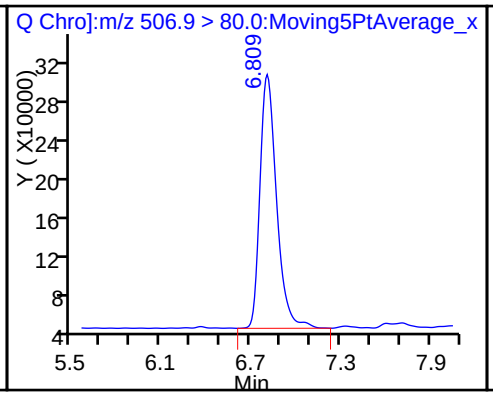
19 Perfluorooctane sulfonic acid



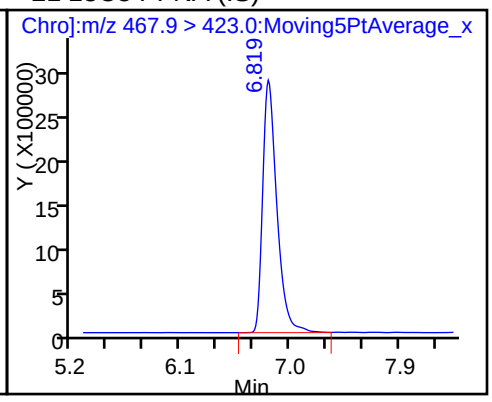
19 Perfluorooctane sulfonic acid



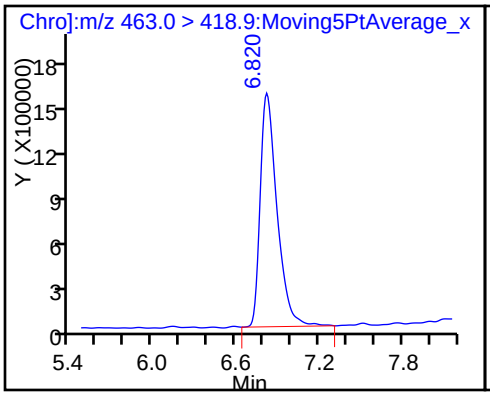
$ 18 13C8 PFOS



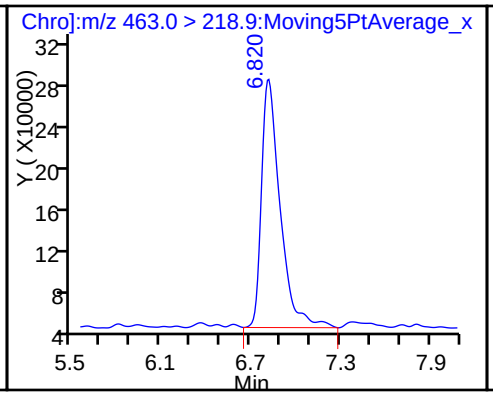
* 21 13C5 PFNA (IS)



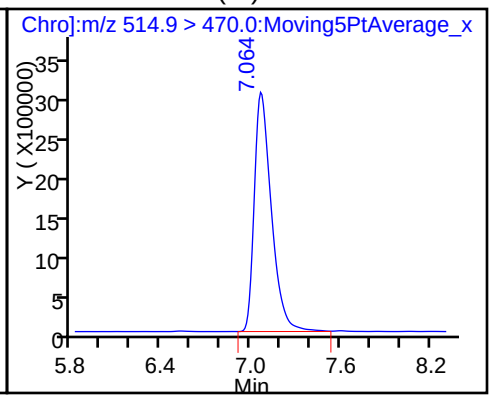
20 Perfluorononanoic acid



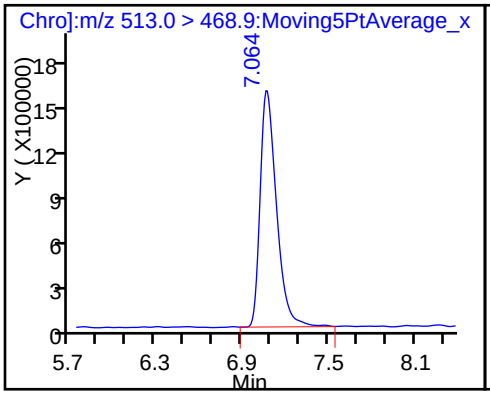
20 Perfluorononanoic acid



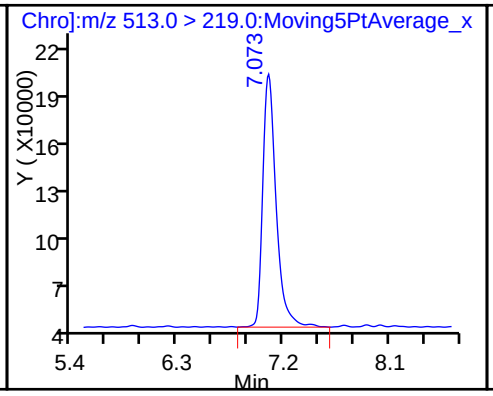
* 22 13C2 PFDA (IS)



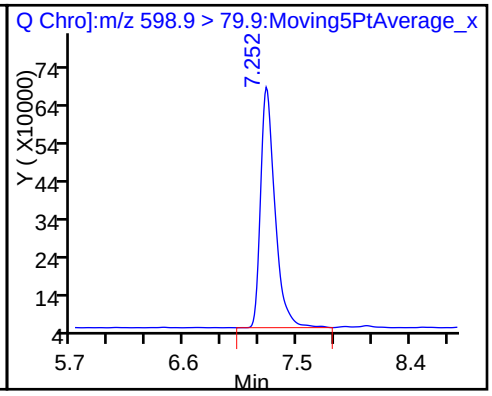
23 Perfluorodecanoic acid



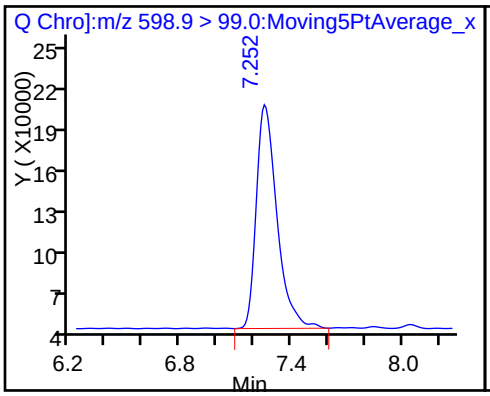
23 Perfluorodecanoic acid



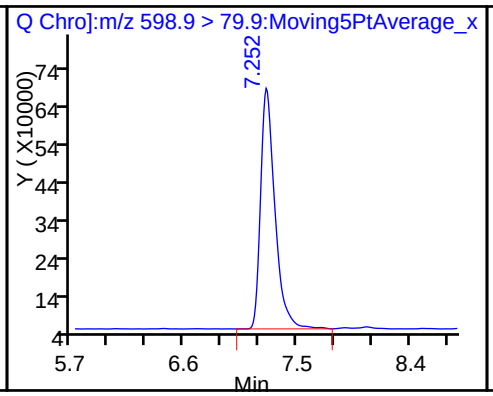
25 Perfluorodecane Sulfonate



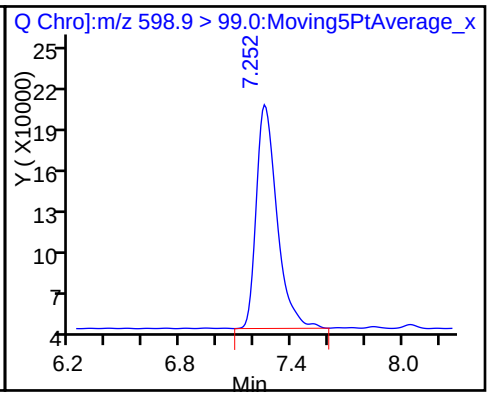
25 Perfluorodecane Sulfonate



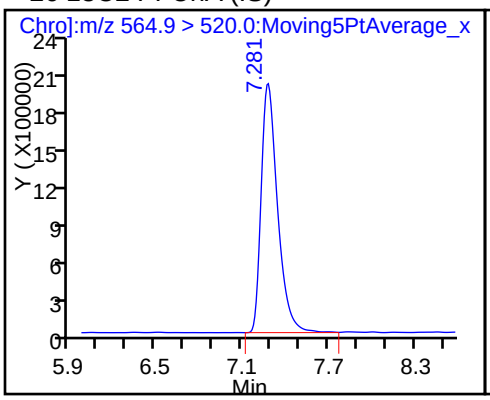
24 Perfluorodecane Sulfonic acid



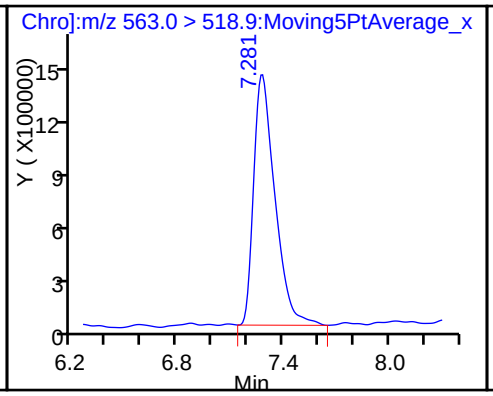
24 Perfluorodecane Sulfonic acid



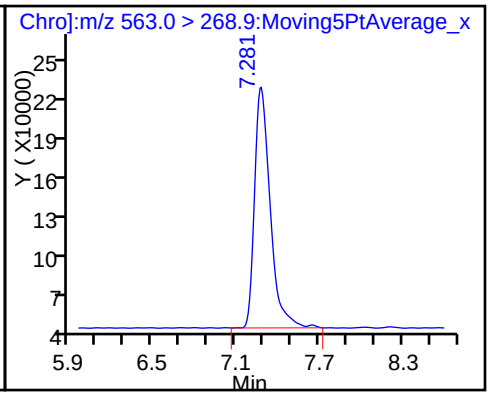
* 26 13C2 PFUnA (IS)



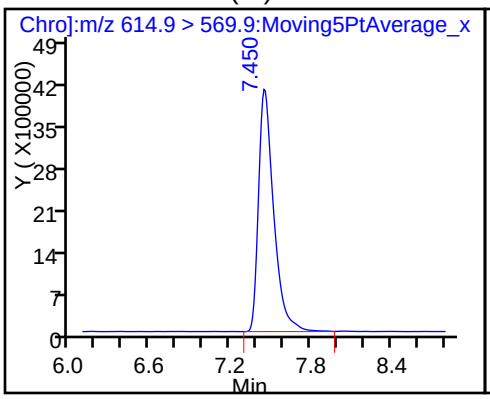
27 Perfluoroundecanoic acid



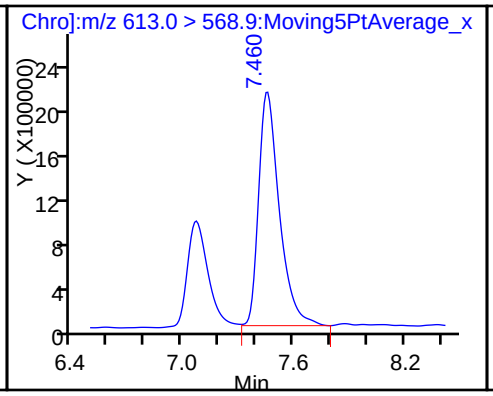
27 Perfluoroundecanoic acid



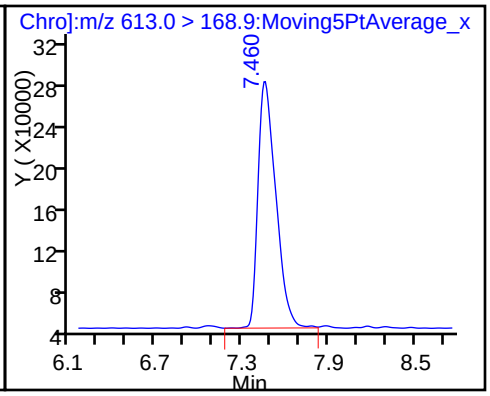
* 28 13C2 PFDoA (IS)



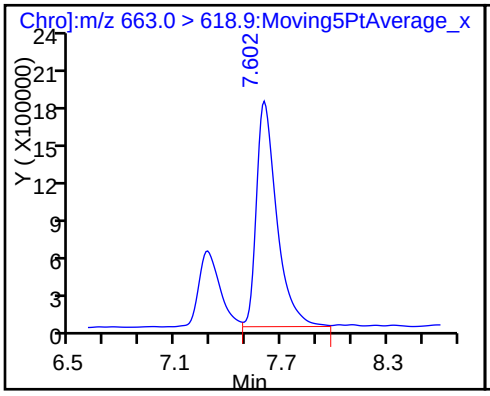
29 Perfluorododecanoic acid



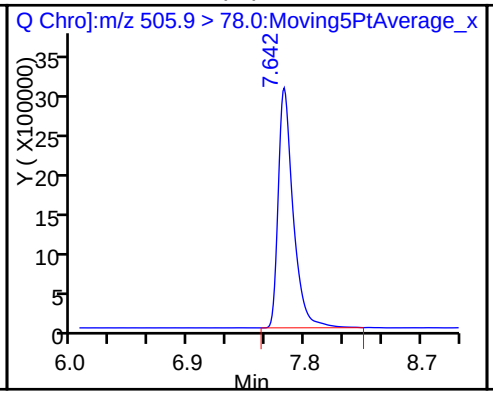
29 Perfluorododecanoic acid



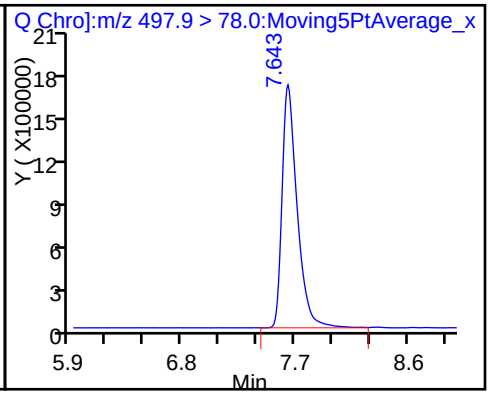
30 Perfluorotridecanoic acid



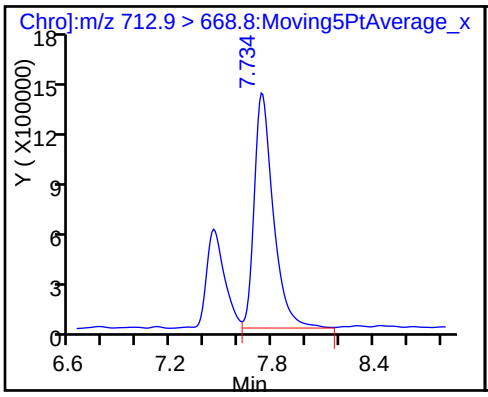
* 31 13C8 FOSA (IS)



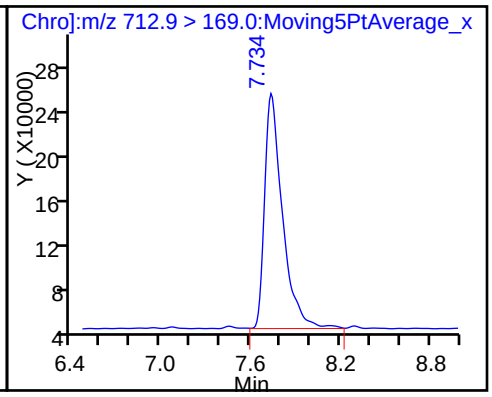
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-343884/1-A

Matrix: Water | Lab File ID: PC516I028101.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 250(mL) | Date Analyzed: 09/29/2016 00:08

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	112		60-155
STL01054	13C8 PFOS	131	X	45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028101.d
Lims ID: MB 280-343884/1-A
Client ID:
Sample Type: MB
Inject. Date: 29-Sep-2016 00:08:57 ALS Bottle#: 0 Worklist Smp#: 25
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-343884/1-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 17:29:08 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK015

First Level Reviewer: tinkhams Date: 29-Sep-2016 17:29:08

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.812	3.906	-0.094		26649207	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		3.907				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.024				ND			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.156				ND			
298.9 > 98.9		5.156							
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.156				ND			
298.9 > 98.9		5.156							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.601	5.610	-0.009		19391430	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.610				ND			
313.0 > 118.6		5.610							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.054	6.035	0.019		2096318	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.035				ND			
398.9 > 98.9		6.035							
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.035				ND			
398.9 > 98.9		6.035							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.036				ND			
363.0 > 168.9		6.036							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.365				ND			
449.0 > 98.9		6.365							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.365				ND			
449.0 > 98.9		6.365							
$ 14 13C8 PFOA									
421.0 > 375.9	6.385	6.375	0.010	1.000	24124643	10.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.385	6.376	0.009		29022818	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.376				ND			
413.0 > 169.0		6.376							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.667	6.648	0.019		6873940	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.648				ND			
498.9 > 98.9		6.648							
$ 18 13C8 PFOS									M
506.9 > 80.0	6.657	6.657	0.0	0.999	4528814	12.1			M
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.677	6.668	0.009		24528765	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.668				ND			
463.0 > 218.9		6.668							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.912	6.912	0.0		24447065	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		6.922				ND			
513.0 > 219.0		6.922							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.110				ND			
598.9 > 99.0		7.110							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.110				ND			
598.9 > 99.0		7.110							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.120	7.129	-0.009		15390491	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.139				ND			
563.0 > 268.9		7.139							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.299	7.318	-0.019		25301770	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.318				ND			
613.0 > 168.9		7.318							
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.469				ND			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.510	7.519	-0.009		711701	10.0			
32 Perfluorooctane Sulfonamide									M
497.9 > 78.0	7.501	7.520	-0.019	0.999	12635	0.1754			M
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.601				ND			
712.9 > 169.0		7.601							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

Report Date: 29-Sep-2016 17:29:09 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028101.d

Injection Date: 29-Sep-2016 00:08:57 Instrument ID: LC_LCMS5

Lims ID: MB 280-343884/1-A

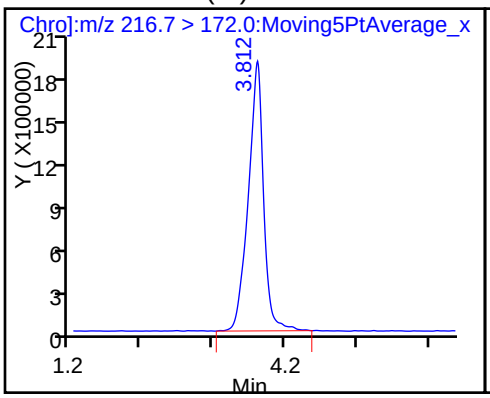
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 25

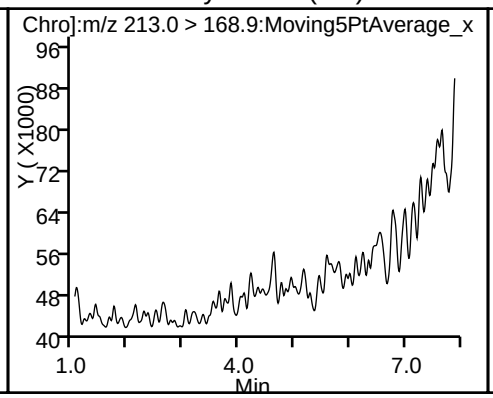
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

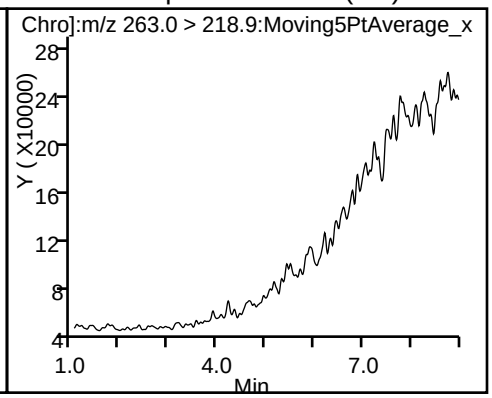
* 1 13C4 PFBA (IS)



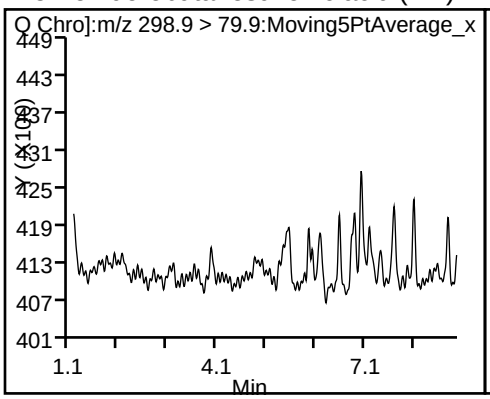
2 Perfluorobutyric acid (ND)



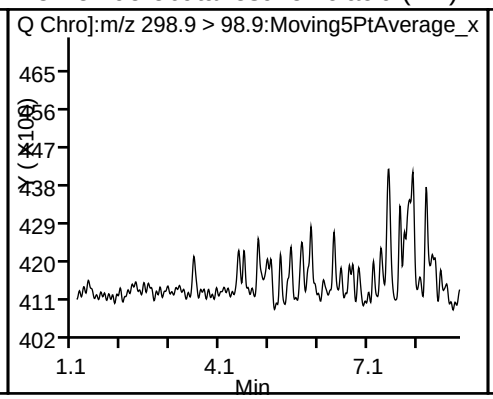
3 Perfluoropentanoic acid (ND)



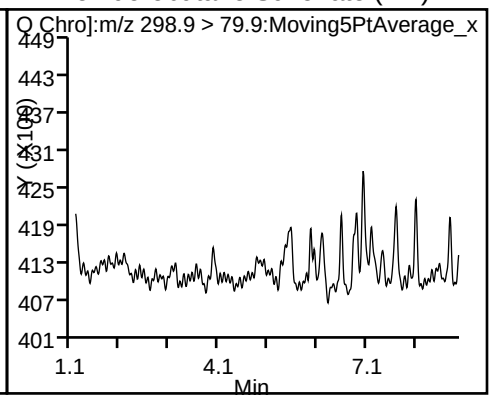
5 Perfluorobutanesulfonic acid (ND)



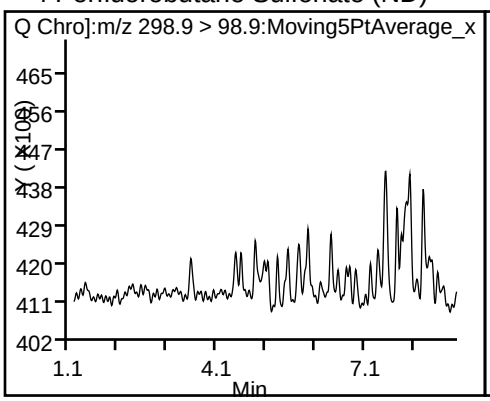
5 Perfluorobutanesulfonic acid (ND)



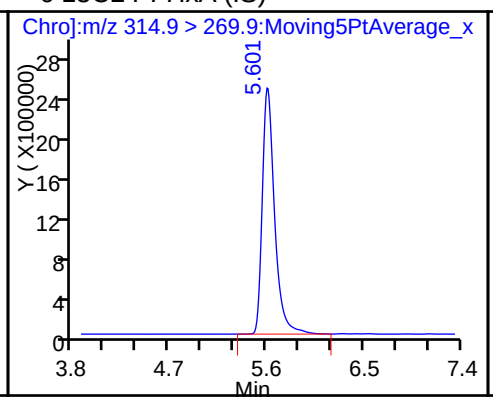
4 Perfluorobutane Sulfonate (ND)



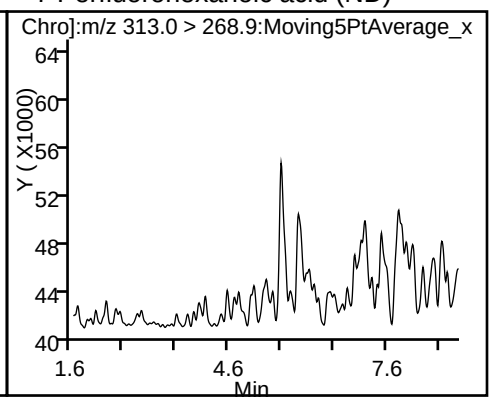
4 Perfluorobutane Sulfonate (ND)



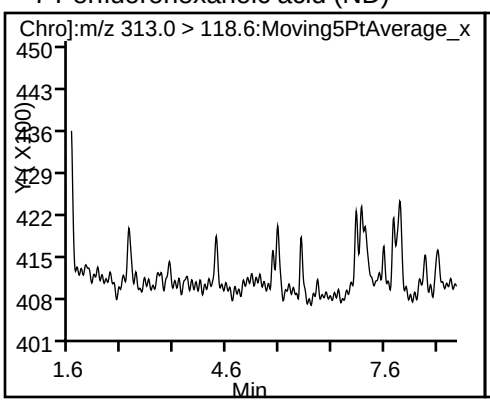
* 6 13C2 PFHxA (IS)



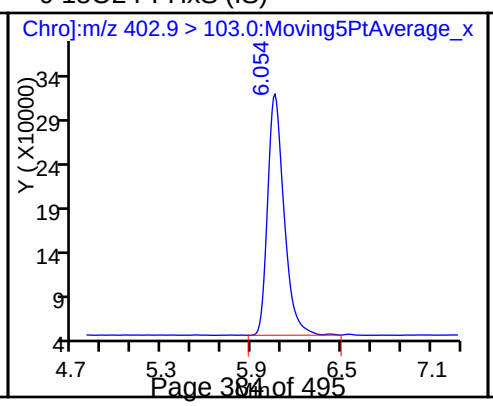
7 Perfluorohexanoic acid (ND)



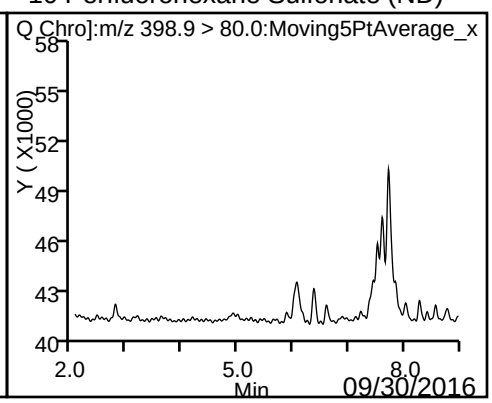
7 Perfluorohexanoic acid (ND)



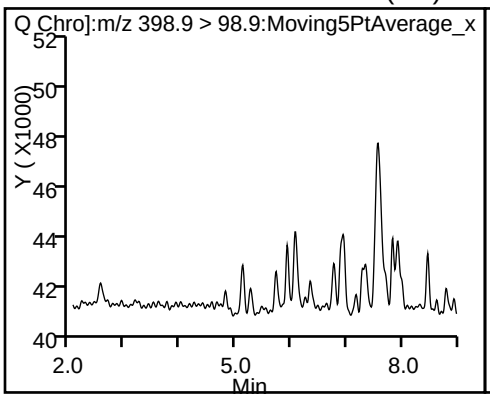
* 9 18O2 PFHxS (IS)



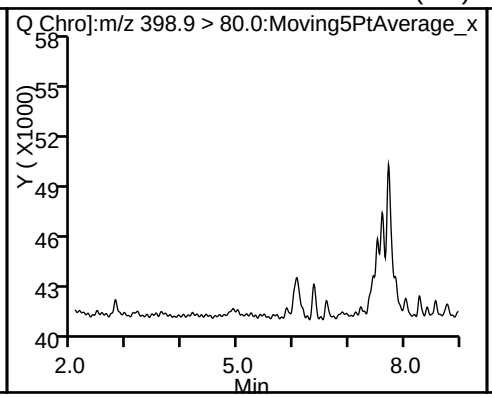
10 Perfluorohexane Sulfonate (ND)



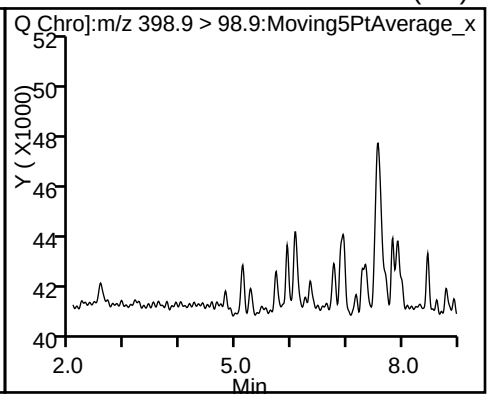
10 Perfluorohexane Sulfonate (ND)



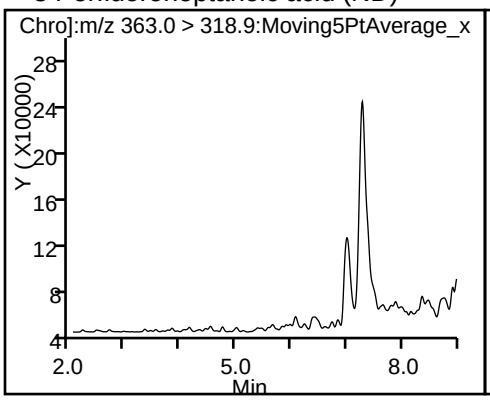
11 Perfluorohexanesulfonic acid (ND)



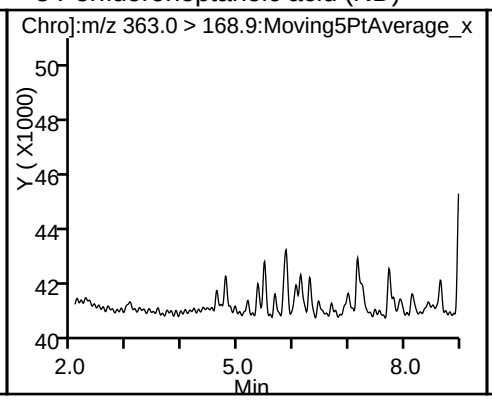
11 Perfluorohexanesulfonic acid (ND)



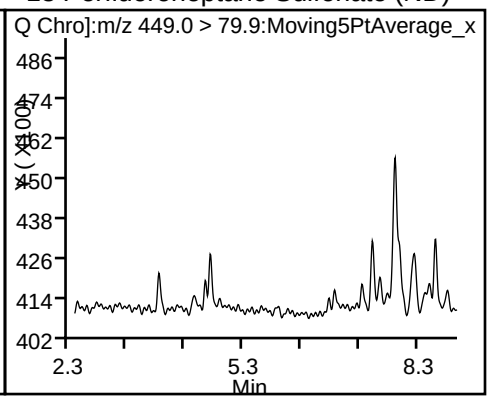
8 Perfluoroheptanoic acid (ND)



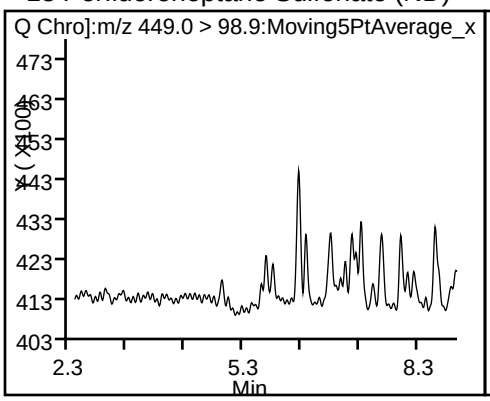
8 Perfluoroheptanoic acid (ND)



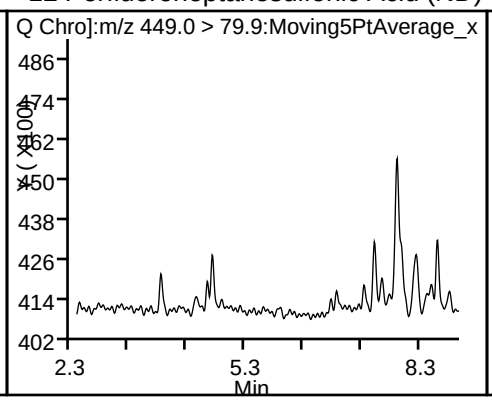
13 Perfluoroheptane Sulfonate (ND)



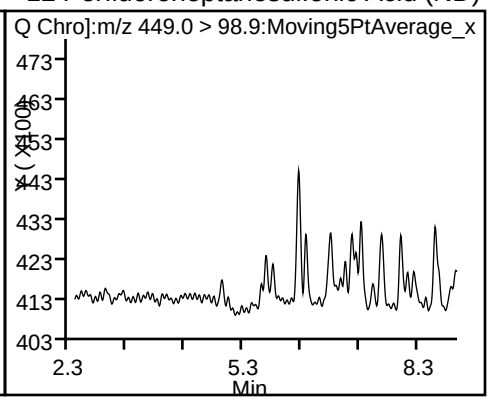
13 Perfluoroheptane Sulfonate (ND)



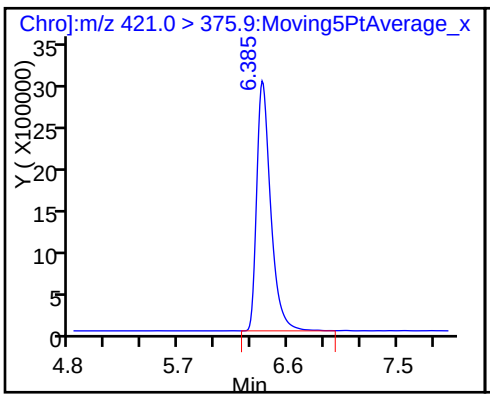
12 Perfluoroheptanesulfonic Acid (ND)



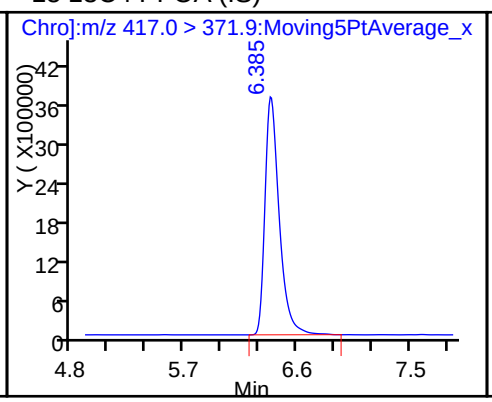
12 Perfluoroheptanesulfonic Acid (ND)



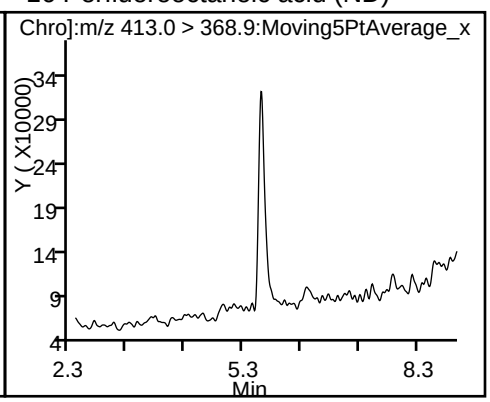
$ 14 13C8 PFOA



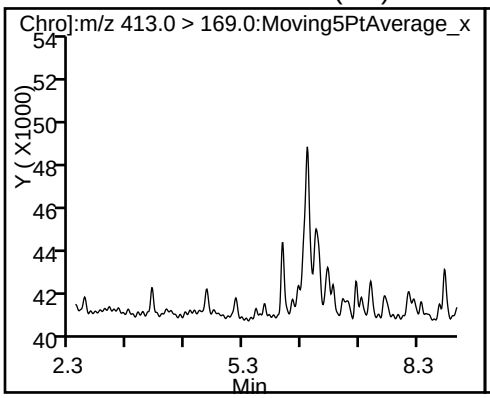
* 15 13C4 PFOA (IS)



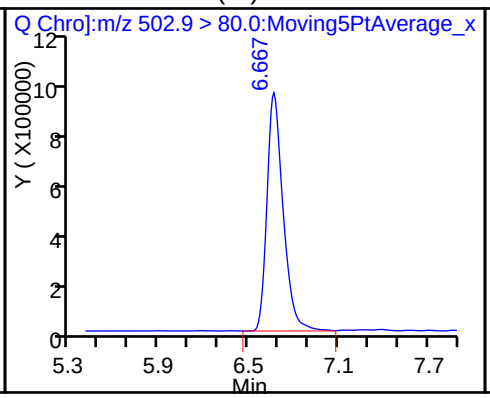
16 Perfluorooctanoic acid (ND)



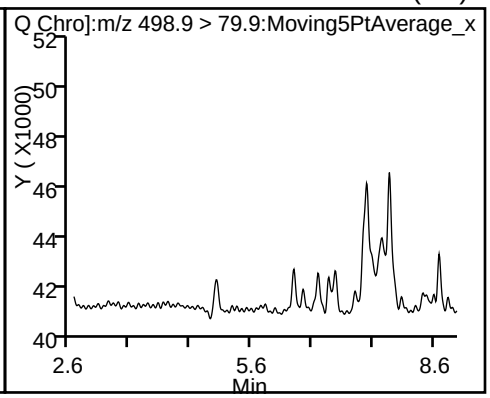
16 Perfluorooctanoic acid (ND)



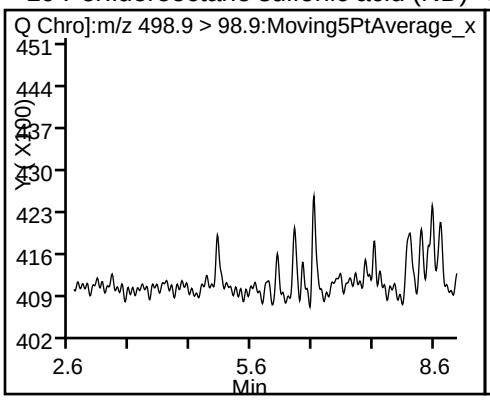
* 17 13C4 PFOS (IS)



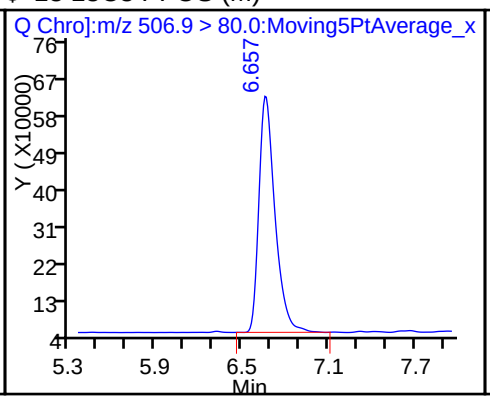
19 Perfluorooctane sulfonic acid (ND)



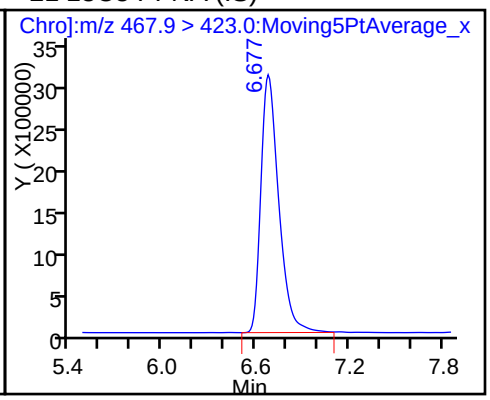
19 Perfluorooctane sulfonic acid (ND)



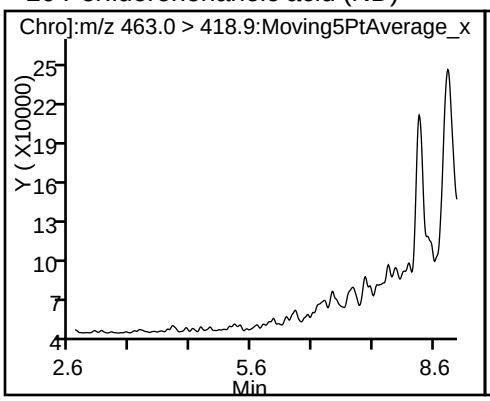
$ 18 13C8 PFOS (M)



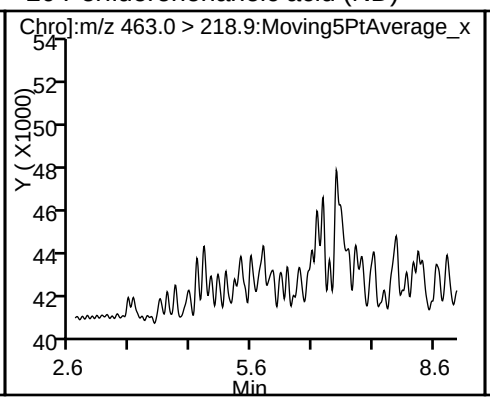
* 21 13C5 PFNA (IS)



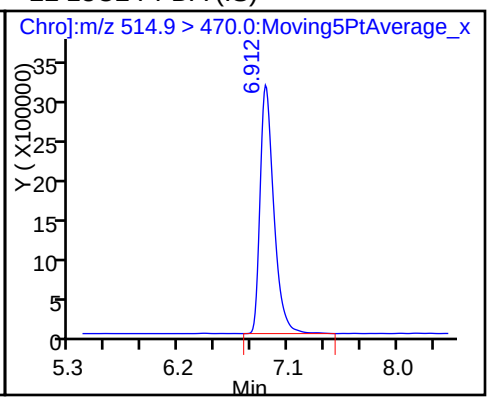
20 Perfluorononanoic acid (ND)



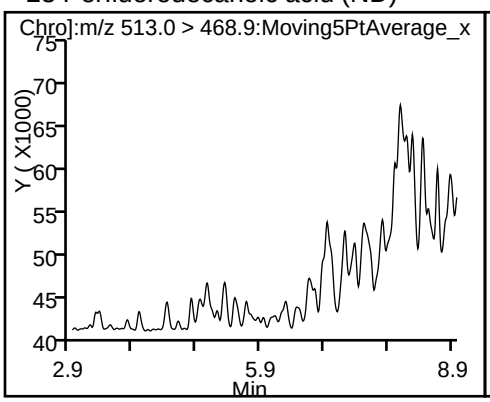
20 Perfluorononanoic acid (ND)



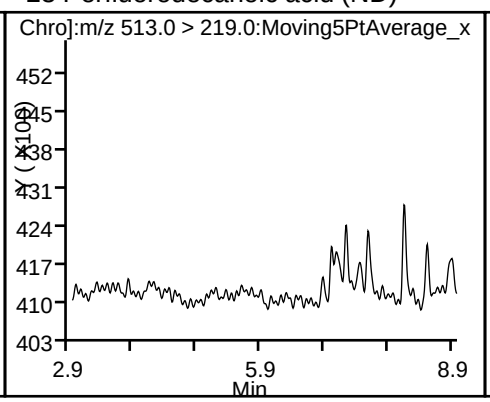
* 22 13C2 PFDA (IS)



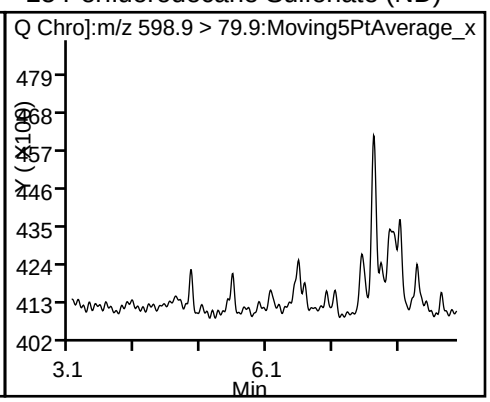
23 Perfluorodecanoic acid (ND)



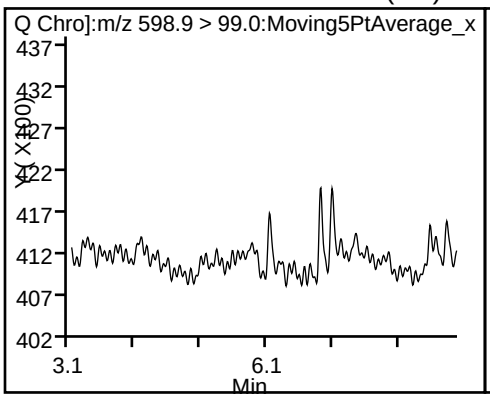
23 Perfluorodecanoic acid (ND)



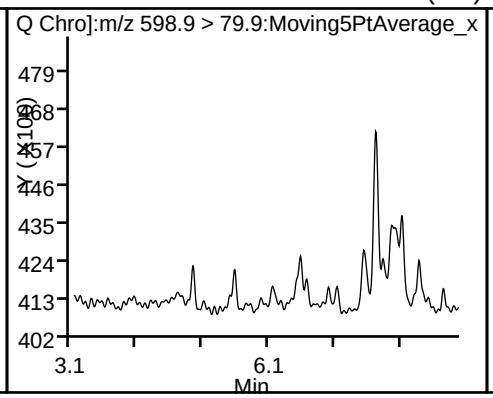
25 Perfluorodecane Sulfonate (ND)



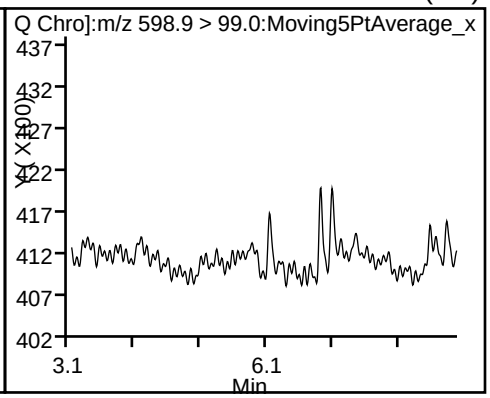
25 Perfluorodecane Sulfonate (ND)



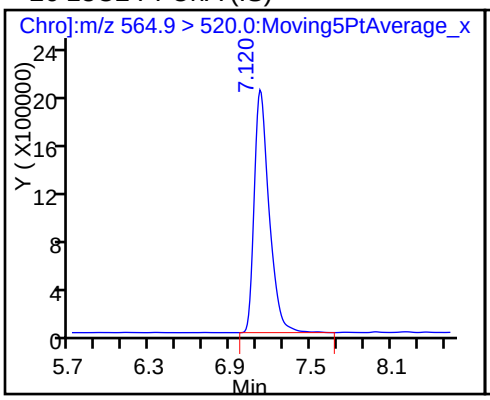
24 Perfluorodecane Sulfonic acid (ND)



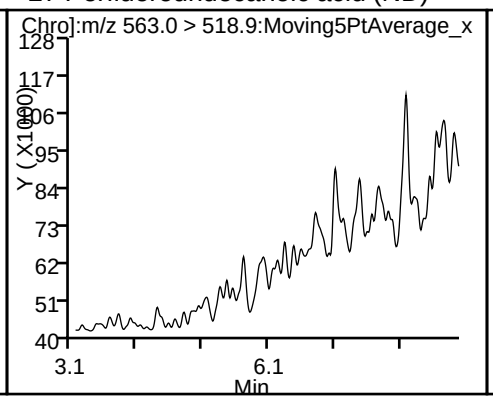
24 Perfluorodecane Sulfonic acid (ND)



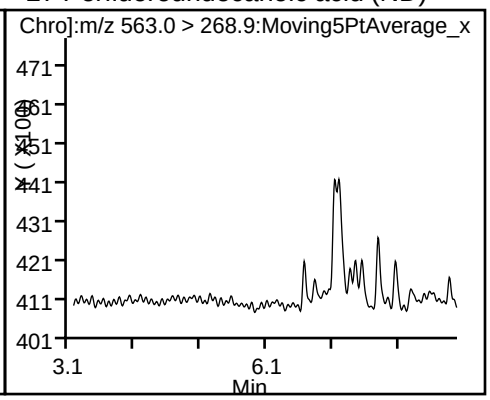
* 26 13C2 PFUnA (IS)



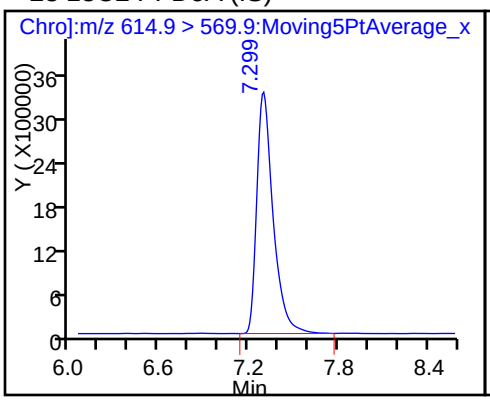
27 Perfluoroundecanoic acid (ND)



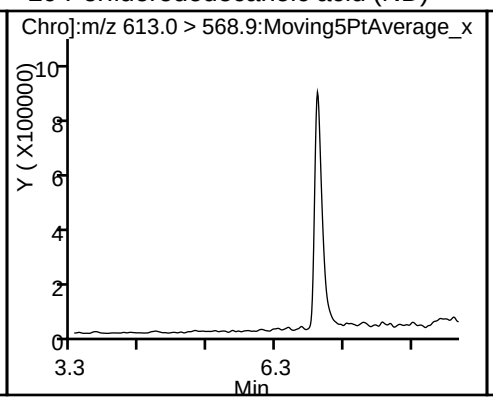
27 Perfluoroundecanoic acid (ND)



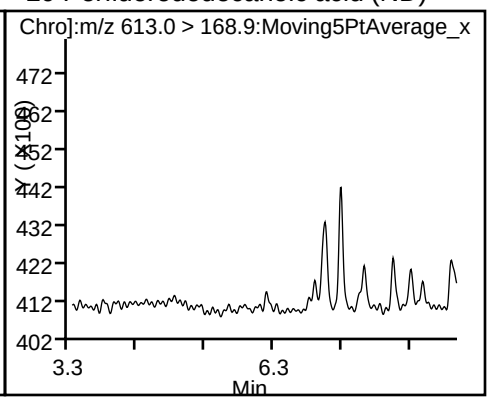
* 28 13C2 PFDoA (IS)



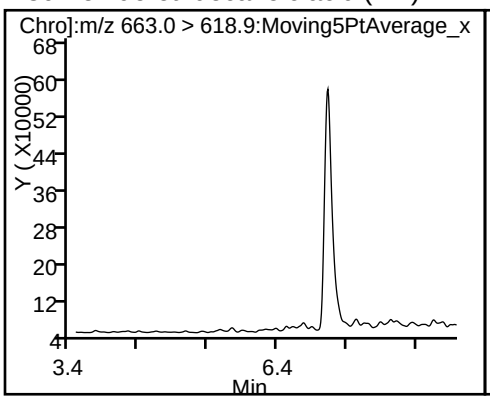
29 Perfluorododecanoic acid (ND)



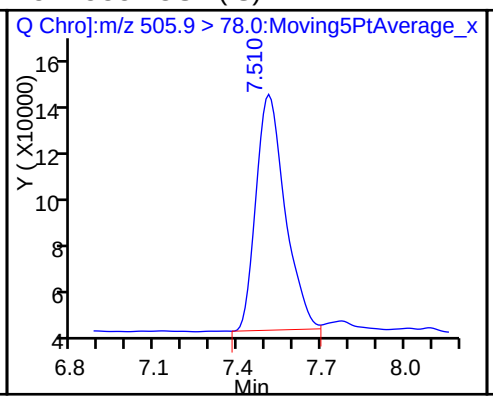
29 Perfluorododecanoic acid (ND)



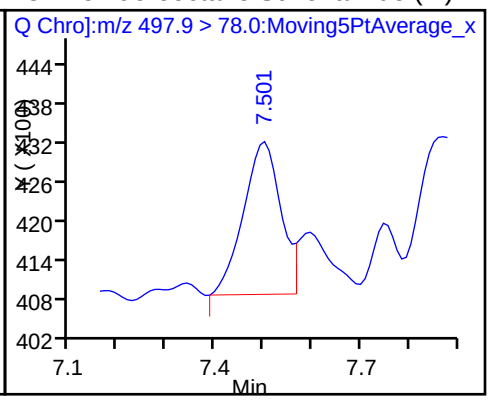
30 Perfluorotridecanoic acid (ND)



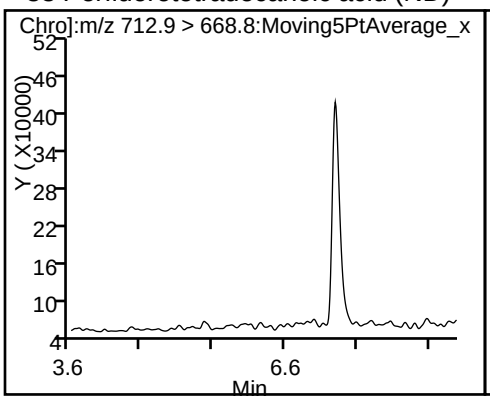
* 31 13C8 FOSA (IS)



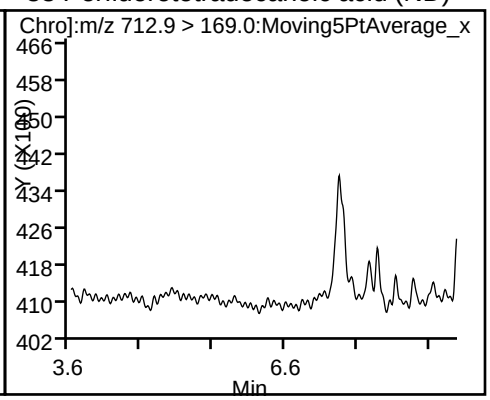
32 Perfluorooctane Sulfonamide (M)



33 Perfluorotetradecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



TestAmerica Denver

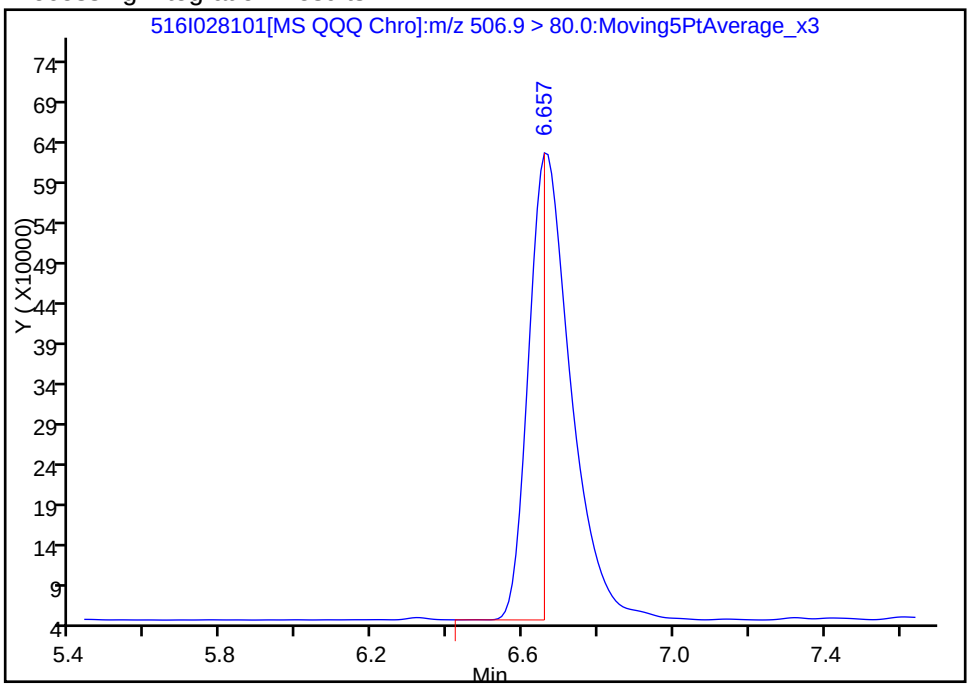
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028101.d
Injection Date: 29-Sep-2016 00:08:57 Instrument ID: LC_LCMS5
Lims ID: MB 280-343884/1-A
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 25
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

$ 18 13C8 PFOS, CAS: STL01054

Signal: 1

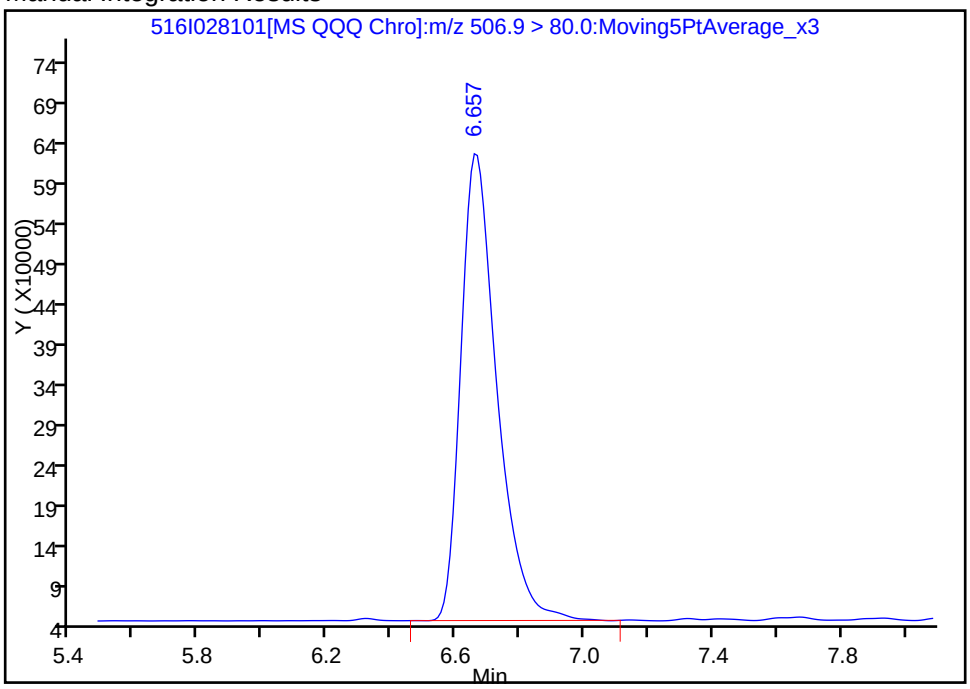
Processing Integration Results

RT: 6.66
Area: 1669781
Amount: 4.440423
Amount Units: ug/L



Manual Integration Results

RT: 6.66
Area: 4528814
Amount: 12.111048
Amount Units: ug/L



Reviewer: tinkhams, 29-Sep-2016 17:29:08
Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-343904/1-A

Matrix: Water | Lab File ID: PC516I028081.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 250(mL) | Date Analyzed: 09/28/2016 20:02

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	118		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028081.d
Lims ID: MB 280-343904/1-A
Client ID:
Sample Type: MB
Inject. Date: 28-Sep-2016 20:02:11 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-343904/1-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:29:33

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.764	3.963	-0.199		28192593	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9		3.963				ND			
3 Perfluoropentanoic acid									
263.0 > 218.9		5.062				ND			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9		5.175				ND			
298.9 > 98.9		5.175							
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.175				ND			
298.9 > 98.9		5.175							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.591	5.638	-0.047		20313313	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9		5.629				ND			
313.0 > 118.6		5.629							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.035	6.073	-0.038		2085082	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.064				ND			
398.9 > 98.9		6.064							
11 Perfluorohexanesulfonic acid									
398.9 > 80.0		6.064				ND			
398.9 > 98.9		6.064							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.064				ND			
363.0 > 168.9		6.064							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.403				ND			
449.0 > 98.9		6.403							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.403				ND			
449.0 > 98.9		6.403							
$ 14 13C8 PFOA									
421.0 > 375.9	6.366	6.413	-0.047	1.000	25941925	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.366	6.404	-0.038		30757039	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.414				ND			
413.0 > 169.0		6.414							
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.648	6.676	-0.028		7929360	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.677				ND			
498.9 > 98.9		6.677							
$ 18 13C8 PFOS									
506.9 > 80.0	6.648	6.685	-0.037	1.000	4724090	10.9			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.658	6.696	-0.038		26158688	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.697				ND			
463.0 > 218.9		6.697							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.912	6.941	-0.029		26142753	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		6.941				ND			
513.0 > 219.0		6.941							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.129				ND			
598.9 > 99.0		7.129							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.129				ND			
598.9 > 99.0		7.129							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.129	7.148	-0.019		17776814	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.149				ND			
563.0 > 268.9		7.149							
29 Perfluorododecanoic acid									
613.0 > 568.9		7.327				ND			
613.0 > 168.9		7.327							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.308	7.327	-0.019		32044148	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.488				ND			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.539	-0.009	1.000	21762	0.2483			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.538	-0.009		852919	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.611				ND			
712.9 > 169.0		7.611							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

Report Date: 29-Sep-2016 11:09:10 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028081.d

Injection Date: 28-Sep-2016 20:02:11 Instrument ID: LC_LCMS5

Lims ID: MB 280-343904/1-A

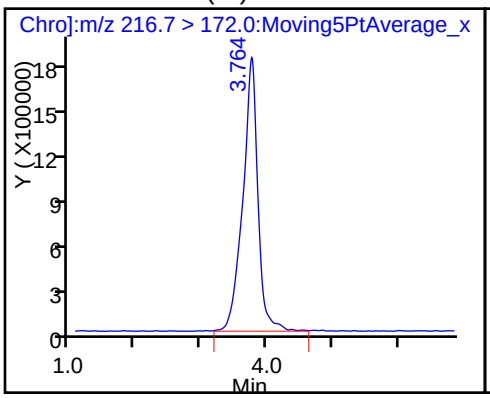
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5

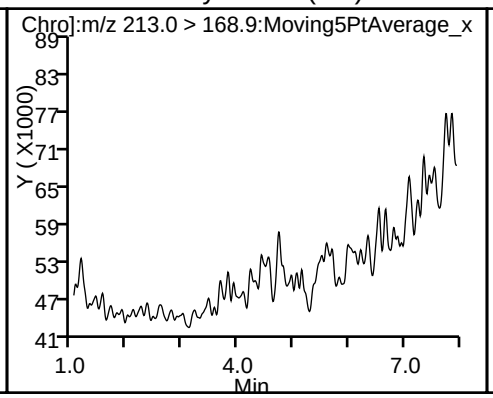
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

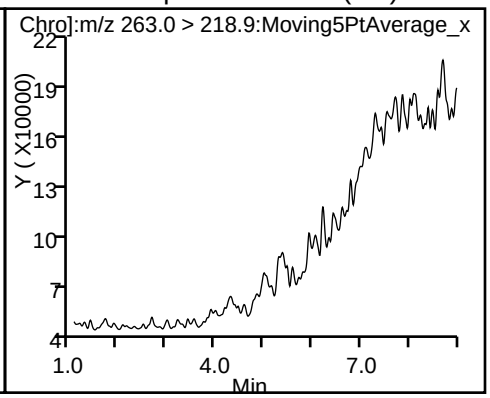
* 1 13C4 PFBA (IS)



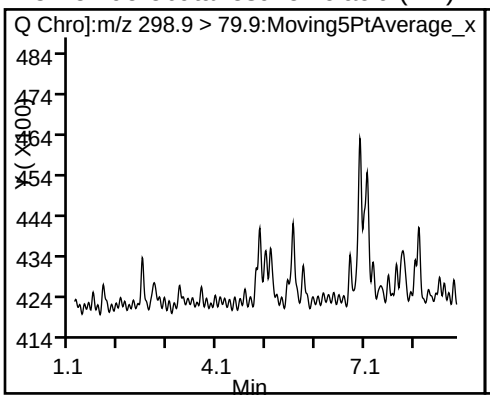
2 Perfluorobutyric acid (ND)



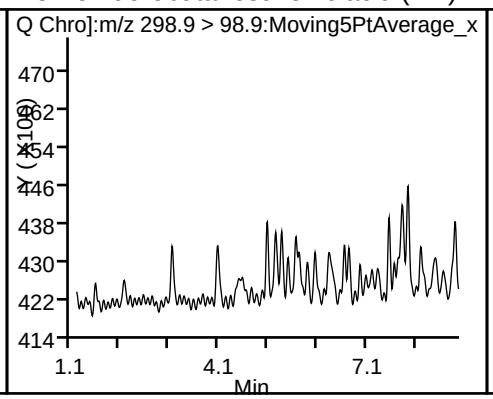
3 Perfluoropentanoic acid (ND)



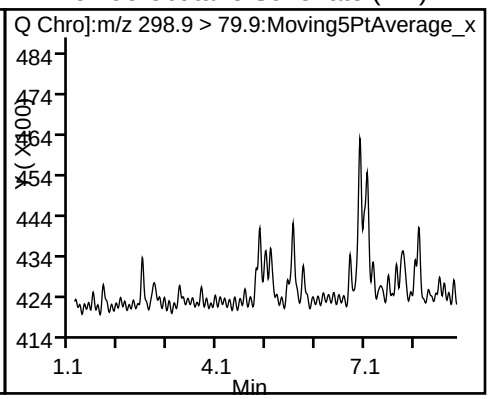
5 Perfluorobutanesulfonic acid (ND)



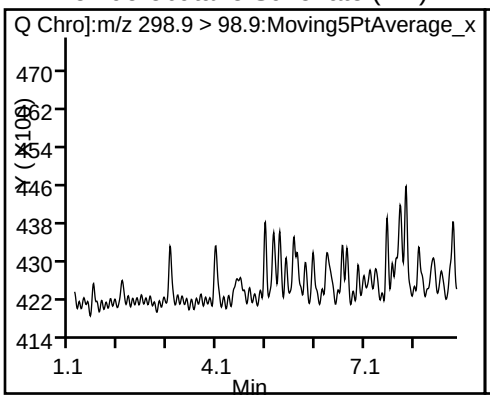
5 Perfluorobutanesulfonic acid (ND)



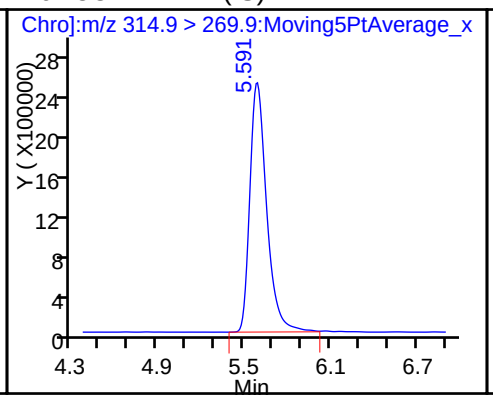
4 Perfluorobutane Sulfonate (ND)



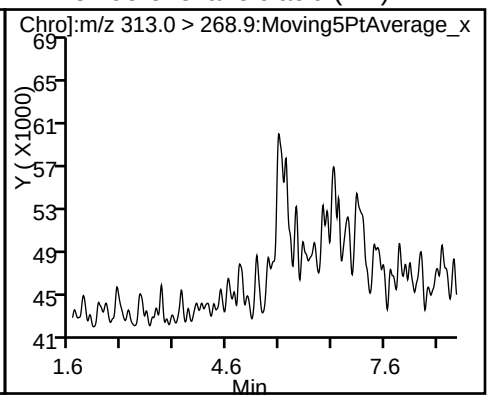
4 Perfluorobutane Sulfonate (ND)



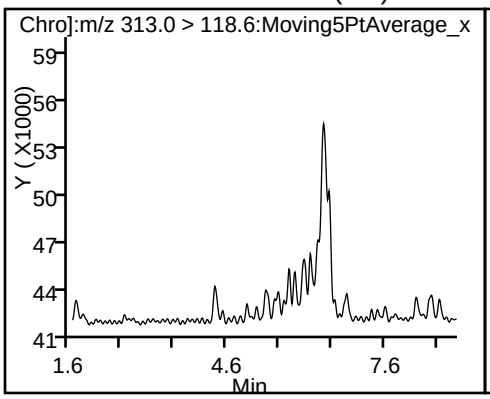
* 6 13C2 PFHxA (IS)



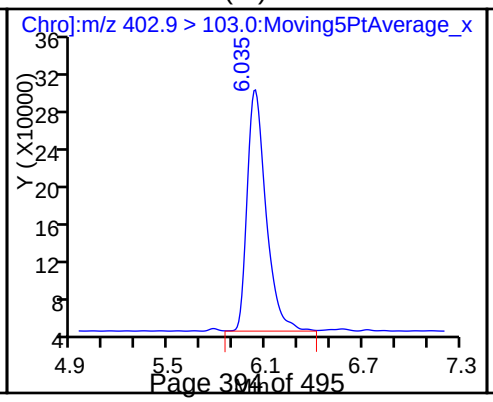
7 Perfluorohexanoic acid (ND)



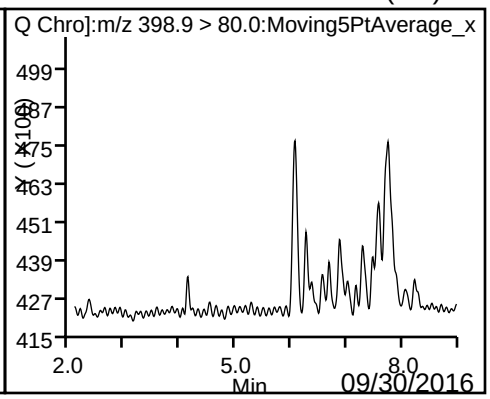
7 Perfluorohexanoic acid (ND)



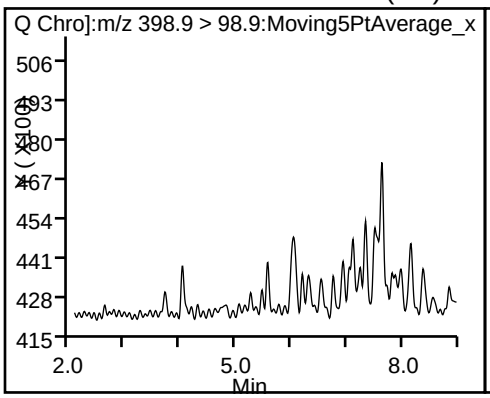
* 9 18O2 PFHxS (IS)



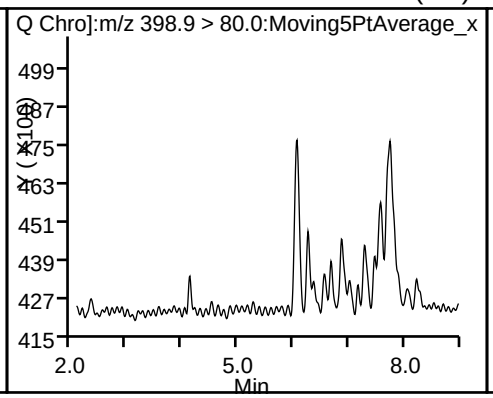
10 Perfluorohexane Sulfonate (ND)



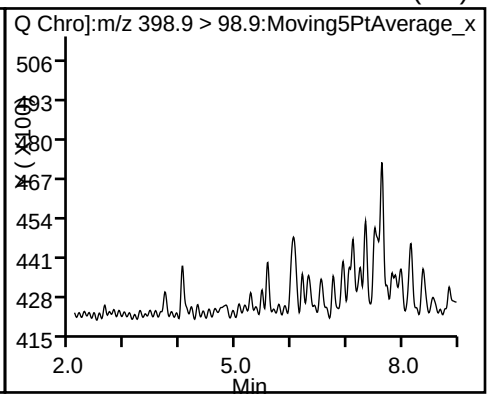
10 Perfluorohexane Sulfonate (ND)



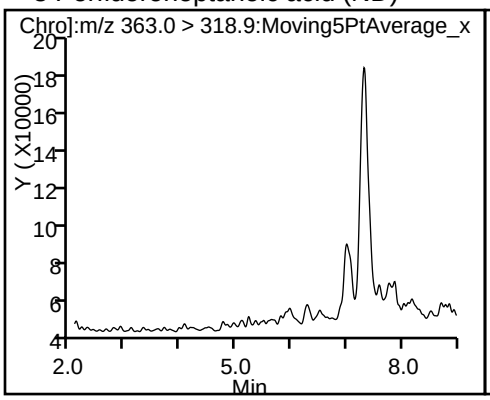
11 Perfluorohexanesulfonic acid (ND)



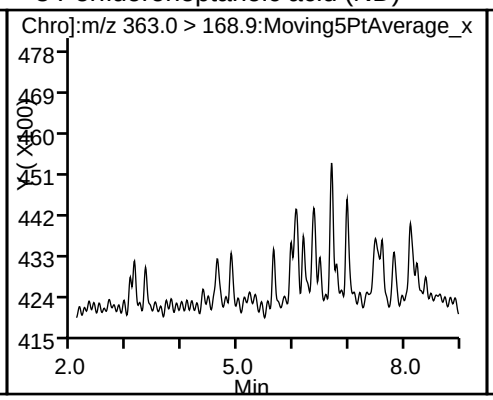
11 Perfluorohexanesulfonic acid (ND)



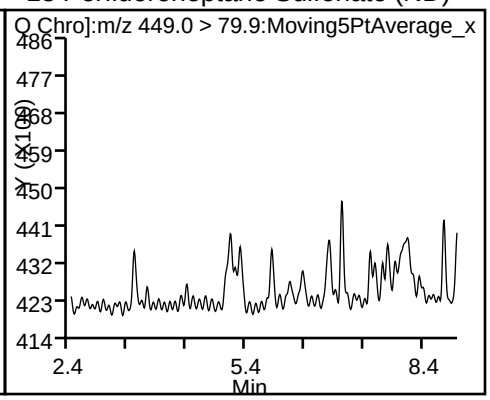
8 Perfluoroheptanoic acid (ND)



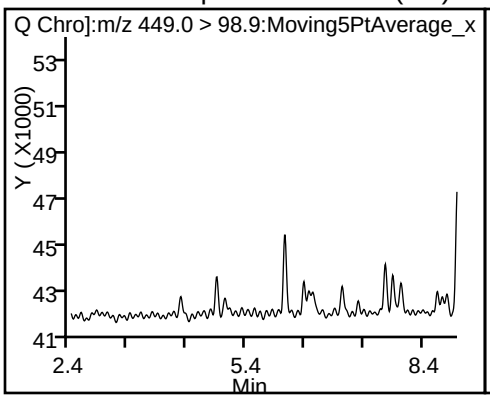
8 Perfluoroheptanoic acid (ND)



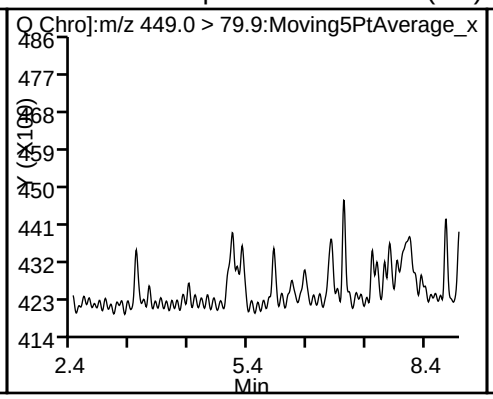
13 Perfluoroheptane Sulfonate (ND)



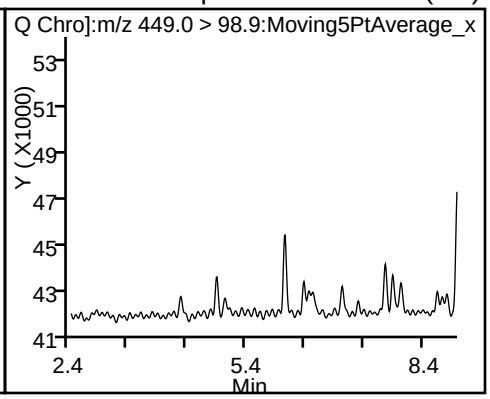
13 Perfluoroheptane Sulfonate (ND)



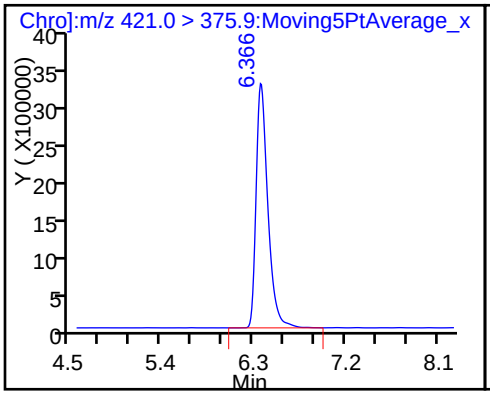
12 Perfluoroheptanesulfonic Acid (ND)



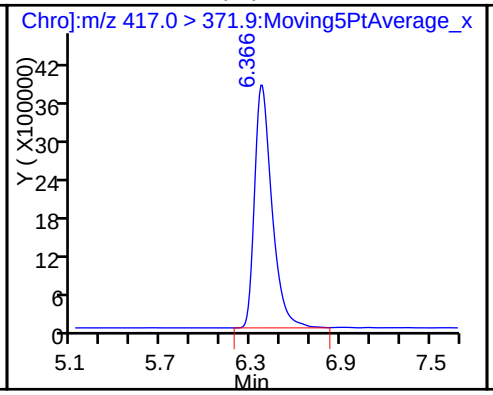
12 Perfluoroheptanesulfonic Acid (ND)



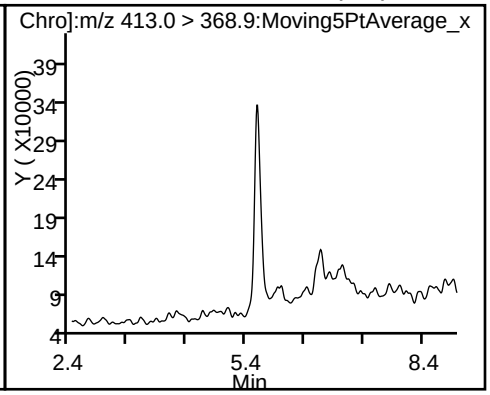
$ 14 13C8 PFOA



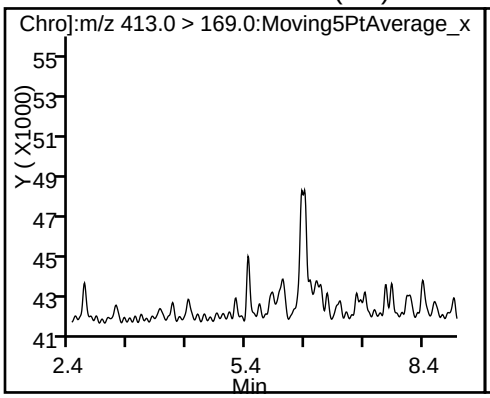
* 15 13C4 PFOA (IS)



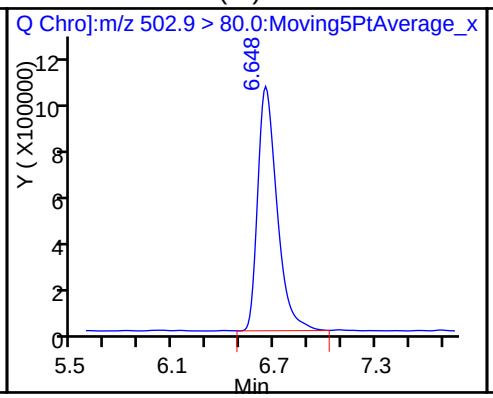
16 Perfluorooctanoic acid (ND)



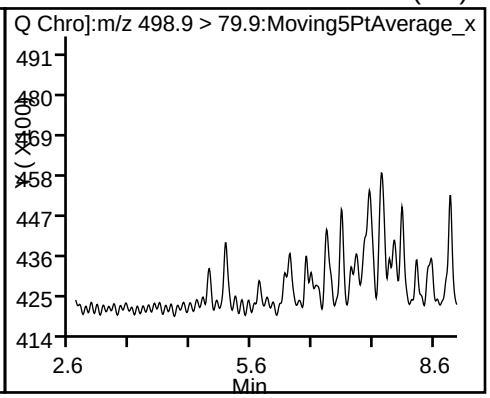
16 Perfluorooctanoic acid (ND)



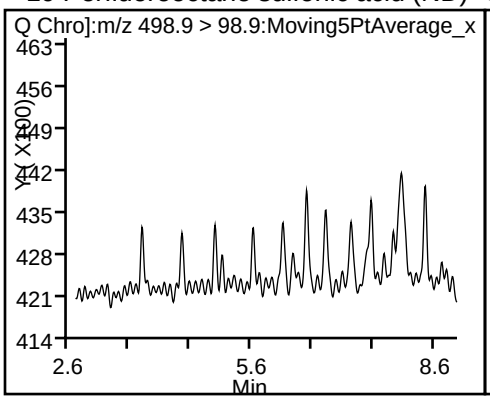
* 17 13C4 PFOS (IS)



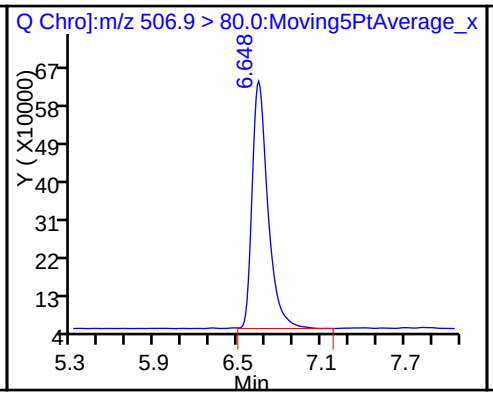
19 Perfluorooctane sulfonic acid (ND)



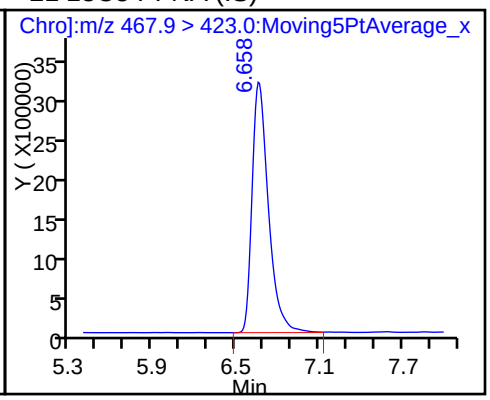
19 Perfluorooctane sulfonic acid (ND)



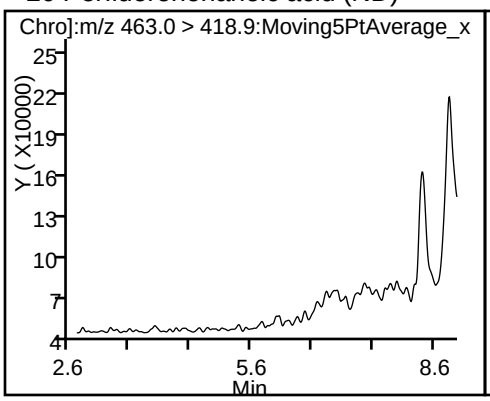
$ 18 13C8 PFOS



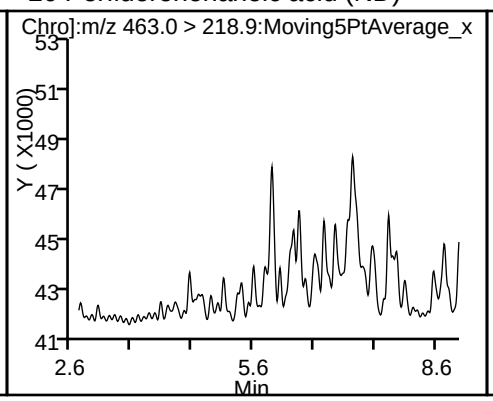
* 21 13C5 PFNA (IS)



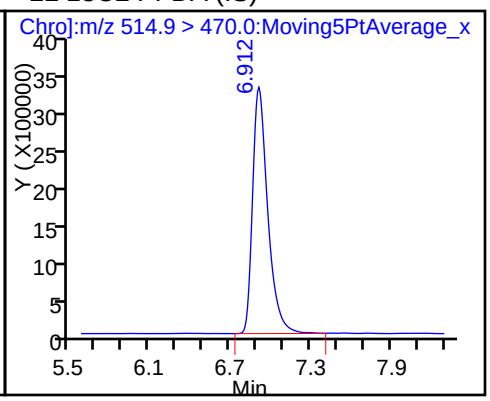
20 Perfluorononanoic acid (ND)



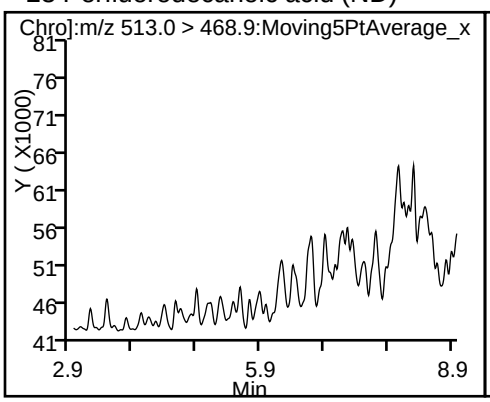
20 Perfluorononanoic acid (ND)



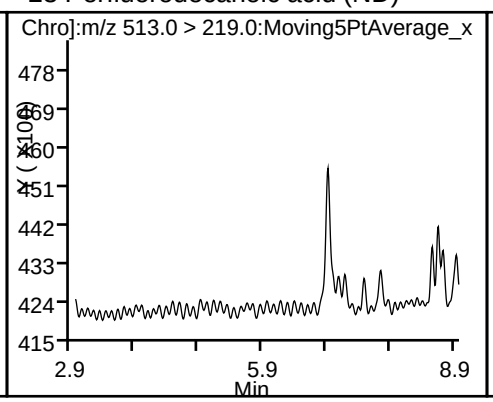
* 22 13C2 PFDA (IS)



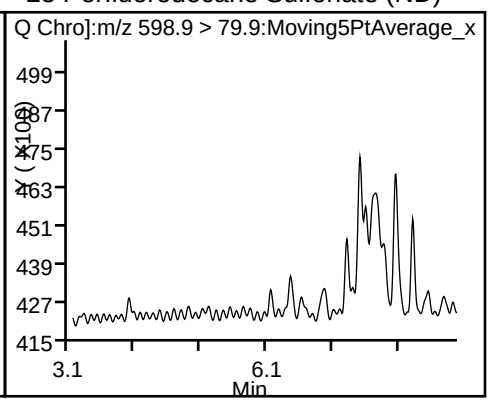
23 Perfluorodecanoic acid (ND)



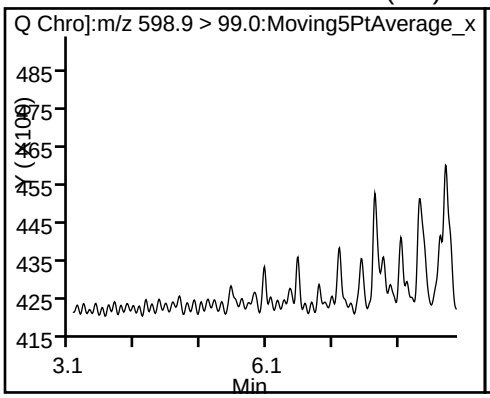
23 Perfluorodecanoic acid (ND)



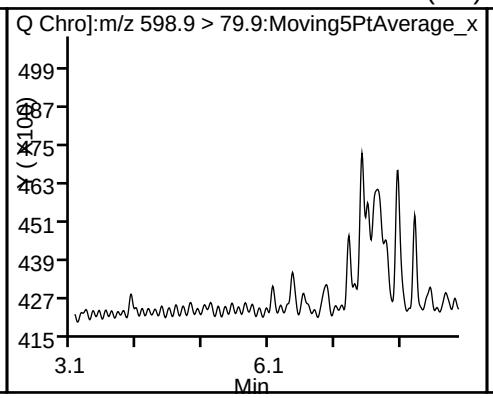
25 Perfluorodecane Sulfonate (ND)



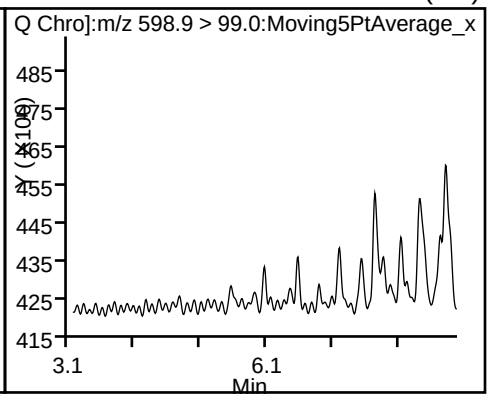
25 Perfluorodecane Sulfonate (ND)



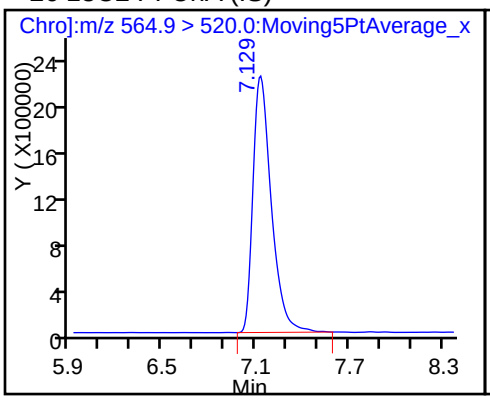
24 Perfluorodecane Sulfonic acid (ND)



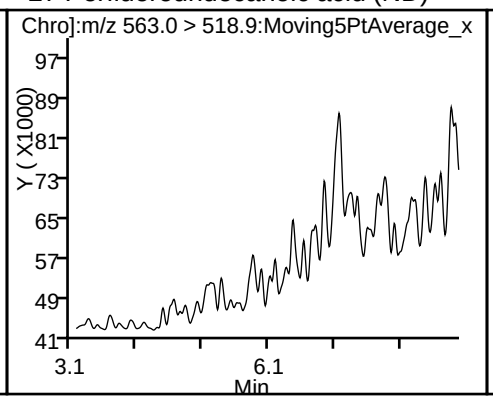
24 Perfluorodecane Sulfonic acid (ND)



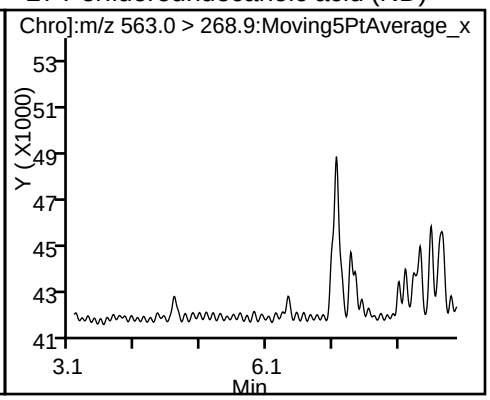
* 26 13C2 PFUnA (IS)



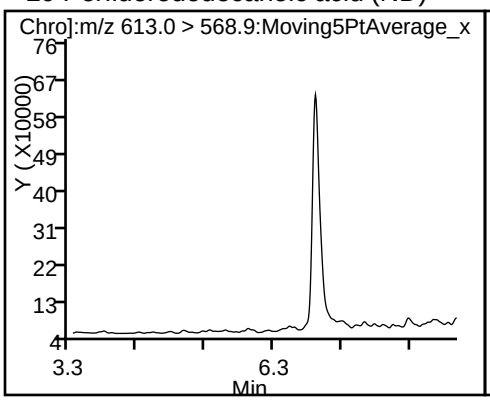
27 Perfluoroundecanoic acid (ND)



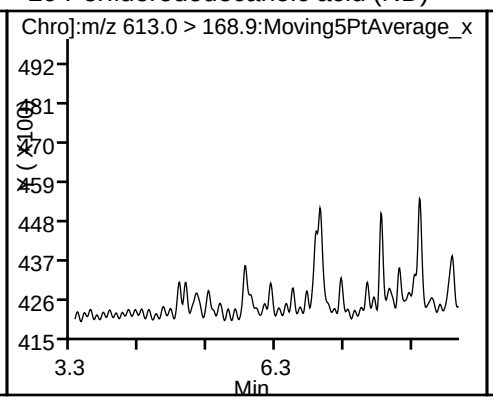
27 Perfluoroundecanoic acid (ND)



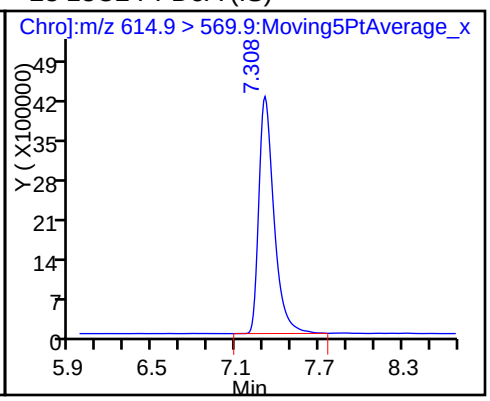
29 Perfluorododecanoic acid (ND)



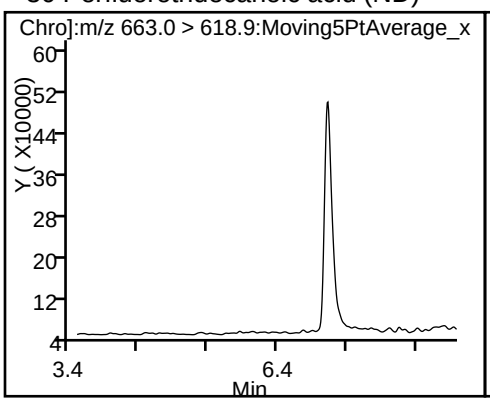
29 Perfluorododecanoic acid (ND)



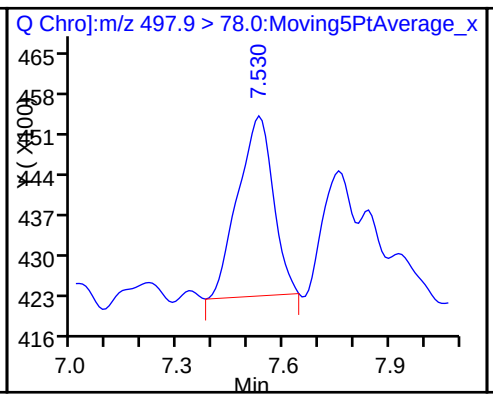
* 28 13C2 PFDoA (IS)



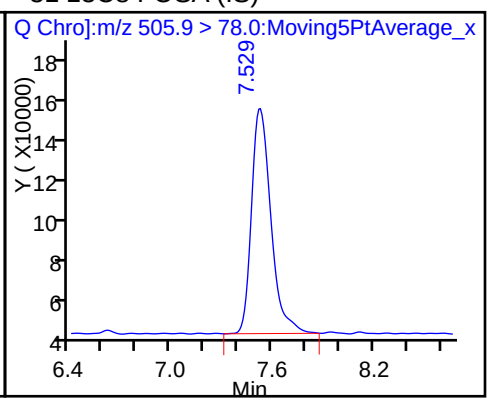
30 Perfluorotridecanoic acid (ND)



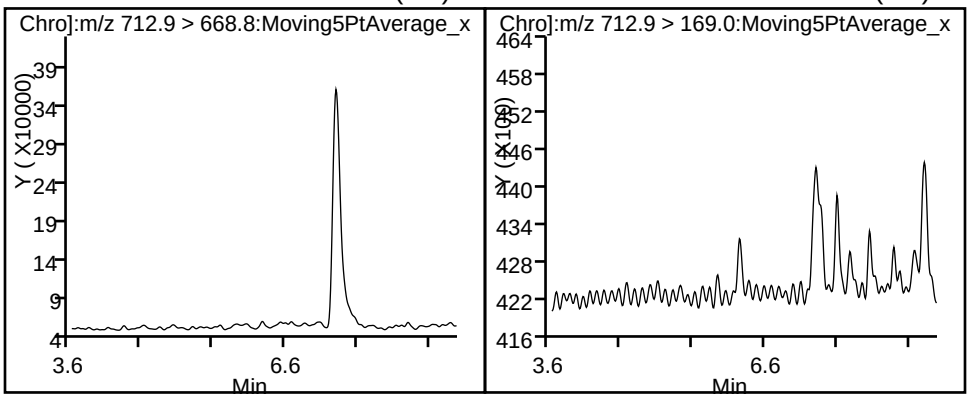
32 Perfluorooctane Sulfonamide



* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid (ND) 33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-343884/2-A

Matrix: Water | Lab File ID: PC516I028102.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 250(mL) | Date Analyzed: 09/29/2016 00:21

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.138		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.172		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.169		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.168		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.167		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.192		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	114		60-155
STL01054	13C8 PFOS	118		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028102.d
Lims ID: LCS 280-343884/2-A
Client ID:
Sample Type: LCS
Inject. Date: 29-Sep-2016 00:21:17 ALS Bottle#: 0 Worklist Smp#: 26
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-343884/2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:03:51

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.793	3.963	-0.170		26811556	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.802	3.963	-0.161	1.003	25332297	8.38			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.005	5.071	-0.066	0.895	20963282	9.97			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.128	5.184	-0.056	0.850	8081496	6.89			
298.9 > 98.9	5.128	5.184	-0.056	0.850	2612853		3.09(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.128	5.184	-0.056	0.850	8081496	6.89			
298.9 > 98.9	5.128	5.184	-0.056	0.850	2612853		3.09(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.591	5.648	-0.057		19272705	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.582	5.648	-0.066	0.998	16940528	9.38			
313.0 > 118.6	5.572	5.648	-0.076	0.997	511303		33.13(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.035	6.073	-0.038		2246548	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.026	6.073	-0.047	0.998	7554456	8.46			R
398.9 > 98.9	6.035	6.073	-0.038	1.000	2593959		2.91(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.026	6.073	-0.047	0.998	7554456	8.46			
398.9 > 98.9	6.035	6.073	-0.038	1.000	2593959		2.91(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.017	6.074	-0.057	0.945	24055890	8.61			
363.0 > 168.9	6.026	6.074	-0.048	0.947	6094416		3.95(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.365	6.403	-0.038	0.957	7614146	8.22			
449.0 > 98.9	6.356	6.403	-0.047	0.956	2305495		3.30(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.365	6.403	-0.038	0.957	7614146	8.22			
449.0 > 98.9	6.356	6.403	-0.047	0.956	2305495		3.30(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.366	6.413	-0.047	1.000	24033745	11.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.366	6.413	-0.047		28312065	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.366	6.414	-0.048	1.000	28309526	9.62			
413.0 > 169.0	6.366	6.414	-0.048	1.000	8955652		3.16(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.648	6.676	-0.028		7447729	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.648	6.677	-0.029	1.000	8126878	8.34			R
498.9 > 98.9	6.648	6.677	-0.029	1.000	3068770		2.65(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.648	6.685	-0.037	1.000	4449439	11.0			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.658	6.696	-0.038		23381679	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.659	6.697	-0.038	1.000	22790467	8.38			
463.0 > 218.9	6.659	6.697	-0.038	1.000	3546590		6.43(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.903	6.941	-0.038		24343768	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.903	6.941	-0.038	1.000	23640236	9.33			R
513.0 > 219.0	6.912	6.941	-0.029	1.001	2306964		10.25(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.091	7.119	-0.028	1.067	7600112	7.77			
598.9 > 99.0	7.091	7.119	-0.028	1.067	2313083		3.29(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.091	7.119	-0.028	1.067	7600112	7.77			
598.9 > 99.0	7.091	7.119	-0.028	1.067	2313083		3.29(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.110	7.148	-0.038		16050393	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.111	7.149	-0.038	1.000	20886920	9.06			R
563.0 > 268.9	7.120	7.149	-0.029	1.001	2482961		8.41(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.299	7.327	-0.028		27014205	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.299	7.318	-0.019	1.000	25276609	9.27			
613.0 > 168.9	7.299	7.318	-0.019	1.000	2891250		8.74(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.450	7.478	-0.028	1.021	16272382	7.03			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.500	7.548	-0.048		647977	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.501	7.539	-0.038	1.000	759390	11.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.582	7.611	-0.029	1.039	10815333	5.79			
712.9 > 169.0	7.582	7.611	-0.029	1.039	1646658		6.57(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 29-Sep-2016 11:41:46 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028102.d

Injection Date: 29-Sep-2016 00:21:17 Instrument ID: LC_LCMS5

Lims ID: LCS 280-343884/2-A

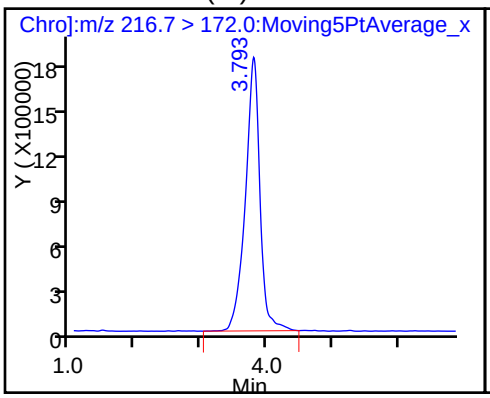
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 26

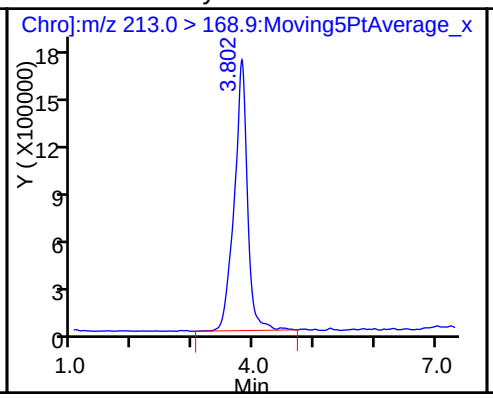
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

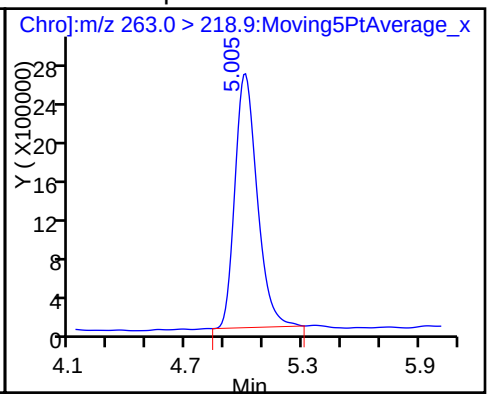
* 1 13C4 PFBA (IS)



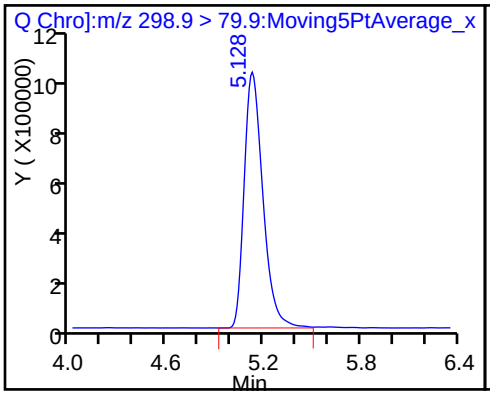
2 Perfluorobutyric acid



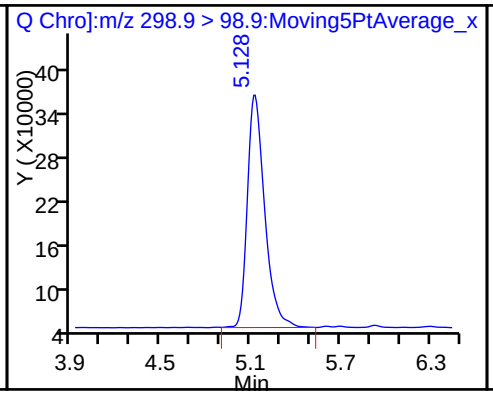
3 Perfluoropentanoic acid



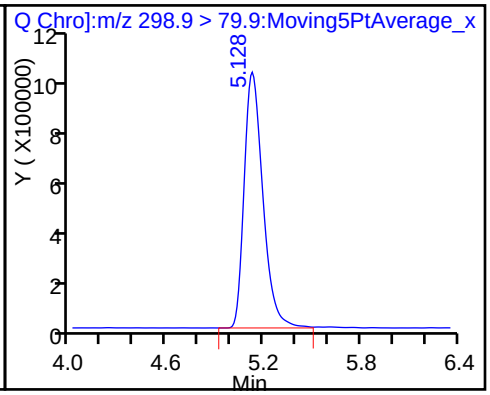
5 Perfluorobutanesulfonic acid



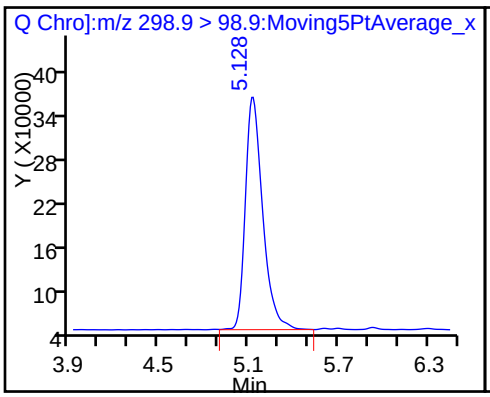
5 Perfluorobutanesulfonic acid



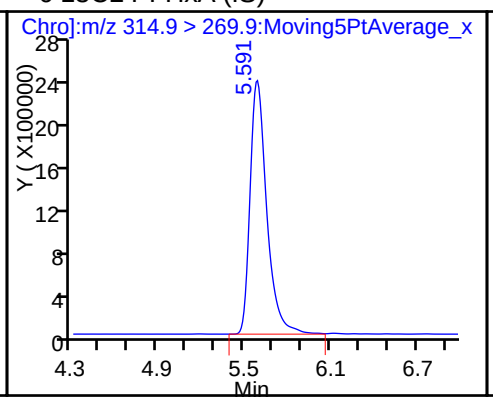
4 Perfluorobutane Sulfonate



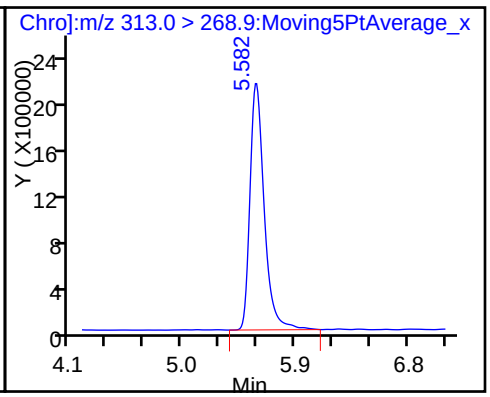
4 Perfluorobutane Sulfonate



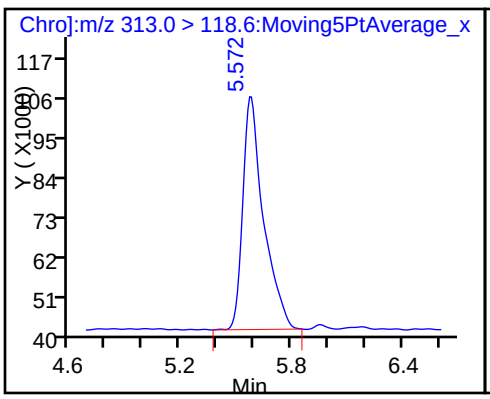
* 6 13C2 PFHxA (IS)



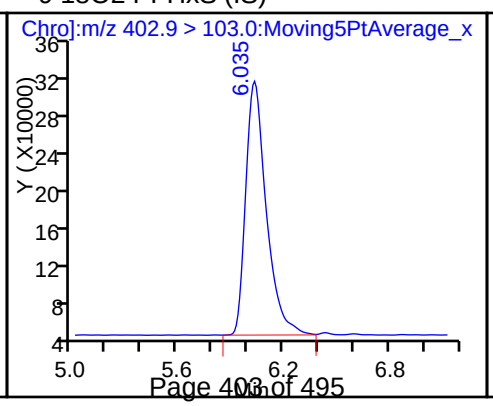
7 Perfluorohexanoic acid



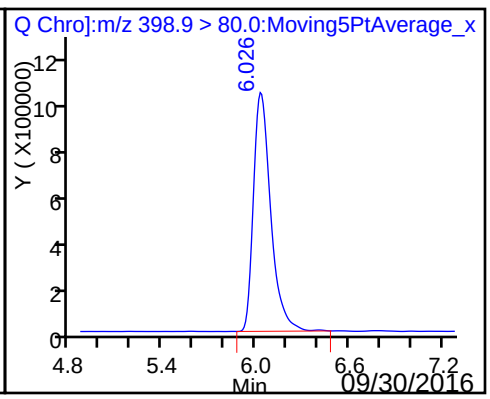
7 Perfluorohexanoic acid



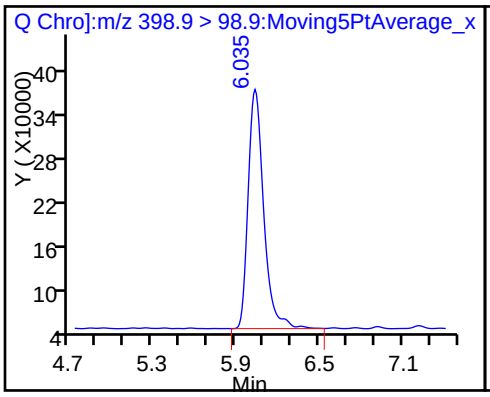
* 9 18O2 PFHxS (IS)



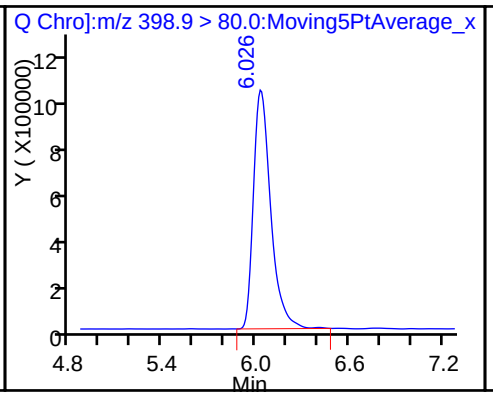
10 Perfluorohexane Sulfonate



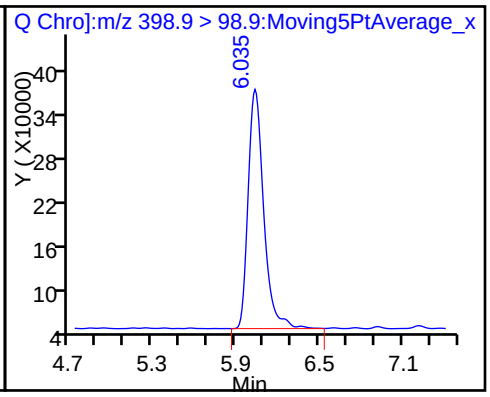
10 Perfluorohexane Sulfonate



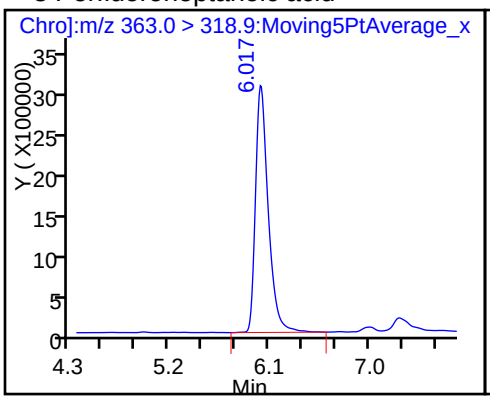
11 Perfluorohexanesulfonic acid



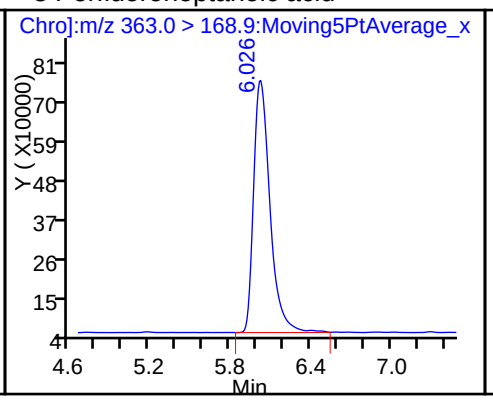
11 Perfluorohexanesulfonic acid



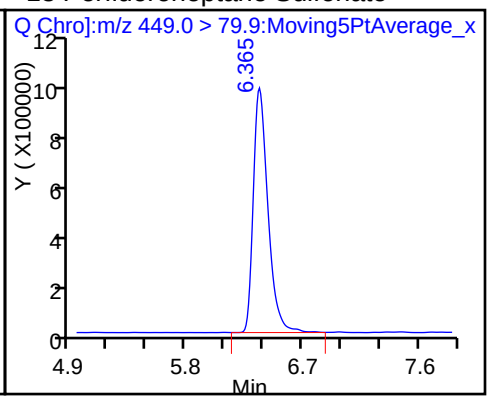
8 Perfluoroheptanoic acid



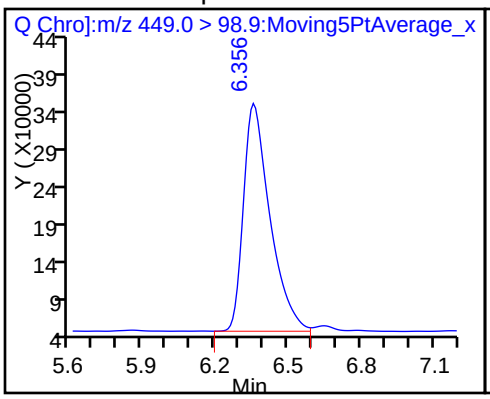
8 Perfluoroheptanoic acid



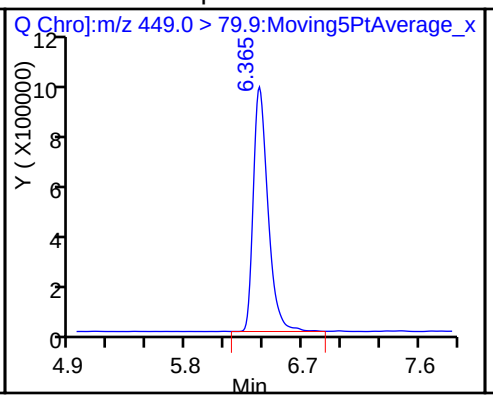
13 Perfluoroheptane Sulfonate



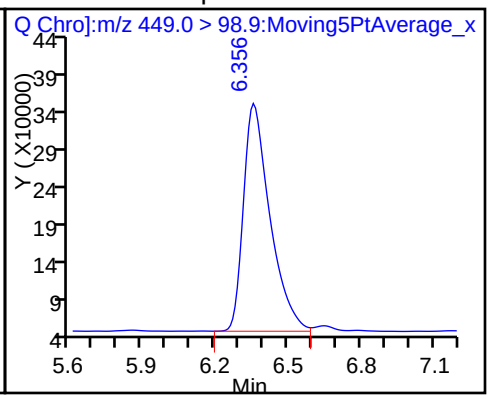
13 Perfluoroheptane Sulfonate



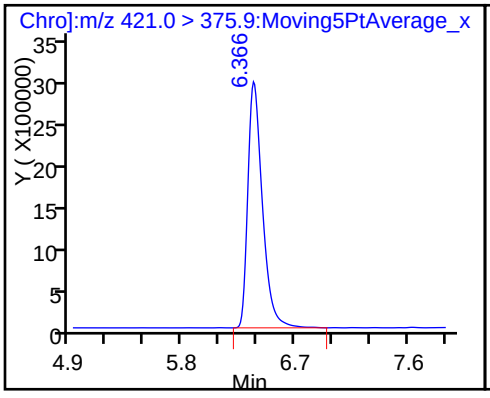
12 Perfluoroheptanesulfonic Acid



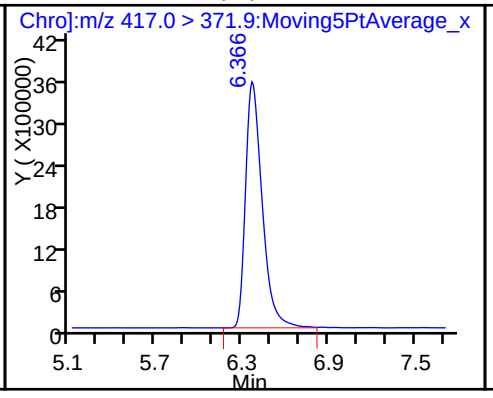
12 Perfluoroheptanesulfonic Acid



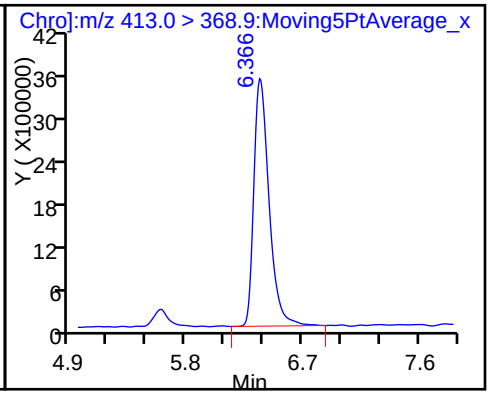
$ 14 13C8 PFOA



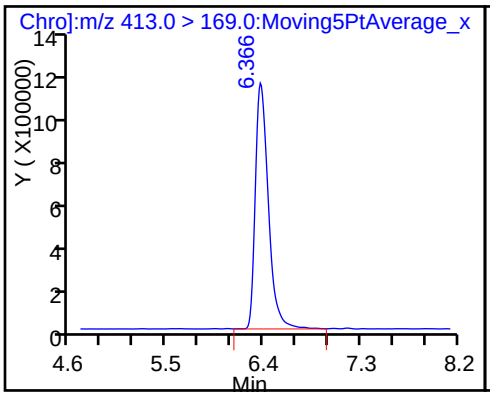
* 15 13C4 PFOA (IS)



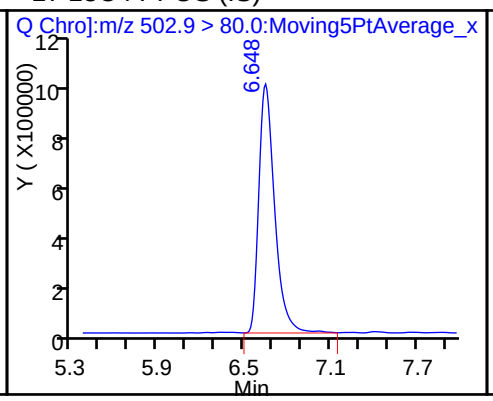
16 Perfluorooctanoic acid



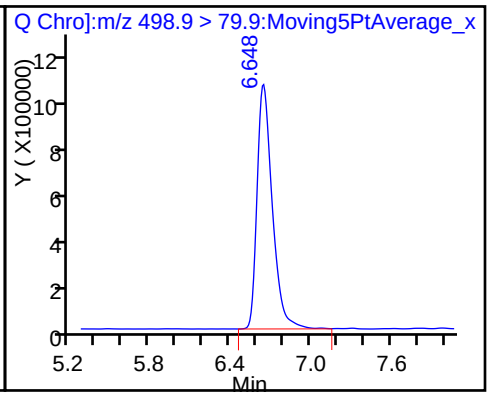
16 Perfluorooctanoic acid



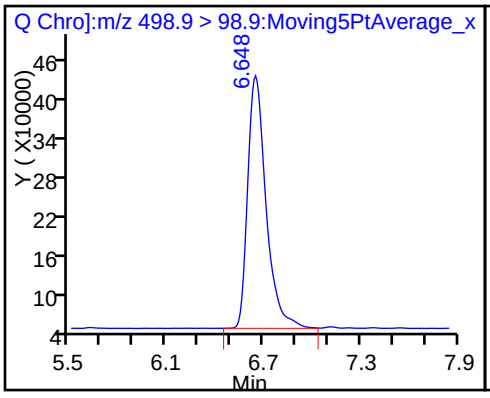
* 17 13C4 PFOS (IS)



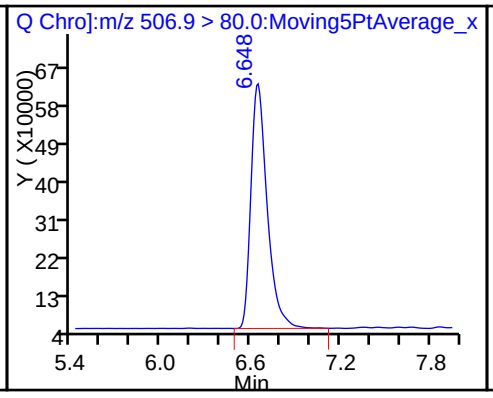
19 Perfluorooctane sulfonic acid



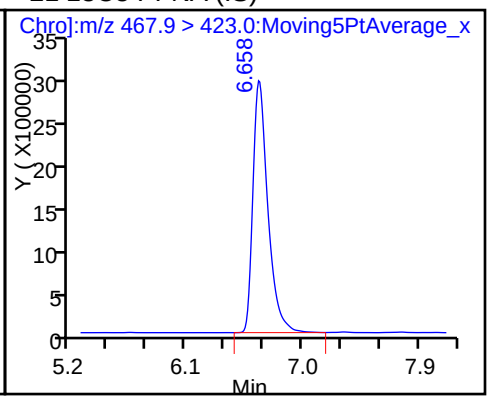
19 Perfluorooctane sulfonic acid



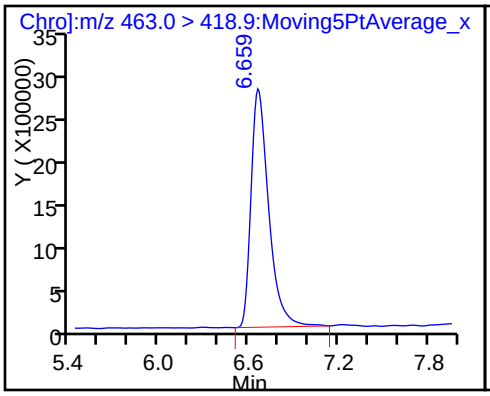
$ 18 13C8 PFOS



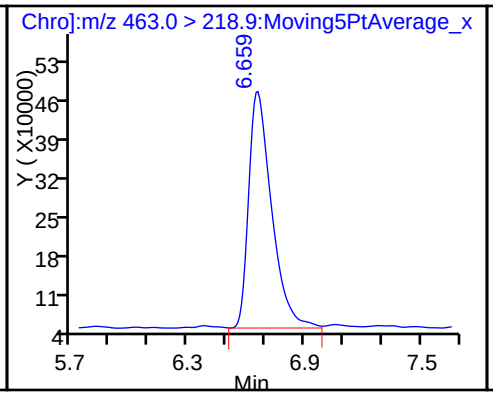
* 21 13C5 PFNA (IS)



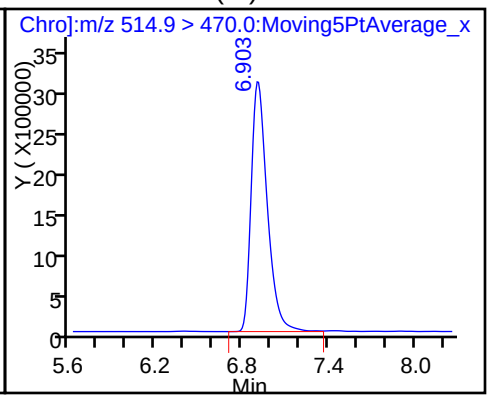
20 Perfluorononanoic acid



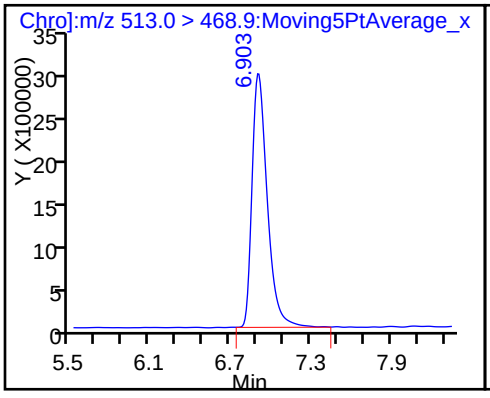
20 Perfluorononanoic acid



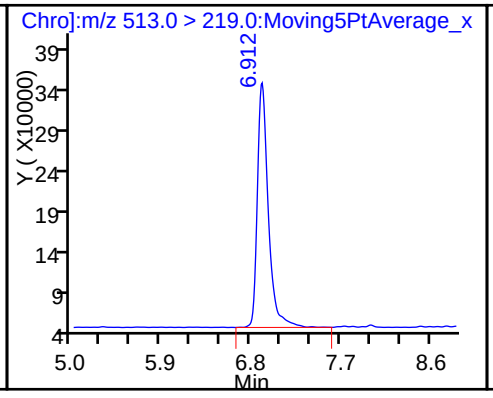
* 22 13C2 PFDA (IS)



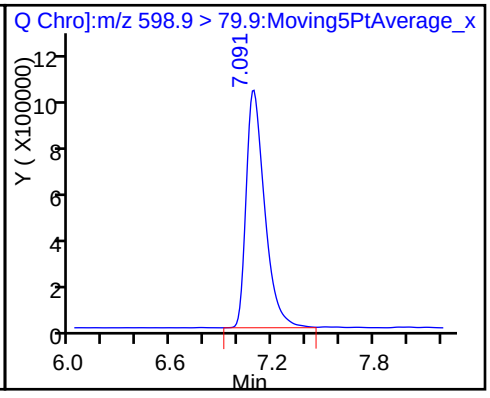
23 Perfluorodecanoic acid



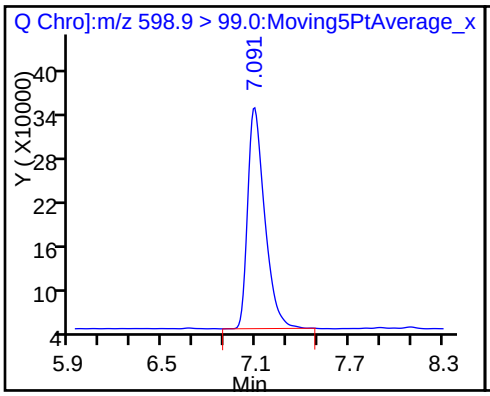
23 Perfluorodecanoic acid



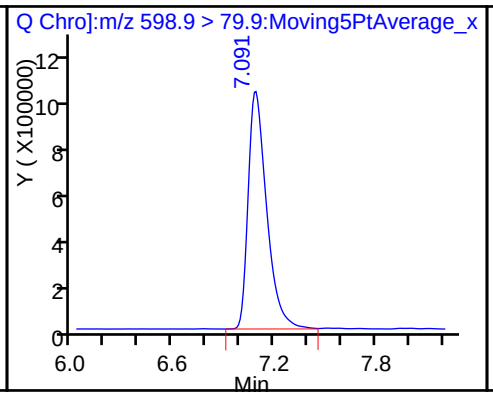
25 Perfluorodecane Sulfonate



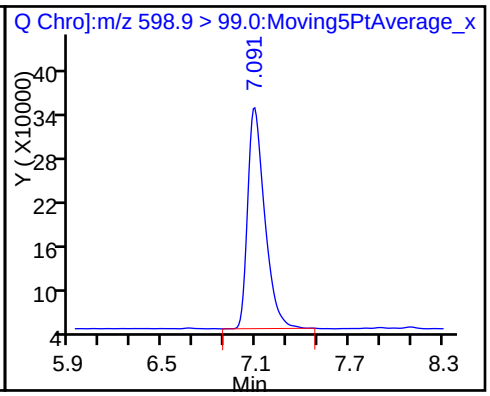
25 Perfluorodecane Sulfonate



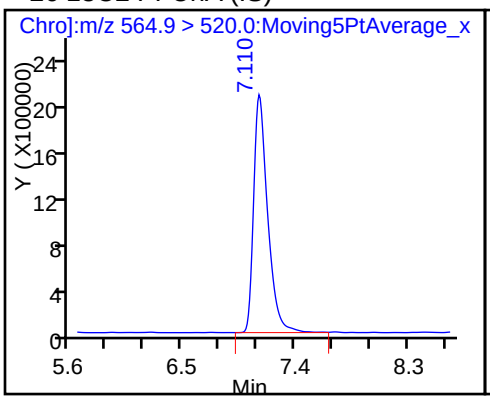
24 Perfluorodecane Sulfonic acid



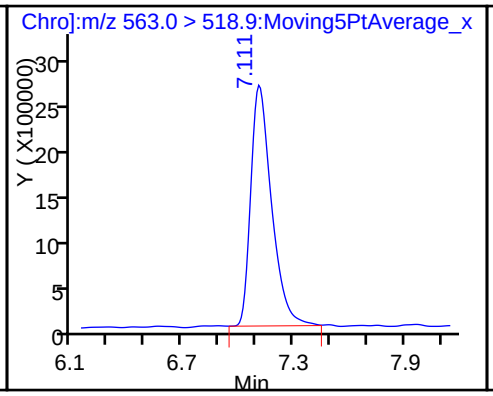
24 Perfluorodecane Sulfonic acid



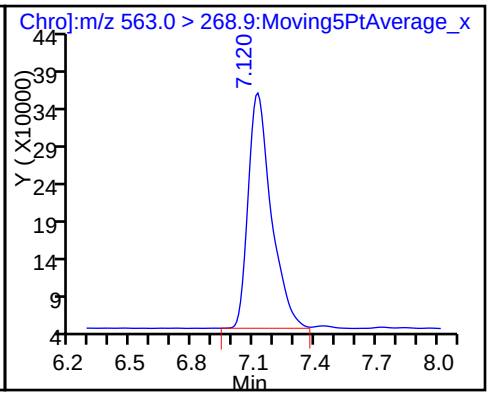
* 26 13C2 PFUnA (IS)



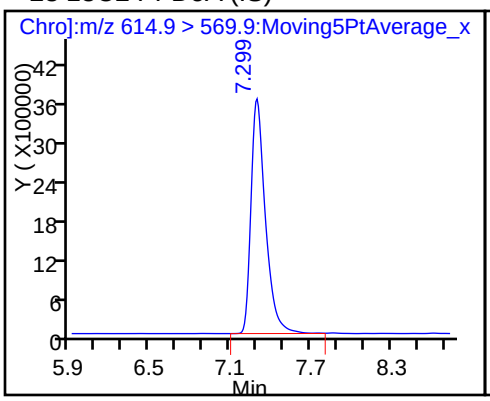
27 Perfluoroundecanoic acid



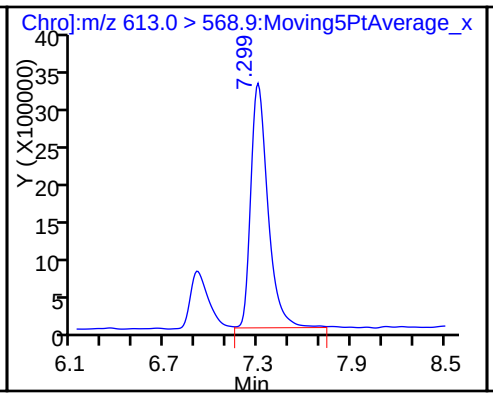
27 Perfluoroundecanoic acid



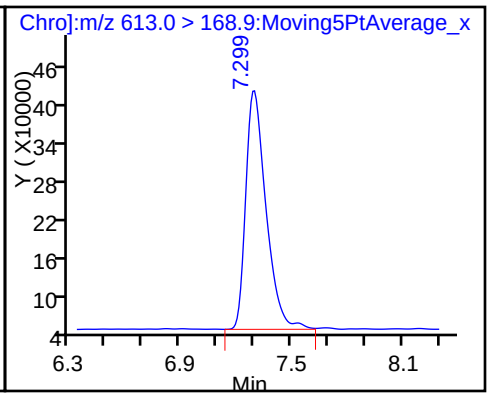
* 28 13C2 PFDoA (IS)



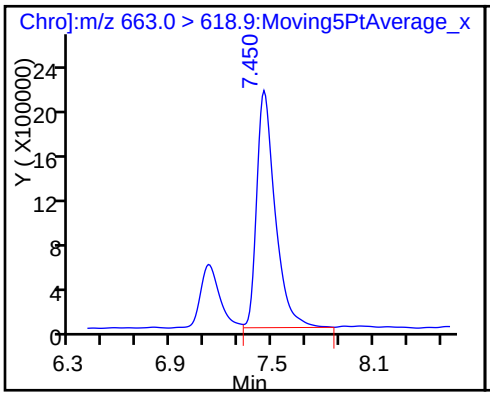
29 Perfluorododecanoic acid



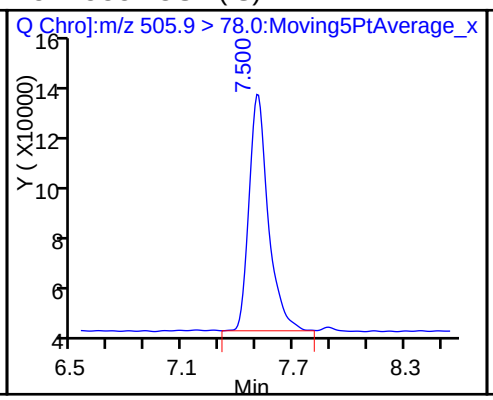
29 Perfluorododecanoic acid



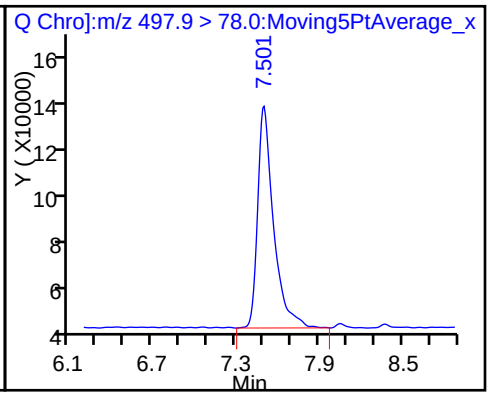
30 Perfluorotridecanoic acid



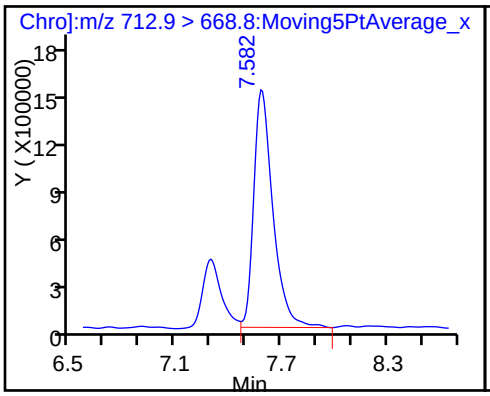
* 31 13C8 FOSA (IS)



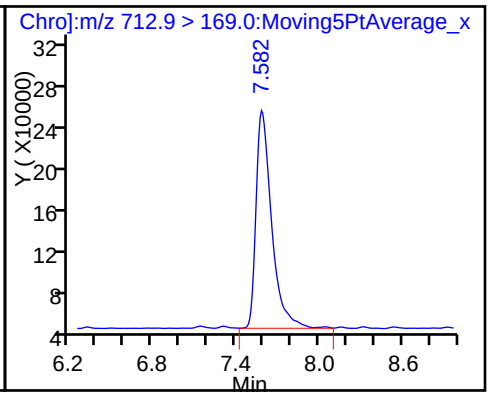
32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 280-343904/2-A

Matrix: Water | Lab File ID: PC516I028082.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 250(mL) | Date Analyzed: 09/28/2016 20:14

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.160		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.175		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.180		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.183		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.178		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.196		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	111		60-155
STL01054	13C8 PFOS	128		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028082.d
Lims ID: LCS 280-343904/2-A
Client ID:
Sample Type: LCS
Inject. Date: 28-Sep-2016 20:14:45 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-343904/2-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:30:10

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.698	3.963	-0.265		26600703	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.698	3.963	-0.265	1.000	27484226	9.16			
3 Perfluoropentanoic acid									
263.0 > 218.9	4.929	5.062	-0.133	0.894	24558714	10.9			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.052	5.175	-0.123	0.846	9180366	7.98			
298.9 > 98.9	5.061	5.175	-0.114	0.848	2768586		3.32(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.052	5.175	-0.123	0.846	9180366	7.98			
298.9 > 98.9	5.061	5.175	-0.114	0.848	2768586		3.32(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.515	5.638	-0.123		20611473	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.516	5.629	-0.113	1.000	17939482	9.29			
313.0 > 118.6	5.516	5.629	-0.113	1.000	471239		38.07(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.969	6.073	-0.104		2201122	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	5.969	6.064	-0.095	1.000	7878628	9.00			R
398.9 > 98.9	5.969	6.064	-0.095	1.000	3020910		2.61(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	5.969	6.064	-0.095	1.000	7878628	9.00			
398.9 > 98.9	5.969	6.064	-0.095	1.000	3020910		2.61(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	5.960	6.064	-0.104	0.945	27122059	8.75			
363.0 > 168.9	5.960	6.064	-0.104	0.945	6939600		3.91(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.309	6.403	-0.094	0.957	8684676	9.14			
449.0 > 98.9	6.309	6.403	-0.094	0.957	2603860		3.34(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.309	6.403	-0.094	0.957	8684676	9.14			
449.0 > 98.9	6.309	6.403	-0.094	0.957	2603860		3.34(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.319	6.413	-0.095	1.001	26049546	10.9			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.309	6.404	-0.095		31400099	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.309	6.414	-0.105	1.000	31949123	9.80			
413.0 > 169.0	6.309	6.414	-0.105	1.000	9505361		3.36(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.591	6.676	-0.085		7633397	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.591	6.677	-0.086	1.000	8864035	8.88			R
498.9 > 98.9	6.591	6.677	-0.086	1.000	3489966		2.54(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.591	6.685	-0.094	1.000	4935947	11.9			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.602	6.696	-0.094		24393891	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.611	6.697	-0.086	1.001	26046321	9.17			
463.0 > 218.9	6.602	6.697	-0.095	1.000	4142518		6.29(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.855	6.941	-0.086		26732202	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.856	6.941	-0.085	1.000	25464323	9.15			R
513.0 > 219.0	6.856	6.941	-0.085	1.000	2496336		10.20(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.044	7.129	-0.085	1.069	8474027	8.45			
598.9 > 99.0	7.053	7.129	-0.076	1.070	2627683		3.22(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.044	7.129	-0.085	1.069	8474027	8.45			
598.9 > 99.0	7.053	7.129	-0.076	1.070	2627683		3.22(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.073	7.148	-0.075		16865066	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.073	7.149	-0.076	1.000	24209595	10.0			R
563.0 > 268.9	7.073	7.149	-0.076	1.000	3063297		7.90(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.252	7.327	-0.075	1.000	30190991	9.77			
613.0 > 168.9	7.252	7.327	-0.075	1.000	3777732		7.99(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.251	7.327	-0.076		30606646	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.422	7.488	-0.066	1.023	19377460	7.39			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.454	7.539	-0.085	1.000	991304	9.41			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.453	7.538	-0.085		990534	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.554	7.611	-0.057	1.042	13387969	6.33			
712.9 > 169.0	7.554	7.611	-0.057	1.042	2096960		6.38(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 29-Sep-2016 11:09:13 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028082.d

Injection Date: 28-Sep-2016 20:14:45 Instrument ID: LC_LCMS5

Lims ID: LCS 280-343904/2-A

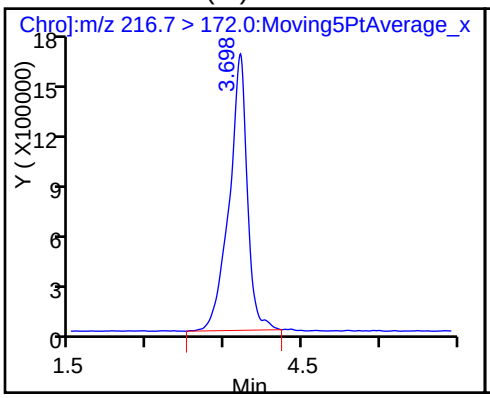
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6

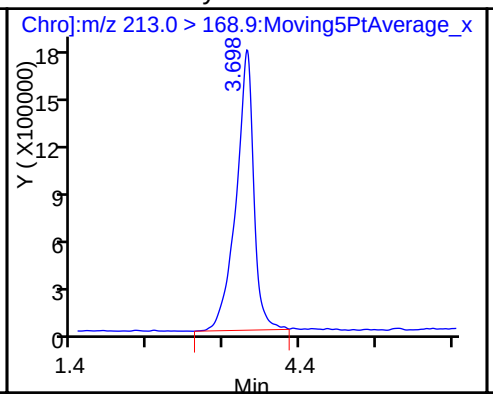
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

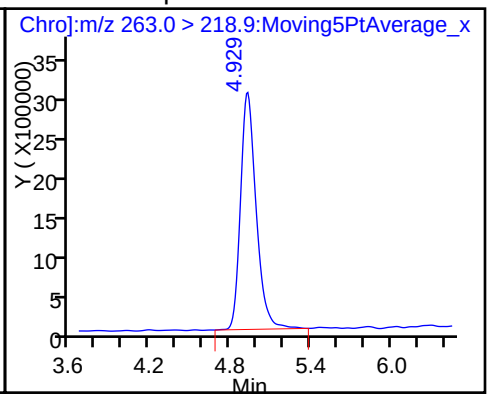
* 1 13C4 PFBA (IS)



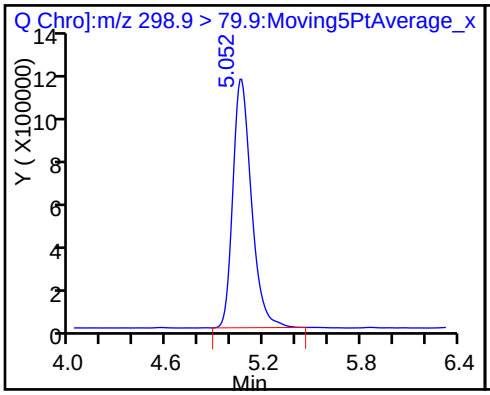
2 Perfluorobutyric acid



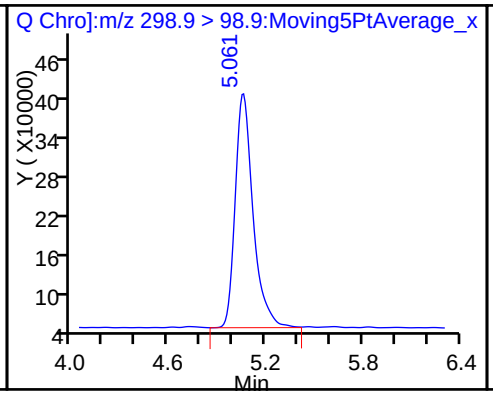
3 Perfluoropentanoic acid



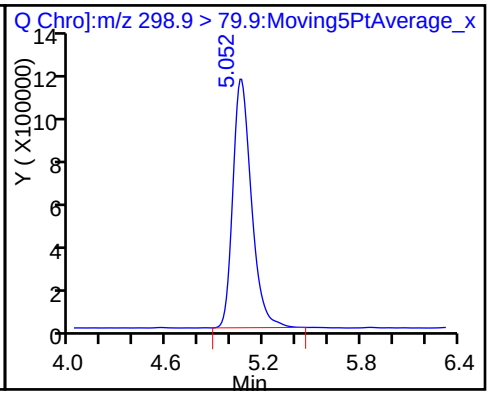
5 Perfluorobutanesulfonic acid



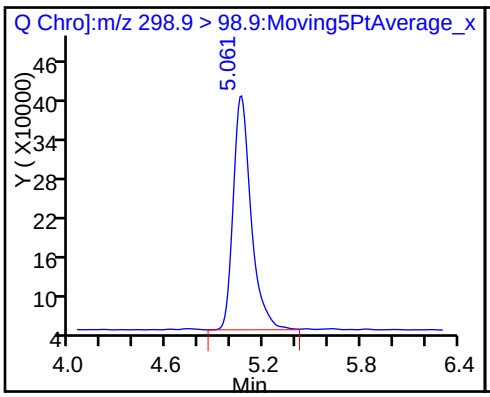
5 Perfluorobutanesulfonic acid



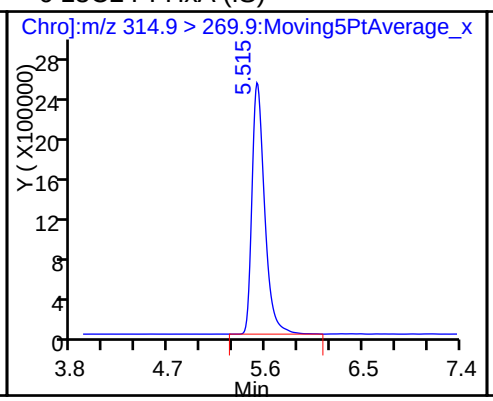
4 Perfluorobutane Sulfonate



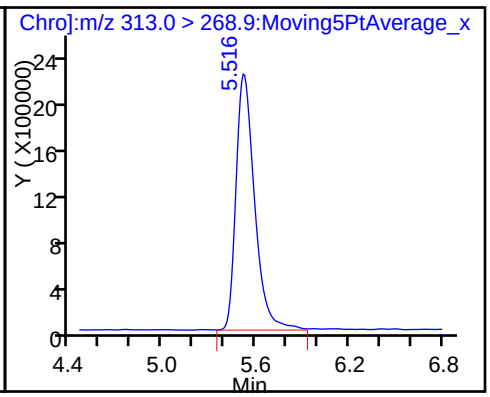
4 Perfluorobutane Sulfonate



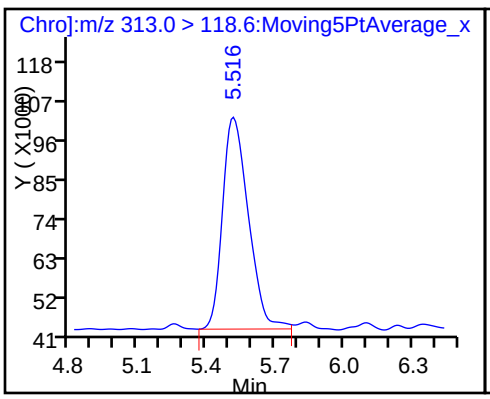
* 6 13C2 PFHxA (IS)



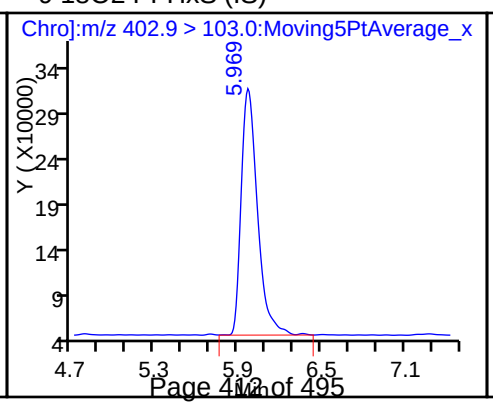
7 Perfluorohexanoic acid



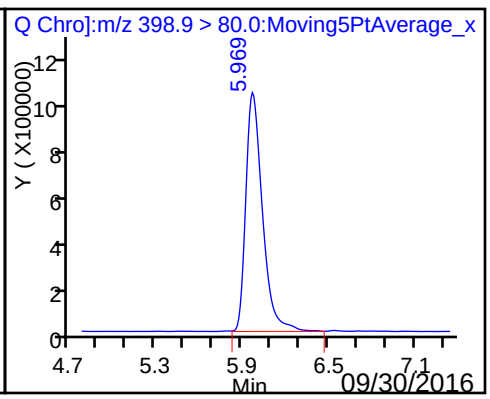
7 Perfluorohexanoic acid



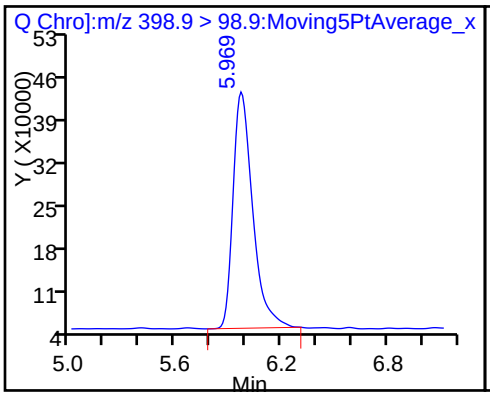
* 9 18O2 PFHxS (IS)



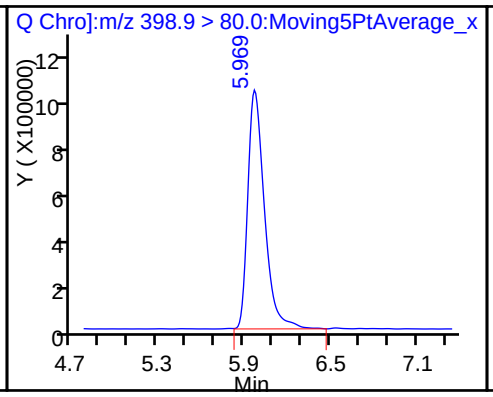
10 Perfluorohexane Sulfonate



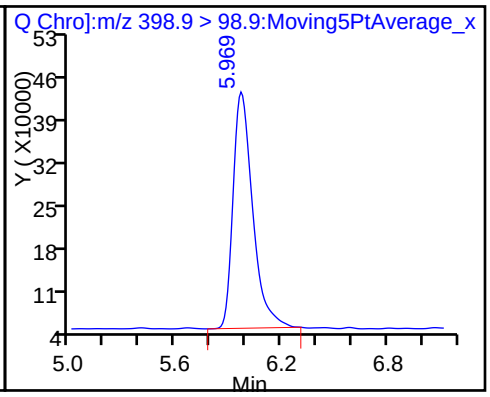
10 Perfluorohexane Sulfonate



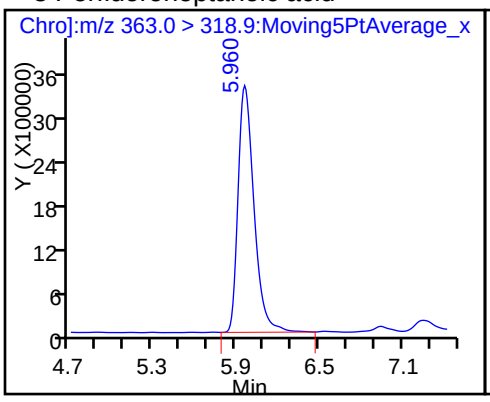
11 Perfluorohexanesulfonic acid



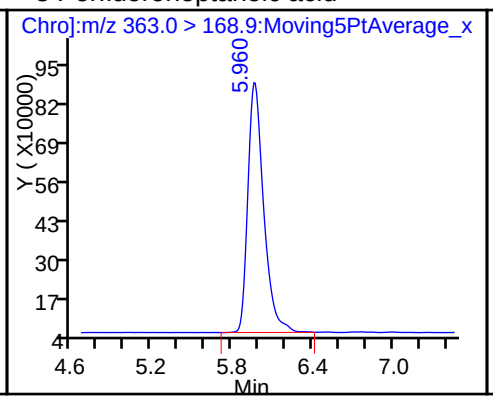
11 Perfluorohexanesulfonic acid



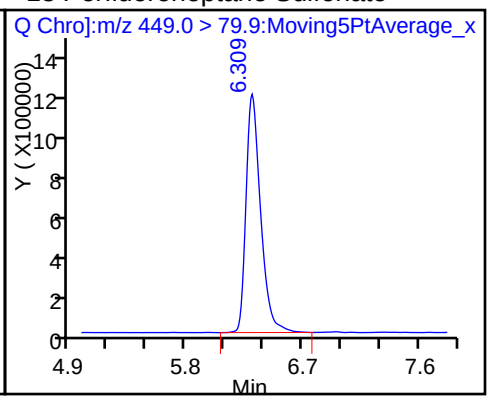
8 Perfluoroheptanoic acid



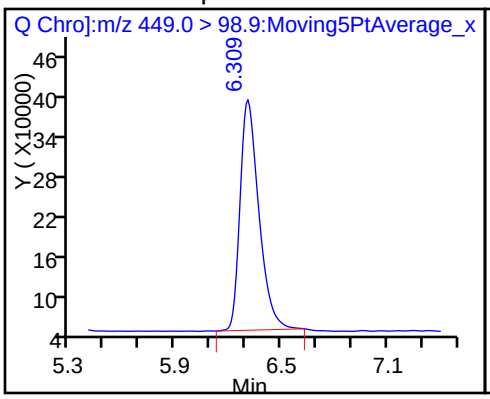
8 Perfluoroheptanoic acid



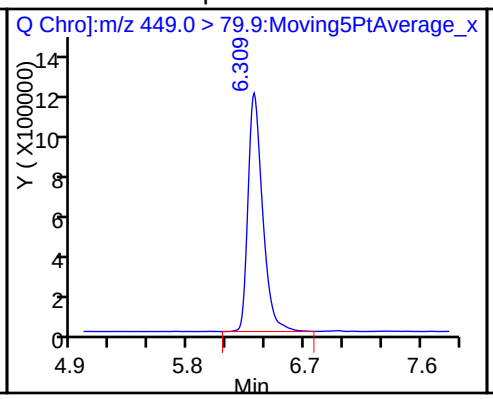
13 Perfluoroheptane Sulfonate



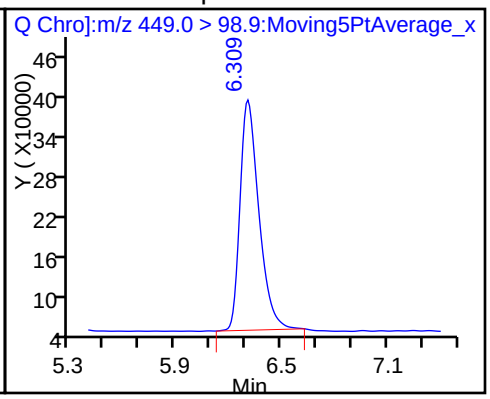
13 Perfluoroheptane Sulfonate



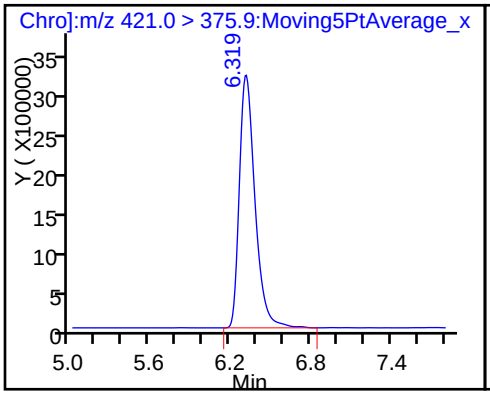
12 Perfluoroheptanesulfonic Acid



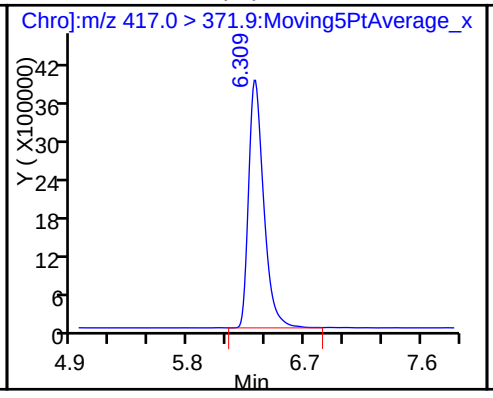
12 Perfluoroheptanesulfonic Acid



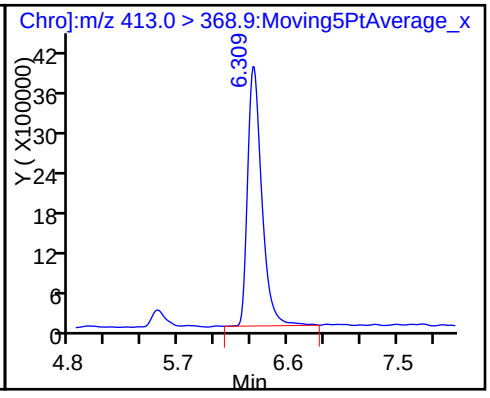
$ 14 13C8 PFOA



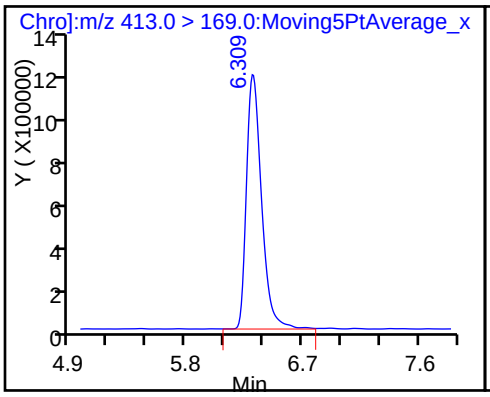
* 15 13C4 PFOA (IS)



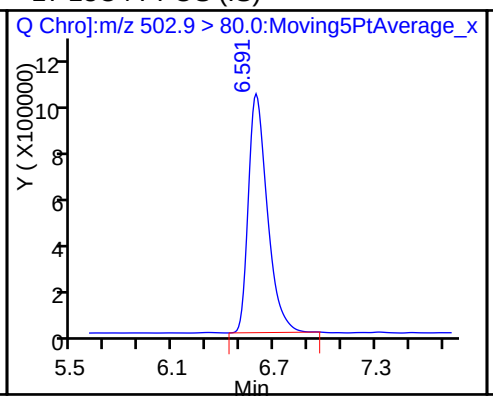
16 Perfluorooctanoic acid



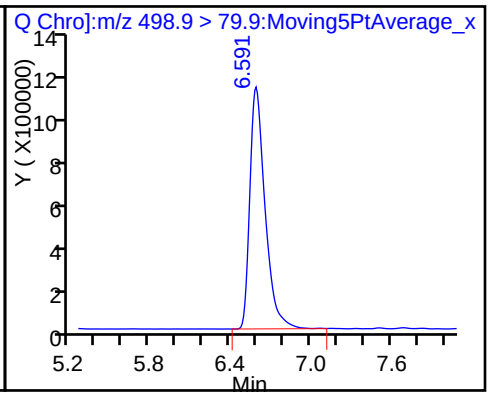
16 Perfluorooctanoic acid



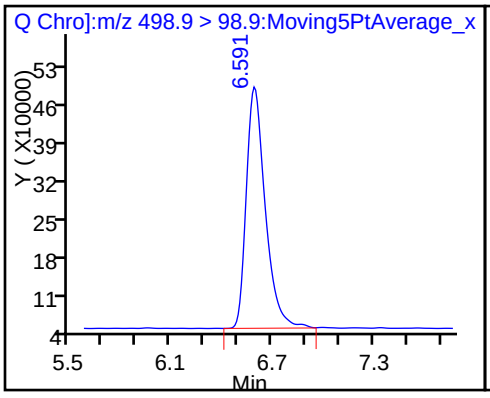
* 17 13C4 PFOS (IS)



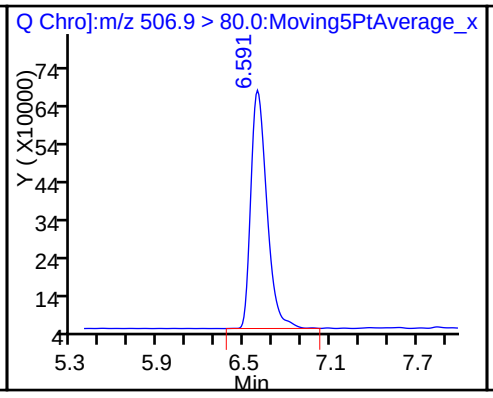
19 Perfluorooctane sulfonic acid



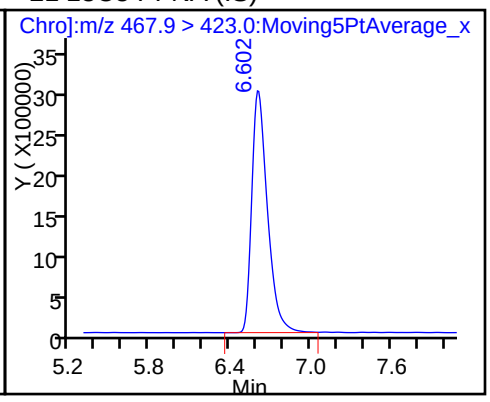
19 Perfluorooctane sulfonic acid



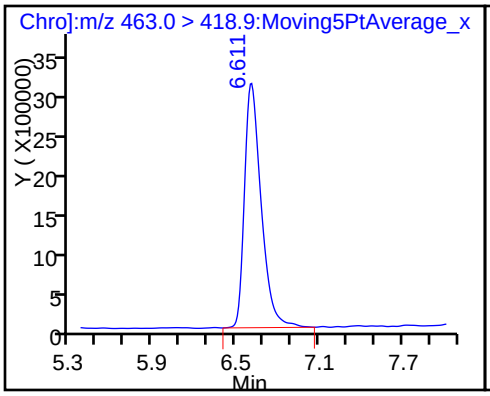
$ 18 13C8 PFOS



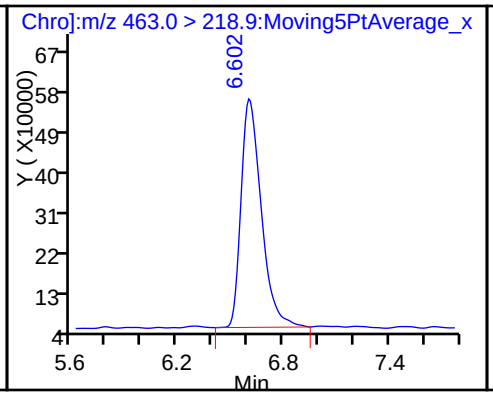
* 21 13C5 PFNA (IS)



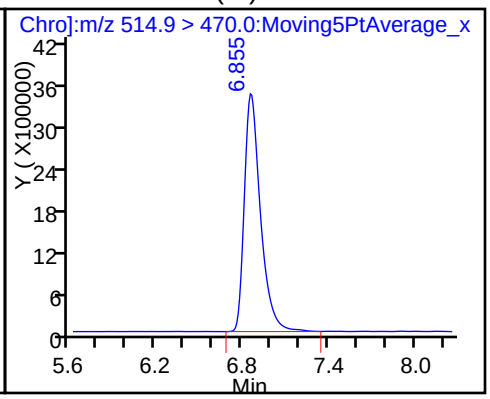
20 Perfluorononanoic acid



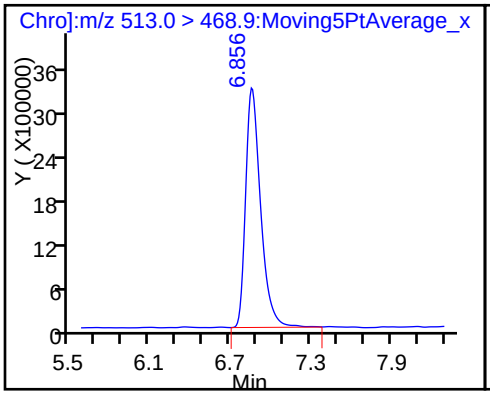
20 Perfluorononanoic acid



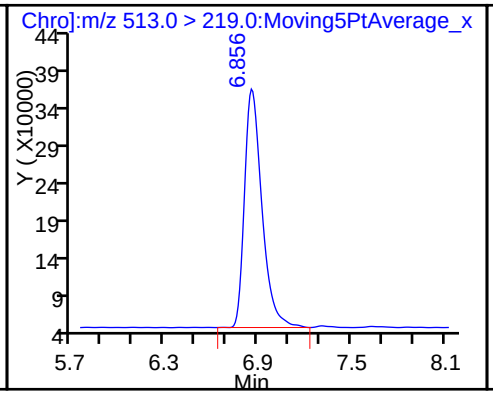
* 22 13C2 PFDA (IS)



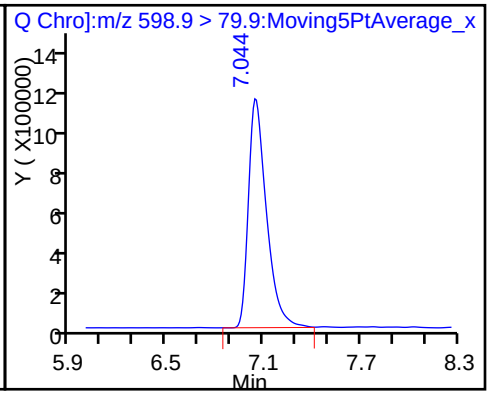
23 Perfluorodecanoic acid



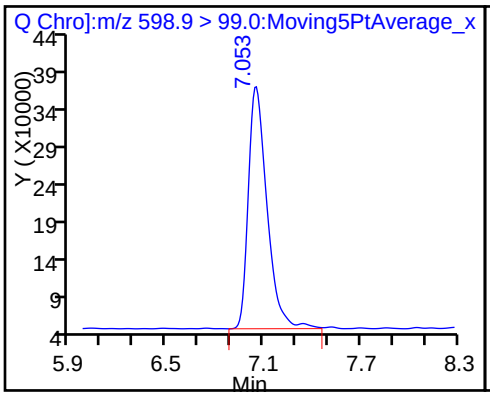
23 Perfluorodecanoic acid



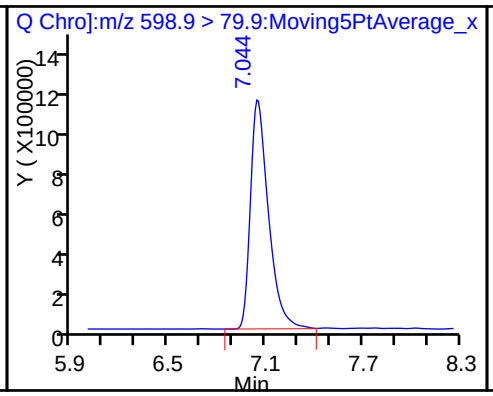
25 Perfluorodecane Sulfonate



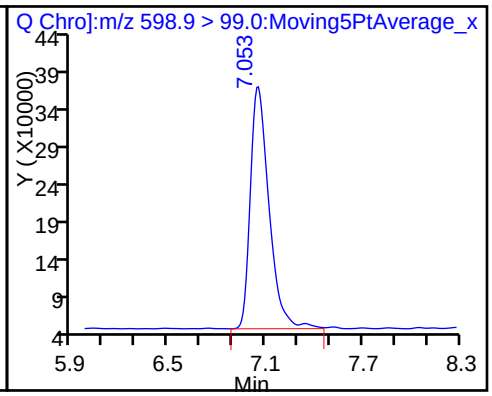
25 Perfluorodecane Sulfonate



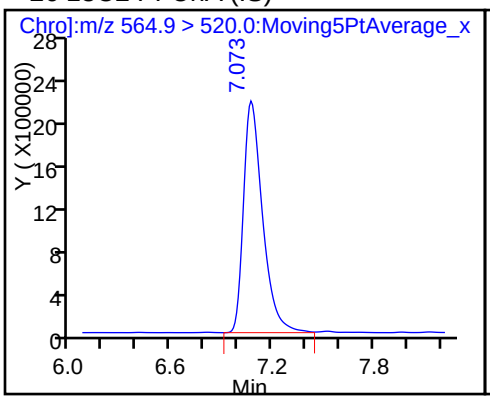
24 Perfluorodecane Sulfonic acid



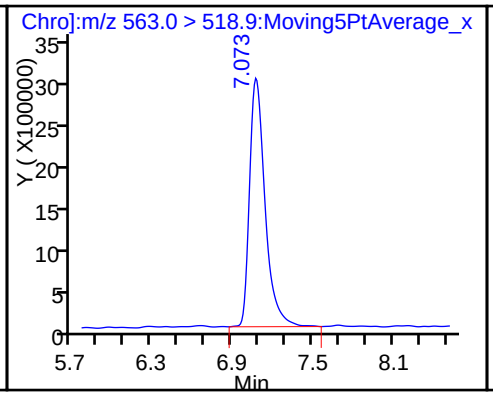
24 Perfluorodecane Sulfonic acid



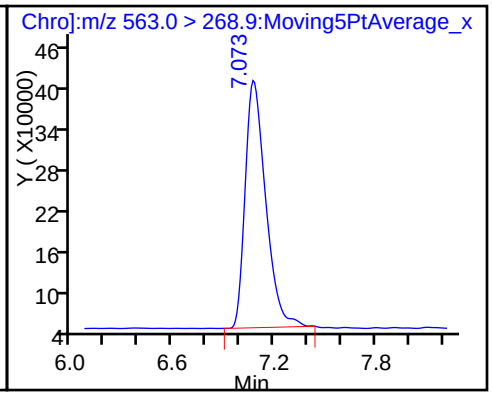
* 26 13C2 PFUnA (IS)



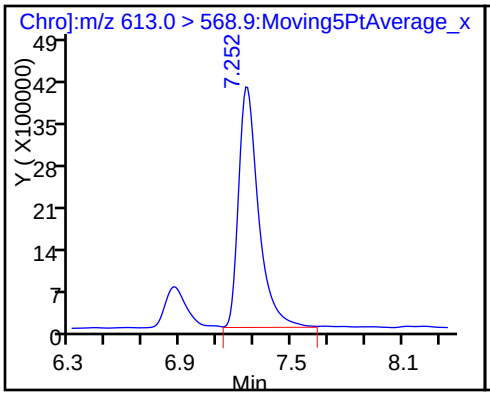
27 Perfluoroundecanoic acid



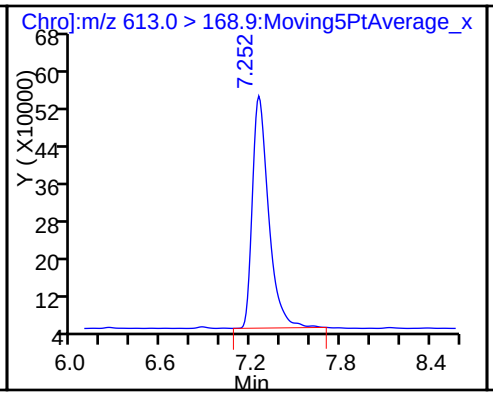
27 Perfluoroundecanoic acid



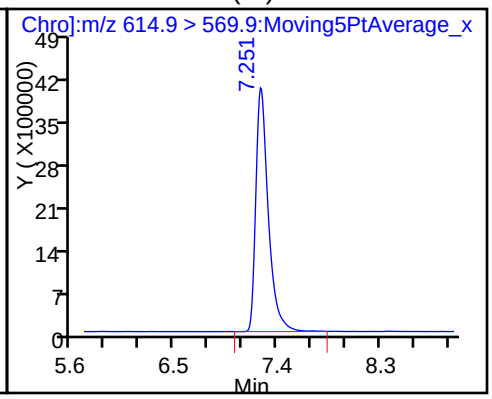
29 Perfluorododecanoic acid



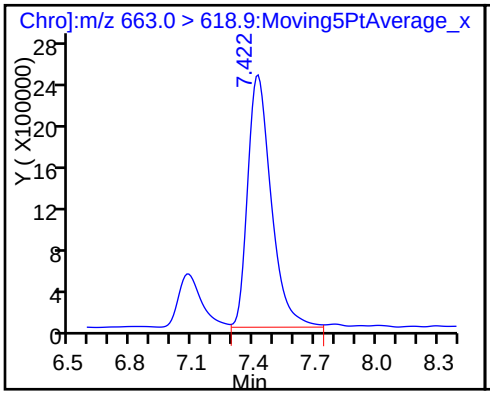
29 Perfluorododecanoic acid



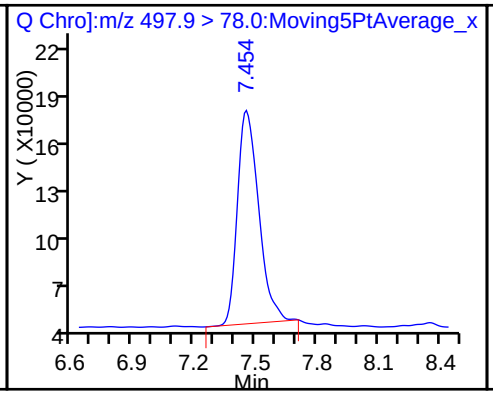
* 28 13C2 PFDoA (IS)



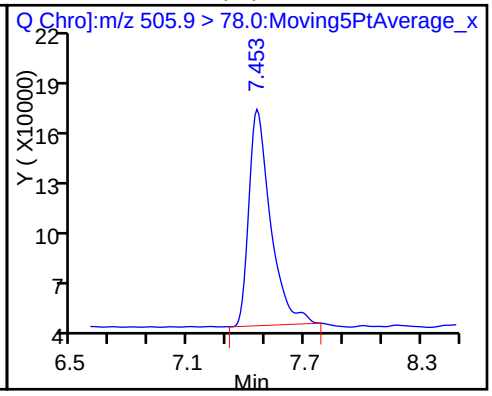
30 Perfluorotridecanoic acid



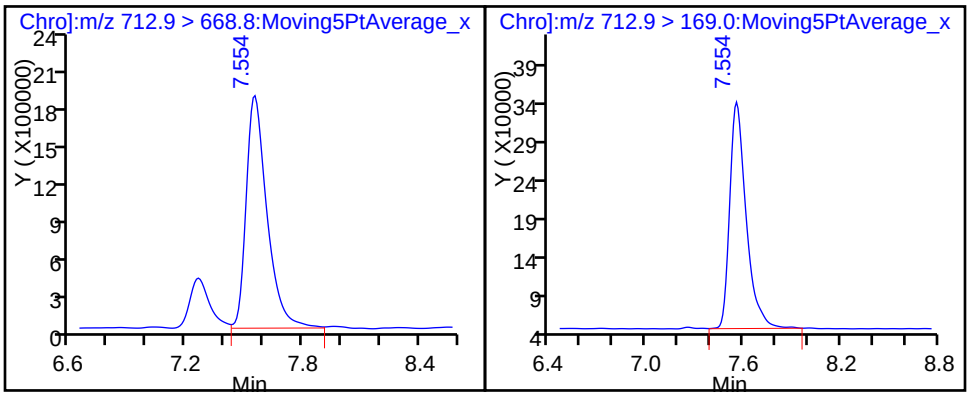
32 Perfluorooctane Sulfonamide



* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-343884/3-A

Matrix: Water | Lab File ID: PC516I028103.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 250(mL) | Date Analyzed: 09/29/2016 00:33

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.153		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.169		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.176		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.171		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.167		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.189		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	109		60-155
STL01054	13C8 PFOS	124		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028103.d
Lims ID: LCSD 280-343884/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 29-Sep-2016 00:33:44 ALS Bottle#: 0 Worklist Smp#: 27
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 280-343884/3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:41:37 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:04:37

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.830	3.963	-0.133		27963409	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.831	3.963	-0.132	1.000	26043780	8.26			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.024	5.071	-0.047	0.896	22706642	10.2			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.147	5.184	-0.037	0.850	8859191	7.63			
298.9 > 98.9	5.147	5.184	-0.037	0.850	2524016		3.51(2.57-2.57)		
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.147	5.184	-0.037	0.850	8859191	7.63			R
298.9 > 98.9	5.147	5.184	-0.037	0.850	2524016		3.51(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.610	5.648	-0.038		20443056	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.601	5.648	-0.047	0.998	17796638	9.29			
313.0 > 118.6	5.610	5.648	-0.038	1.000	506582		35.13(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.054	6.073	-0.019		2222444	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.054	6.073	-0.019	1.000	7798921	8.82			R
398.9 > 98.9	6.054	6.073	-0.019	1.000	2711517		2.88(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.054	6.073	-0.019	1.000	7798921	8.82			
398.9 > 98.9	6.054	6.073	-0.019	1.000	2711517		2.88(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.045	6.074	-0.029	0.945	25393152	8.44			
363.0 > 168.9	6.045	6.074	-0.029	0.945	6435838		3.95(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.384	6.403	-0.019	0.958	7873863	8.09			
449.0 > 98.9	6.384	6.403	-0.019	0.958	2466958		3.19(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.384	6.403	-0.019	0.958	7873863	8.09			
449.0 > 98.9	6.384	6.403	-0.019	0.958	2466958		3.19(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.394	6.413	-0.019	1.000	24721070	10.7			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.395	6.413	-0.018		30481528	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.395	6.414	-0.019	1.000	29919903	9.45			
413.0 > 169.0	6.395	6.414	-0.019	1.000	9527958		3.14(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.667	6.676	-0.009		7823755	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.667	6.677	-0.010	1.000	8530513	8.34			
498.9 > 98.9	6.667	6.677	-0.010	1.000	3548591		2.40(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.667	6.685	-0.018	1.000	4895930	11.5			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.687	6.696	-0.009		23890014	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.687	6.697	-0.010	1.000	23755322	8.55			
463.0 > 218.9	6.687	6.697	-0.010	1.000	3794721		6.26(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.931	6.941	-0.010		26052799	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.931	6.941	-0.010	1.000	23439071	8.65			R
513.0 > 219.0	6.931	6.941	-0.010	1.000	2322294		10.09(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.119	7.119	0.0	1.068	7907464	7.69			
598.9 > 99.0	7.110	7.119	-0.009	1.066	2529129		3.13(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.119	7.119	0.0	1.068	7907464	7.69			
598.9 > 99.0	7.110	7.119	-0.009	1.066	2529129		3.13(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.139	7.148	-0.009		16072951	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.139	7.149	-0.010	1.000	21818784	9.45			R
563.0 > 268.9	7.139	7.149	-0.010	1.000	2724646		8.01(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.327	7.327	0.0		29640632	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.318	7.318	0.0	0.999	27987592	9.35			
613.0 > 168.9	7.327	7.318	0.009	1.000	3544358		7.90(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.478	7.478	0.0	1.021	18745037	7.39			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.548	-0.019		982588	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.539	-0.009	1.000	1007082	9.64			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.611	7.611	0.0	1.039	11388829	5.56			
712.9 > 169.0	7.611	7.611	0.0	1.039	1698084		6.71(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 29-Sep-2016 11:41:50 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028103.d

Injection Date: 29-Sep-2016 00:33:44 Instrument ID: LC_LCMS5

Lims ID: LCSD 280-343884/3-A

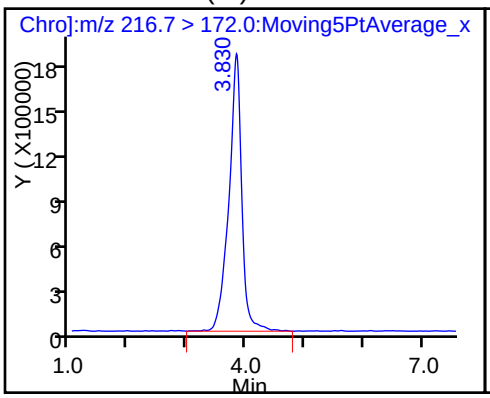
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 27

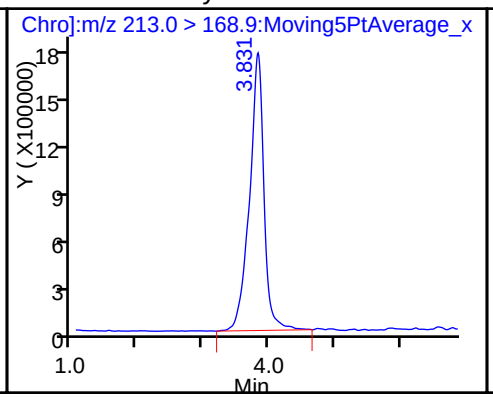
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

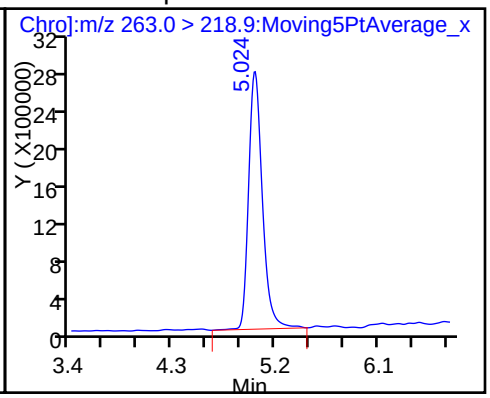
* 1 13C4 PFBA (IS)



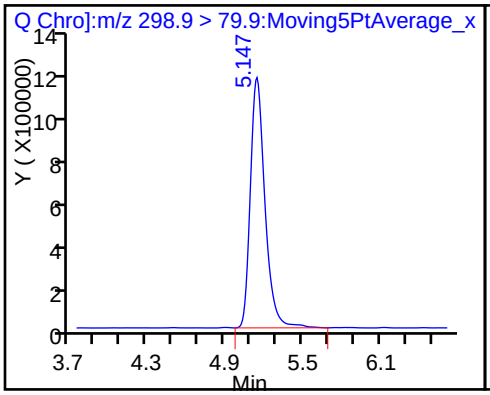
2 Perfluorobutyric acid



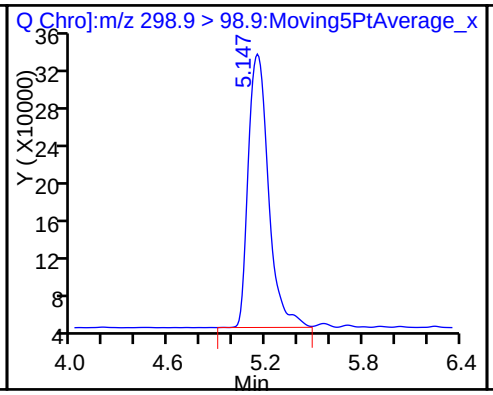
3 Perfluoropentanoic acid



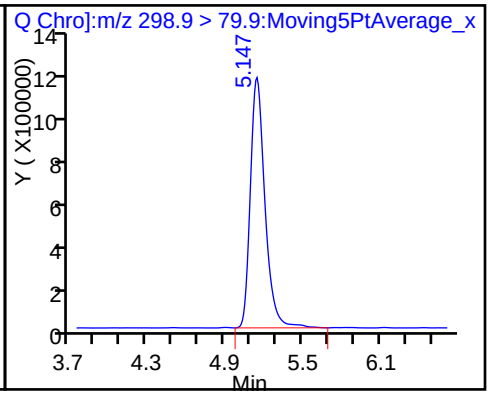
5 Perfluorobutanesulfonic acid



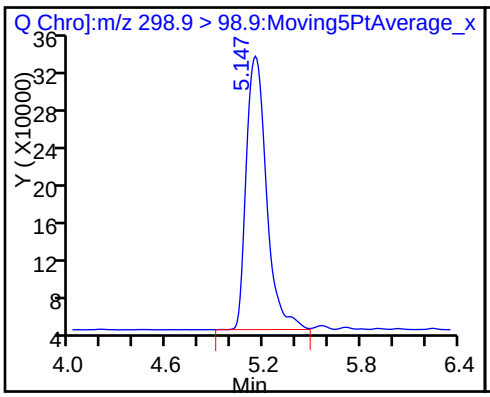
5 Perfluorobutanesulfonic acid



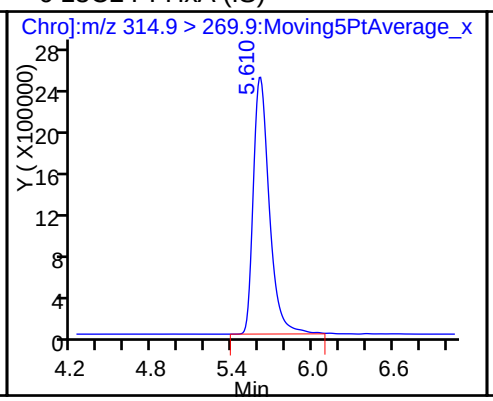
4 Perfluorobutane Sulfonate



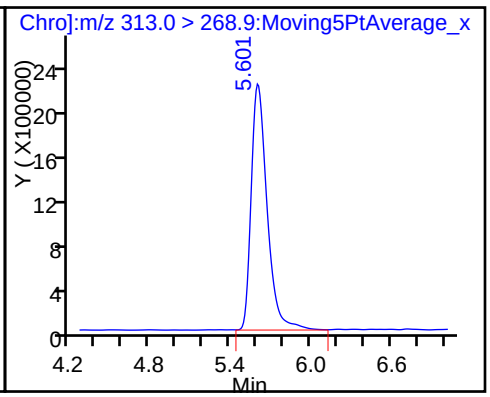
4 Perfluorobutane Sulfonate



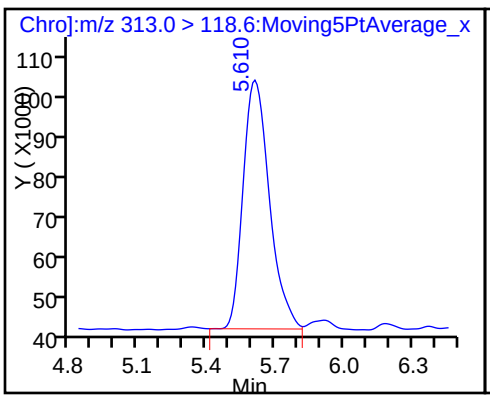
* 6 13C2 PFHxA (IS)



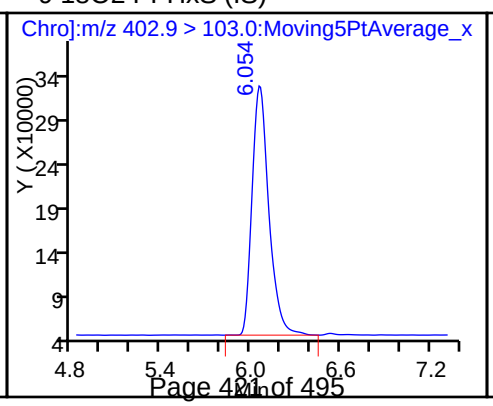
7 Perfluorohexanoic acid



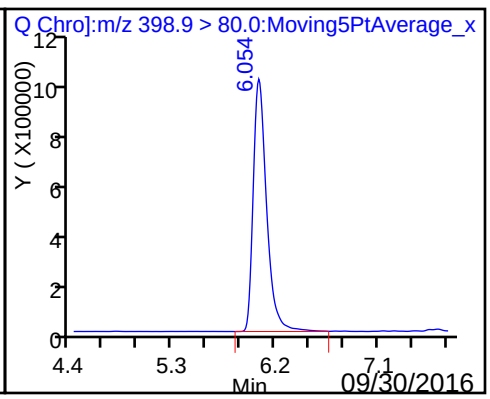
7 Perfluorohexanoic acid



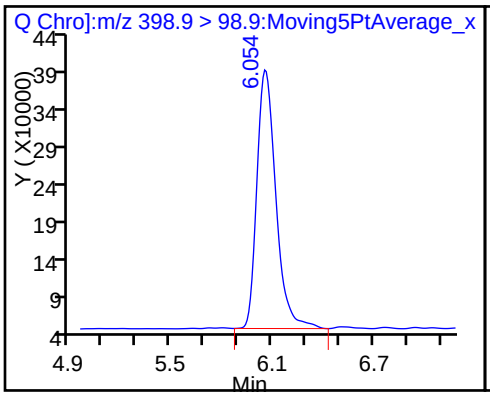
* 9 18O2 PFHxS (IS)



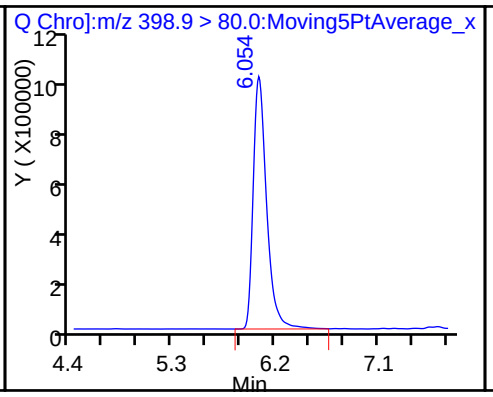
10 Perfluorohexane Sulfonate



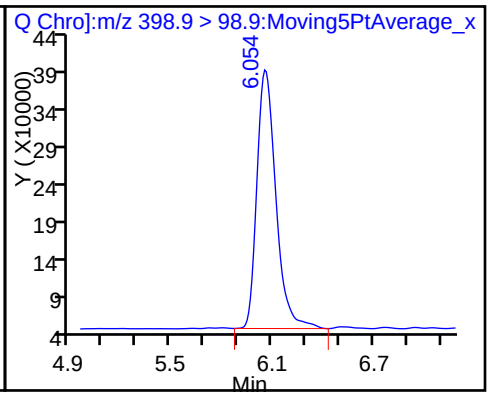
10 Perfluorohexane Sulfonate



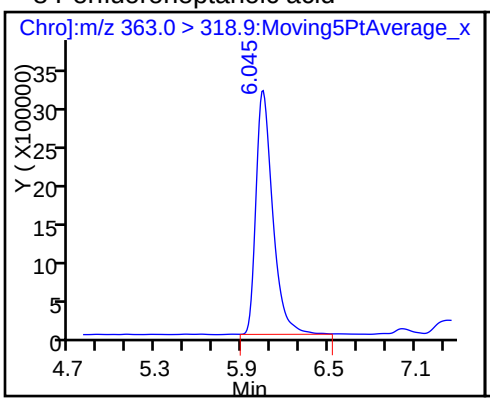
11 Perfluorohexanesulfonic acid



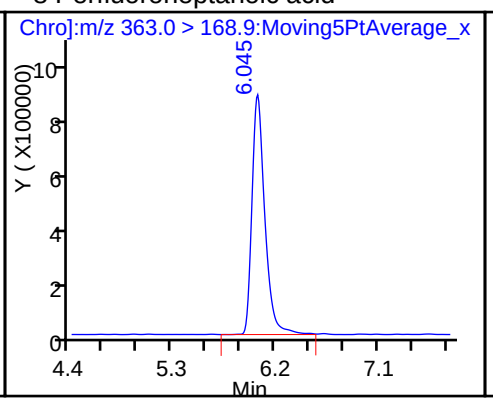
11 Perfluorohexanesulfonic acid



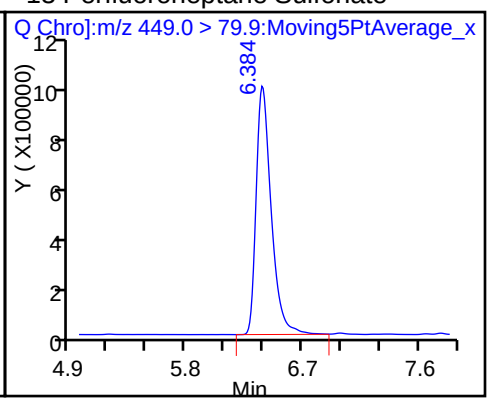
8 Perfluoroheptanoic acid



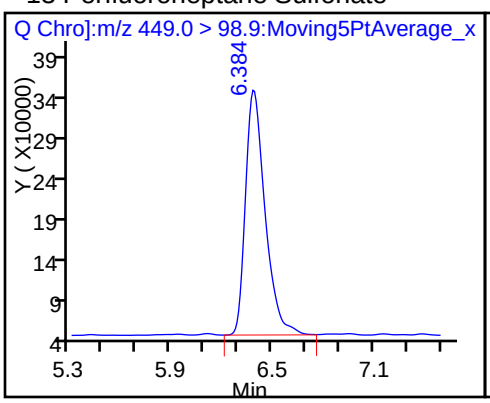
8 Perfluoroheptanoic acid



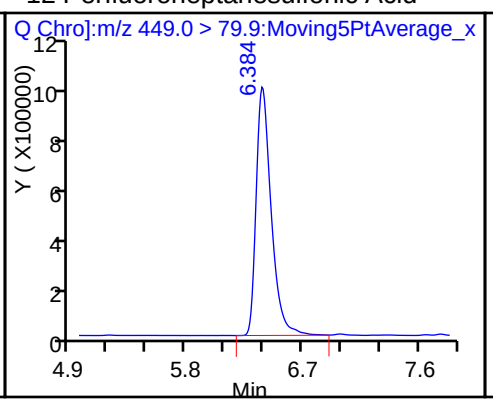
13 Perfluoroheptane Sulfonate



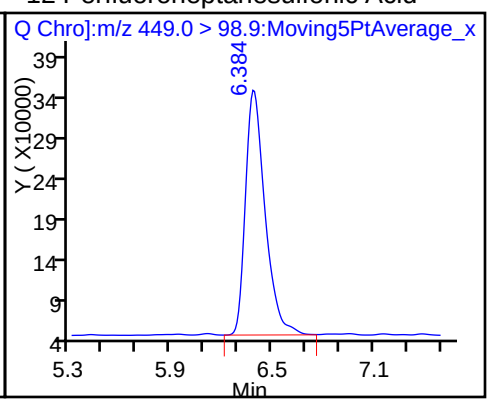
13 Perfluoroheptane Sulfonate



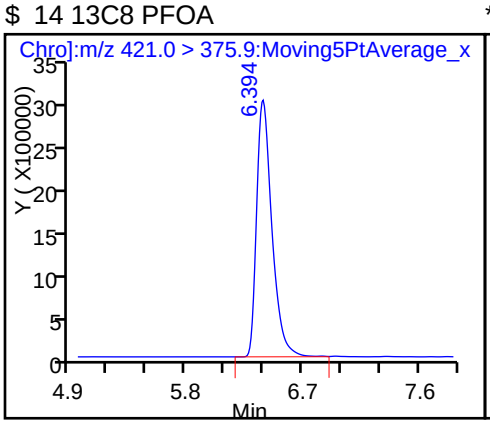
12 Perfluoroheptanesulfonic Acid



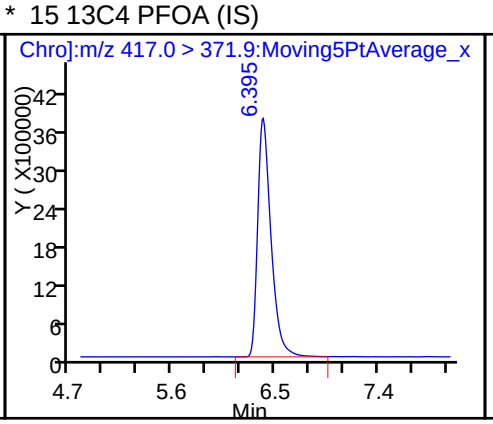
12 Perfluoroheptanesulfonic Acid



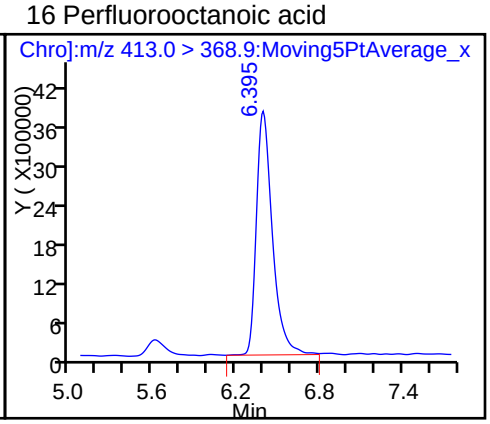
$ 14 13C8 PFOA



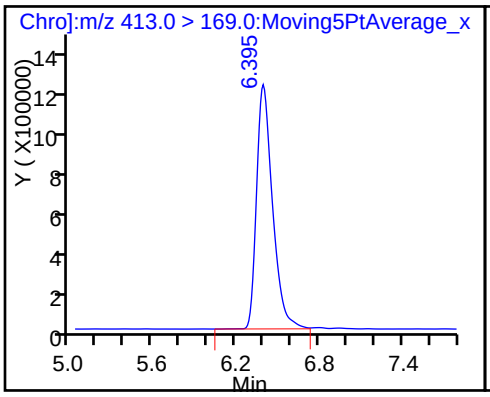
* 15 13C4 PFOA (IS)



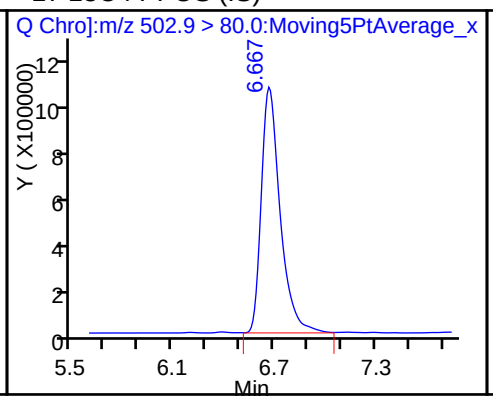
16 Perfluorooctanoic acid



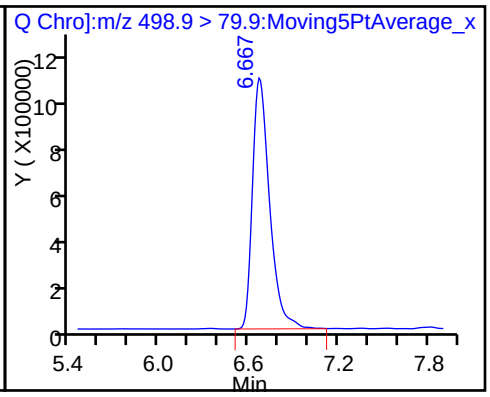
16 Perfluorooctanoic acid



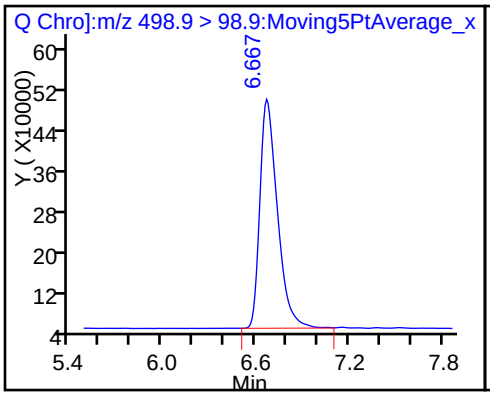
* 17 13C4 PFOS (IS)



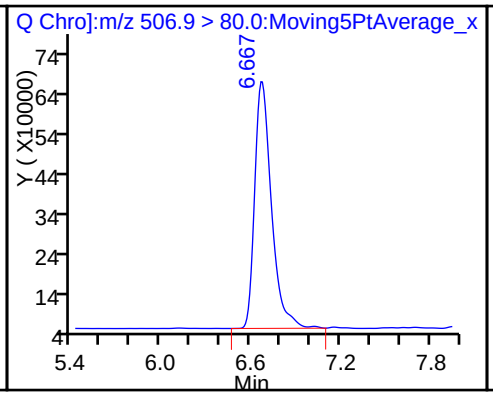
19 Perfluorooctane sulfonic acid



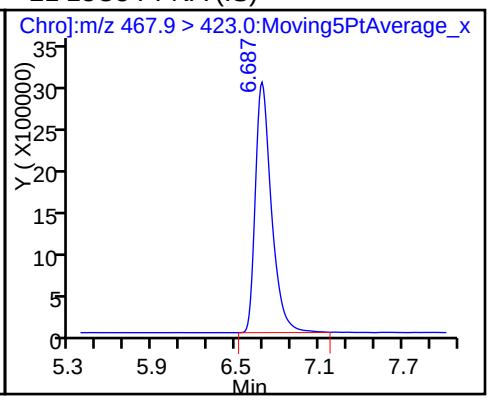
19 Perfluorooctane sulfonic acid



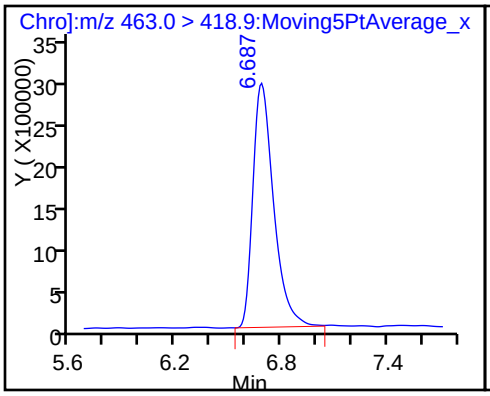
$ 18 13C8 PFOS



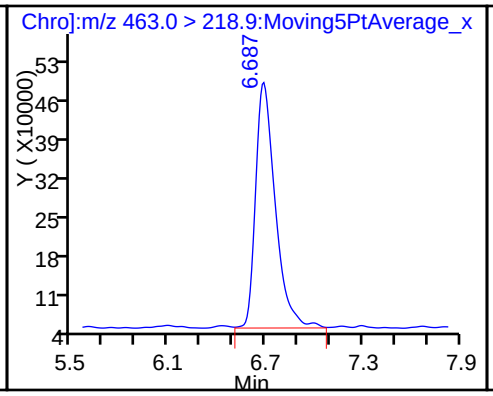
* 21 13C5 PFNA (IS)



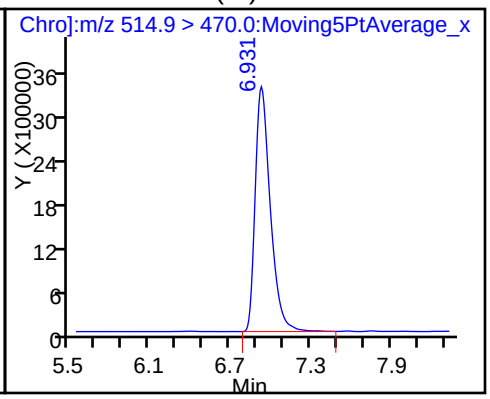
20 Perfluorononanoic acid



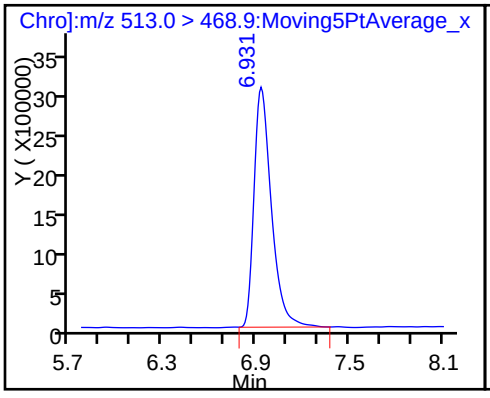
20 Perfluorononanoic acid



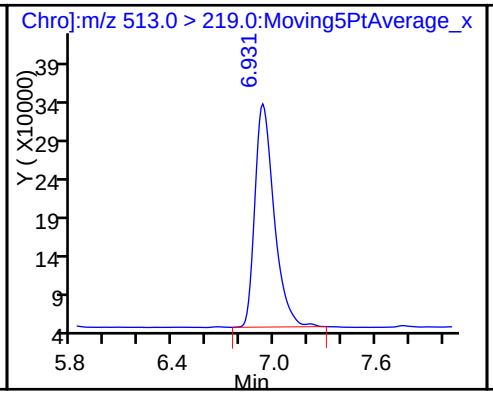
* 22 13C2 PFDA (IS)



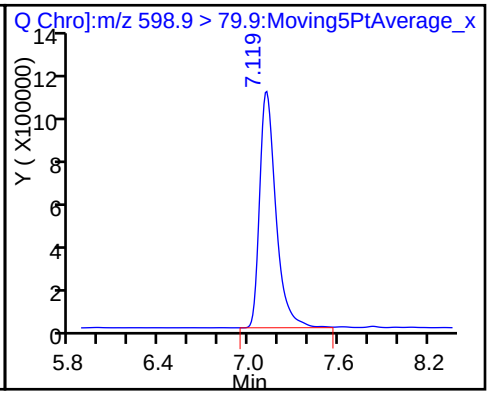
23 Perfluorodecanoic acid



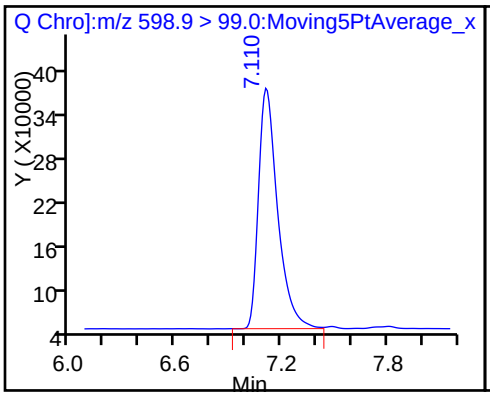
23 Perfluorodecanoic acid



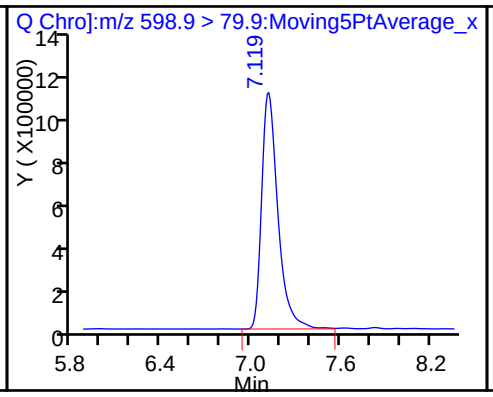
25 Perfluorodecane Sulfonate



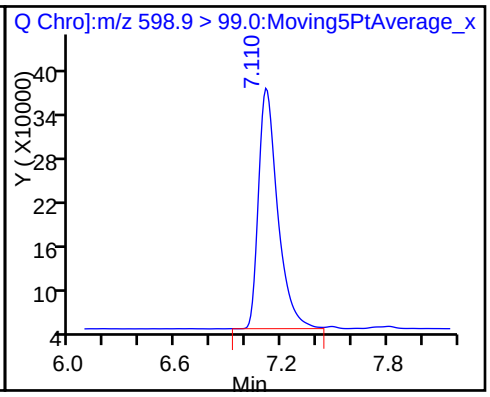
25 Perfluorodecane Sulfonate



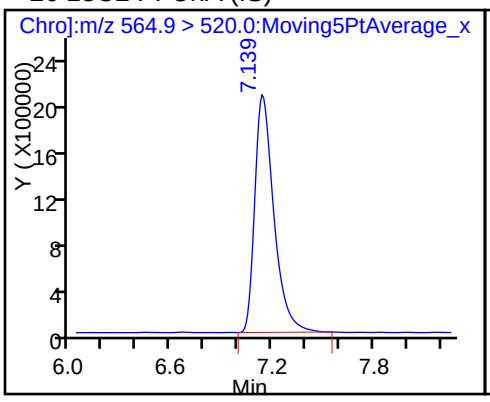
24 Perfluorodecane Sulfonic acid



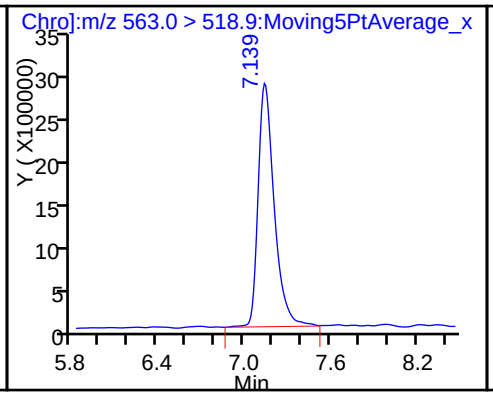
24 Perfluorodecane Sulfonic acid



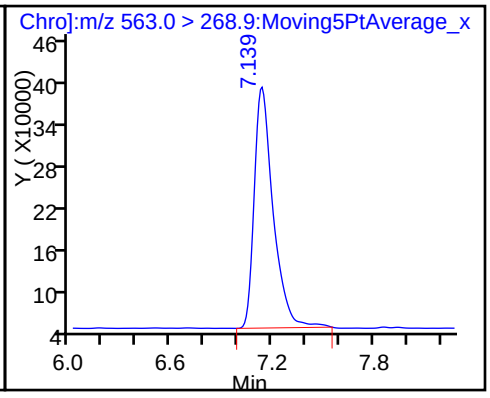
* 26 13C2 PFUnA (IS)



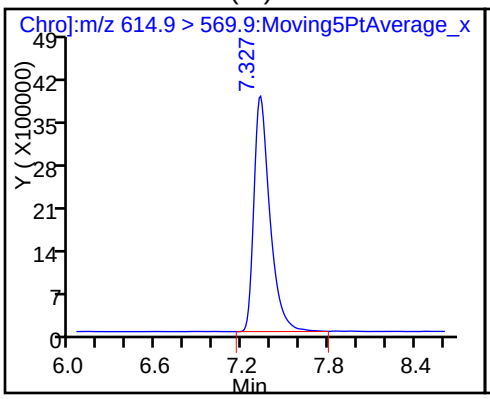
27 Perfluoroundecanoic acid



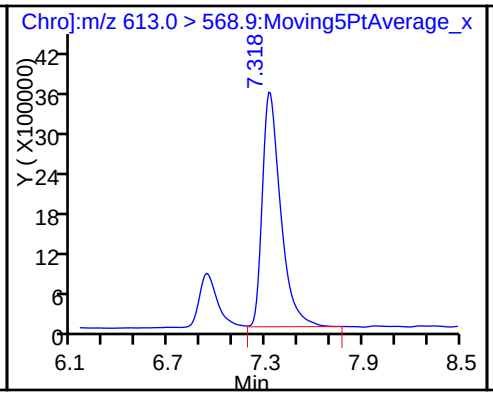
27 Perfluoroundecanoic acid



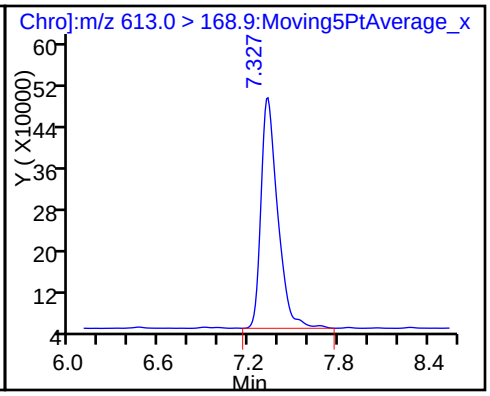
* 28 13C2 PFDoA (IS)



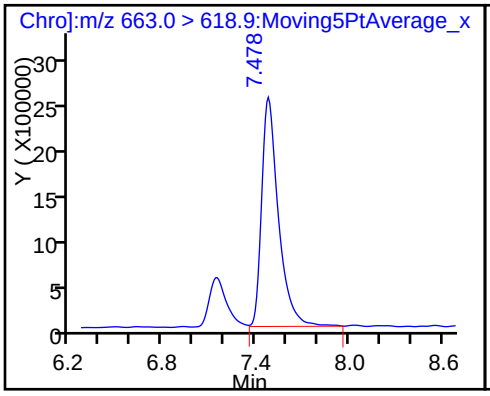
29 Perfluorododecanoic acid



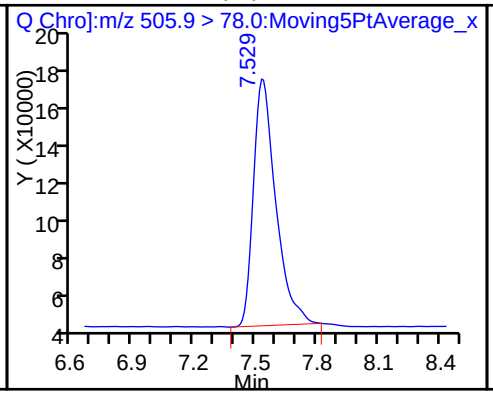
29 Perfluorododecanoic acid



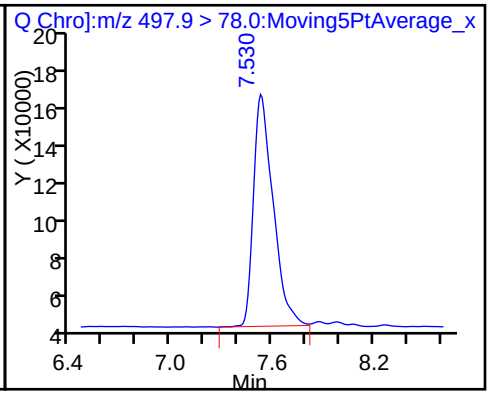
30 Perfluorotridecanoic acid



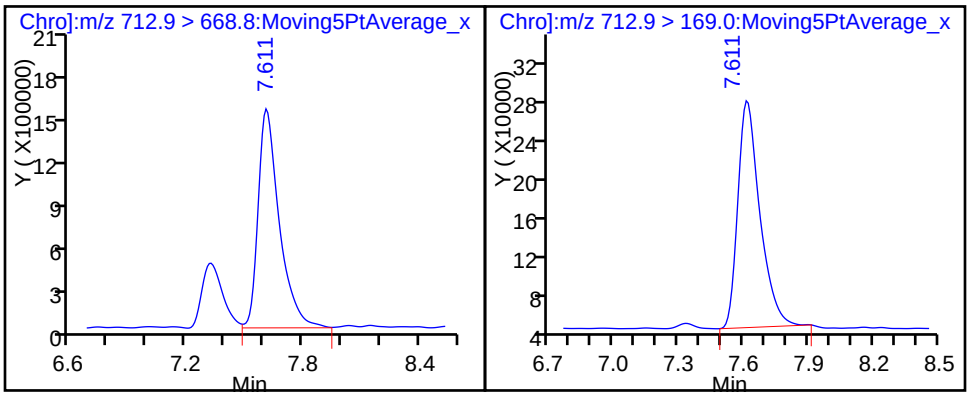
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 280-343904/3-A

Matrix: Water | Lab File ID: PC516I028083.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 250(mL) | Date Analyzed: 09/28/2016 20:27

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.166		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.179		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.191		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.181		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.170		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.199		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	110		60-155
STL01054	13C8 PFOS	120		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028083.d
Lims ID: LCSD 280-343904/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 28-Sep-2016 20:27:04 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 280-343904/3-A, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:38:15

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.793	3.963	-0.170		25586328	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.783	3.963	-0.180	0.998	26089241	9.04			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.024	5.062	-0.038	0.894	21771716	10.4			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.147	5.175	-0.028	0.850	8602824	8.28			
298.9 > 98.9	5.156	5.175	-0.019	0.852	2816561		3.05(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.147	5.175	-0.028	0.850	8602824	8.28			
298.9 > 98.9	5.156	5.175	-0.019	0.852	2816561		3.05(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.620	5.638	-0.018		19202910	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.610	5.629	-0.019	0.998	17421003	9.68			
313.0 > 118.6	5.620	5.629	-0.009	1.000	521140		33.43(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.054	6.073	-0.019		1987481	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.054	6.064	-0.010	1.000	7562825	9.57			R
398.9 > 98.9	6.054	6.064	-0.010	1.000	2848313		2.66(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.054	6.064	-0.010	1.000	7562825	9.57			
398.9 > 98.9	6.054	6.064	-0.010	1.000	2848313		2.66(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.045	6.064	-0.019	0.945	25221755	8.93			
363.0 > 168.9	6.045	6.064	-0.019	0.945	6149836		4.10(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.384	6.403	-0.019	0.958	7855239	8.61			
449.0 > 98.9	6.384	6.403	-0.019	0.958	2491315		3.15(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.384	6.403	-0.019	0.958	7855239	8.61			
449.0 > 98.9	6.384	6.403	-0.019	0.958	2491315		3.15(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.394	6.413	-0.019	1.000	23405533	10.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.395	6.404	-0.009		28604881	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.385	6.414	-0.029	0.999	29549197	9.95			
413.0 > 169.0	6.385	6.414	-0.029	0.999	8851127		3.34(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.667	6.676	-0.009		7331743	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.667	6.677	-0.010	1.000	8146504	8.49			R
498.9 > 98.9	6.667	6.677	-0.010	1.000	3258338		2.50(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.667	6.685	-0.018	1.000	4440373	11.1			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.687	6.696	-0.009		22578775	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.678	6.697	-0.019	0.999	23844006	9.07			
463.0 > 218.9	6.678	6.697	-0.019	0.999	3780708		6.31(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.922	6.941	-0.019		24418048	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.922	6.941	-0.019	1.000	22236734	8.75			R
513.0 > 219.0	6.931	6.941	-0.010	1.001	2220565		10.01(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.110	7.129	-0.019	1.066	7398191	7.68			
598.9 > 99.0	7.110	7.129	-0.019	1.066	2207102		3.35(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.110	7.129	-0.019	1.066	7398191	7.68			
598.9 > 99.0	7.110	7.129	-0.019	1.066	2207102		3.35(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.139	7.148	-0.009		15609490	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.139	7.149	-0.010	1.000	20586748	9.18			R
563.0 > 268.9	7.139	7.149	-0.010	1.000	2473950		8.32(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.318	7.327	-0.009	1.001	25554770	9.38			
613.0 > 168.9	7.318	7.327	-0.009	1.001	3483323		7.34(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.308	7.327	-0.019		26982005	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.469	7.488	-0.019	1.022	16316253	7.06			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.530	7.539	-0.009	1.000	693254	10.2			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.538	-0.009		639853	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.601	7.611	-0.010	1.040	9318152	4.99			
712.9 > 169.0	7.601	7.611	-0.010	1.040	1374022		6.78(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 29-Sep-2016 11:09:17 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028083.d

Injection Date: 28-Sep-2016 20:27:04 Instrument ID: LC_LCMS5

Lims ID: LCSD 280-343904/3-A

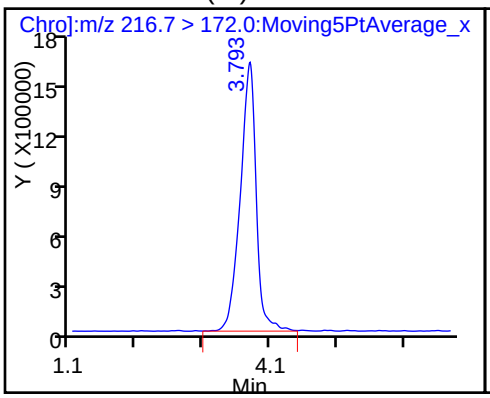
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 7

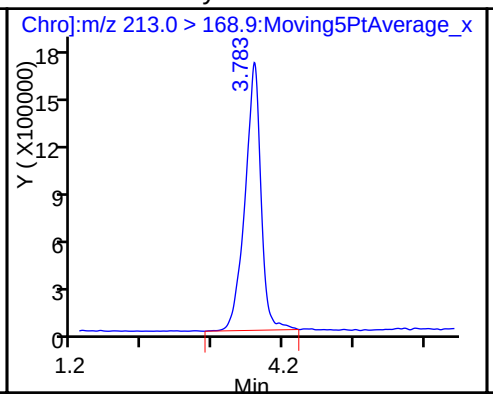
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

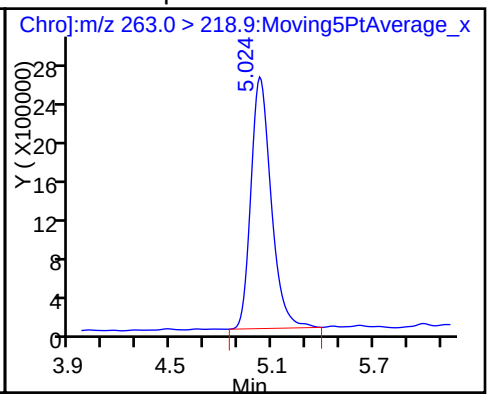
* 1 13C4 PFBA (IS)



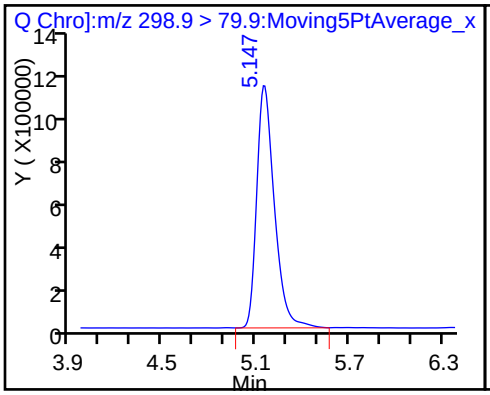
2 Perfluorobutyric acid



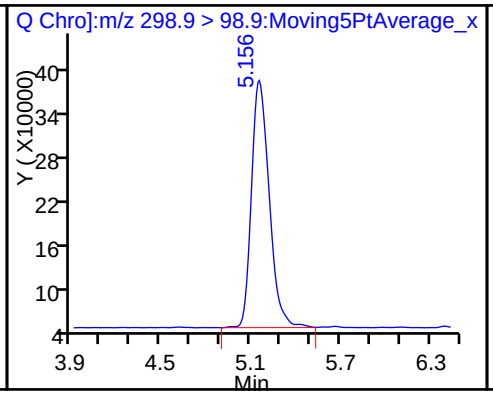
3 Perfluoropentanoic acid



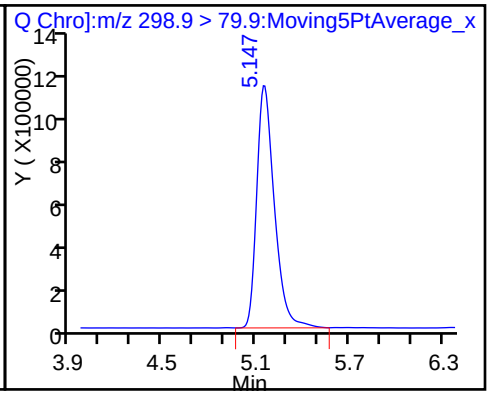
5 Perfluorobutanesulfonic acid



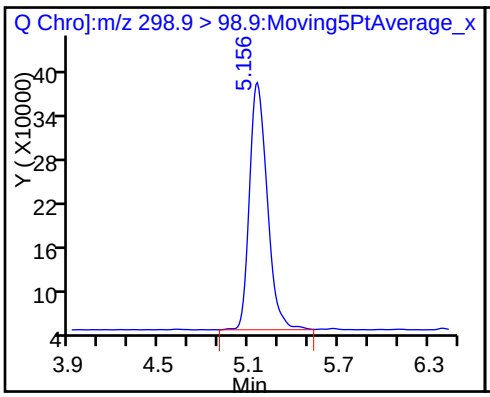
5 Perfluorobutanesulfonic acid



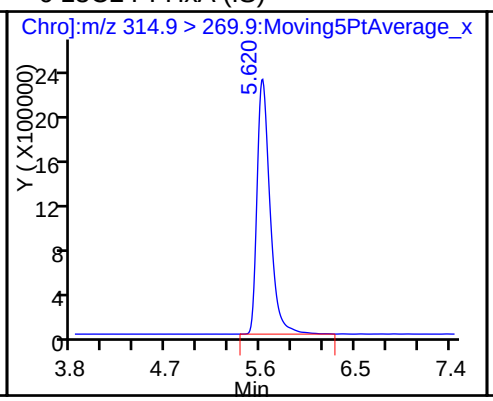
4 Perfluorobutane Sulfonate



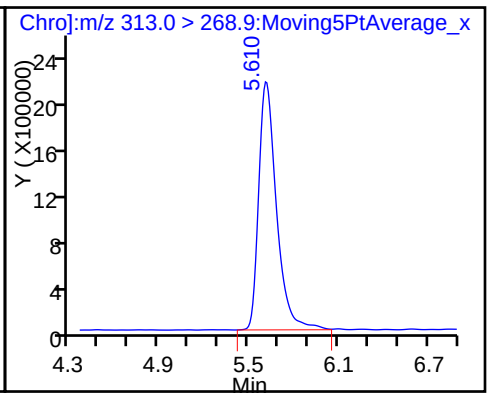
4 Perfluorobutane Sulfonate



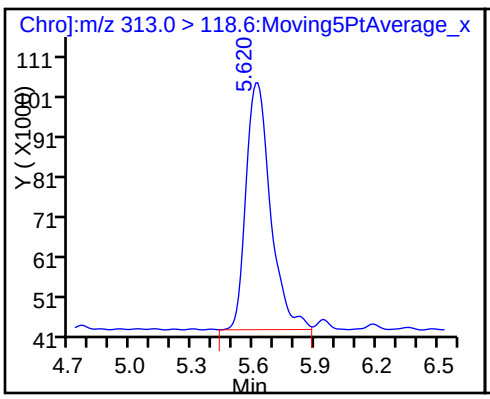
* 6 13C2 PFHxA (IS)



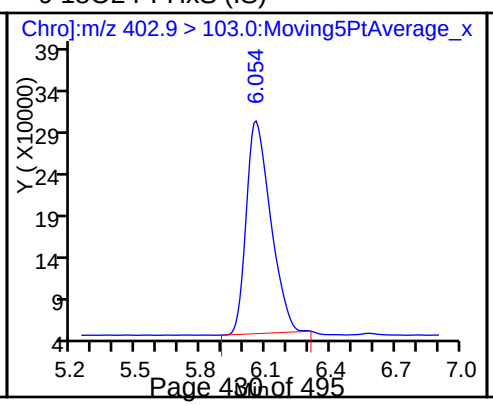
7 Perfluorohexanoic acid



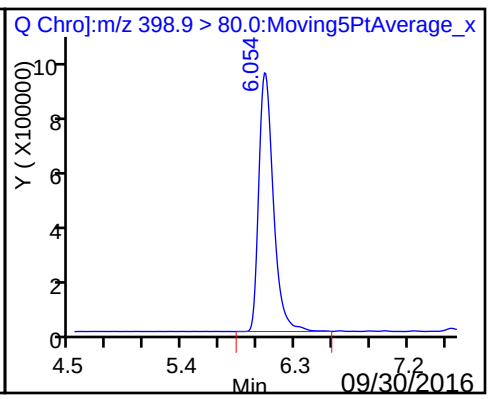
7 Perfluorohexanoic acid



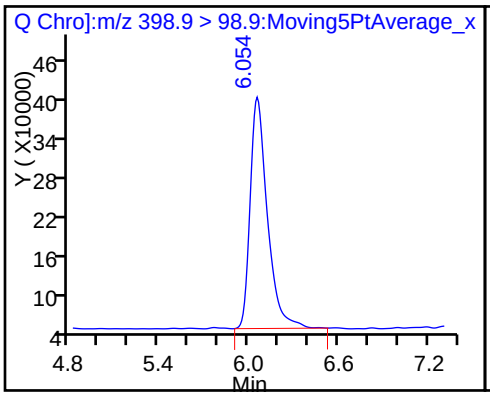
* 9 18O2 PFHxS (IS)



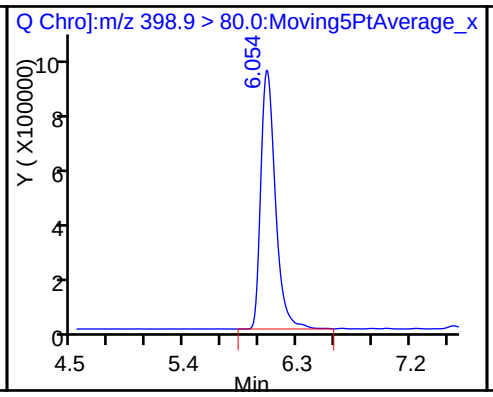
10 Perfluorohexane Sulfonate



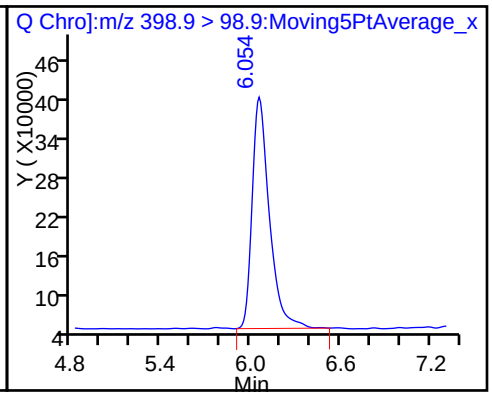
10 Perfluorohexane Sulfonate



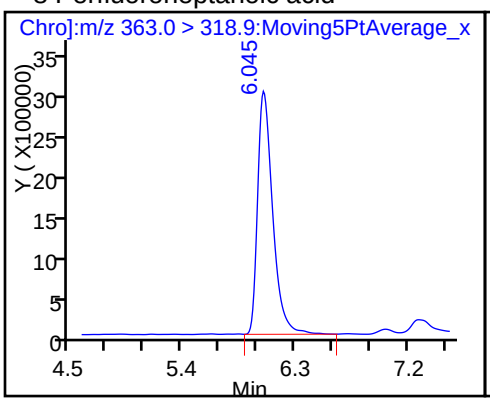
11 Perfluorohexanesulfonic acid



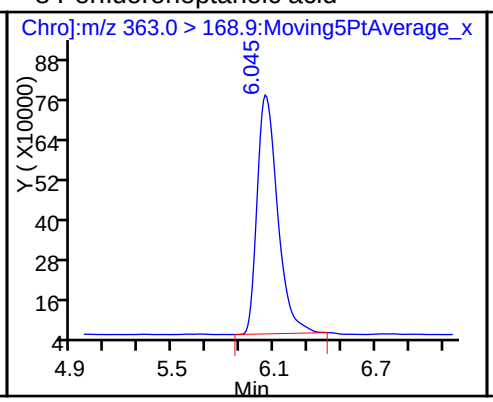
11 Perfluorohexanesulfonic acid



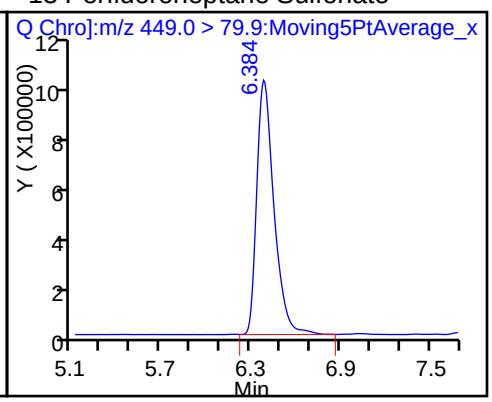
8 Perfluoroheptanoic acid



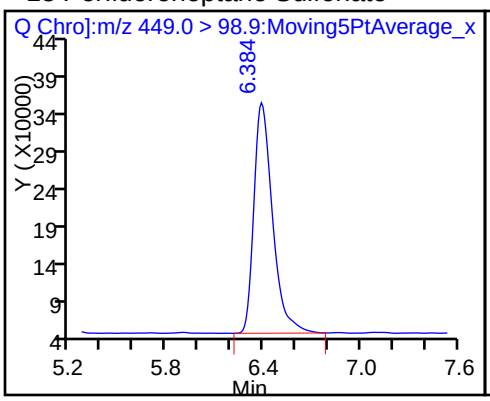
8 Perfluoroheptanoic acid



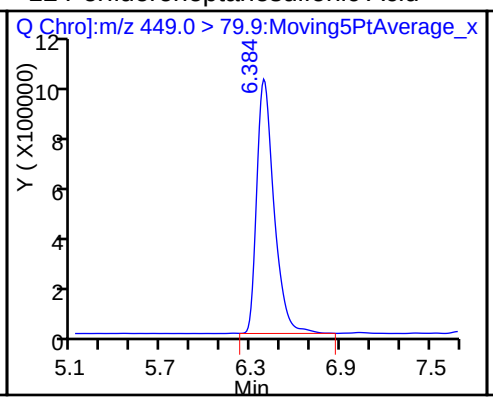
13 Perfluoroheptane Sulfonate



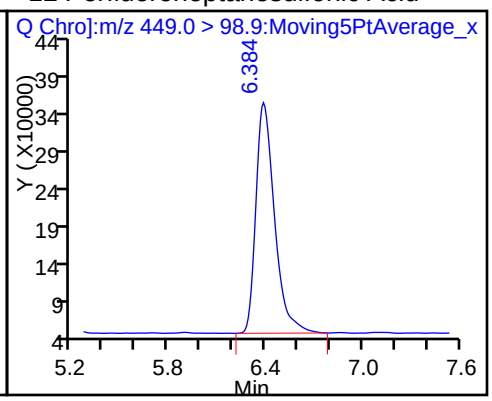
13 Perfluoroheptane Sulfonate



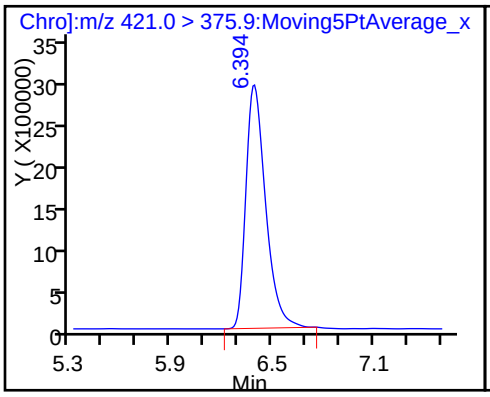
12 Perfluoroheptanesulfonic Acid



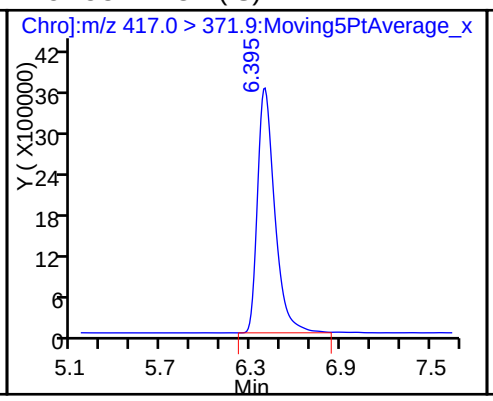
12 Perfluoroheptanesulfonic Acid



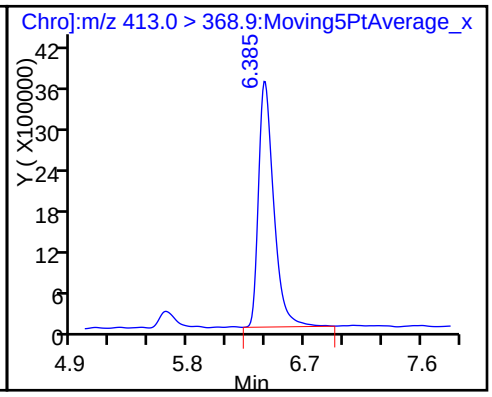
$ 14 13C8 PFOA



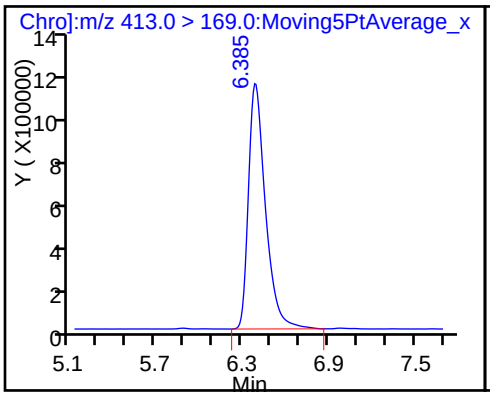
* 15 13C4 PFOA (IS)



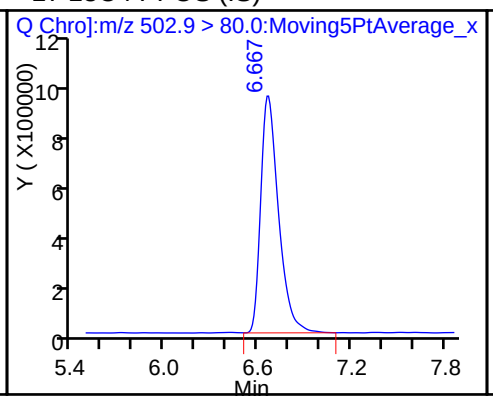
16 Perfluorooctanoic acid



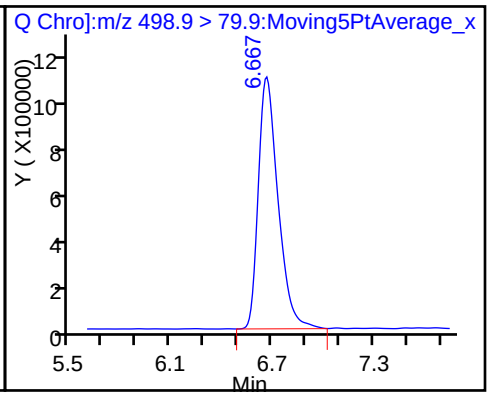
16 Perfluorooctanoic acid



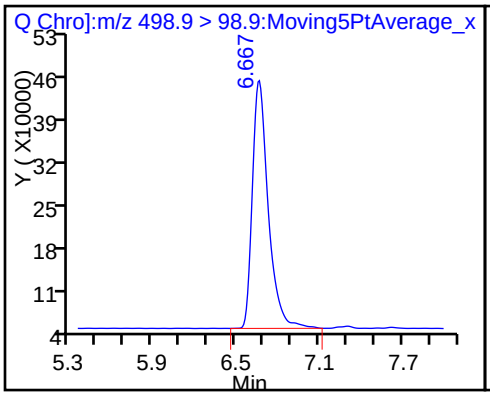
* 17 13C4 PFOS (IS)



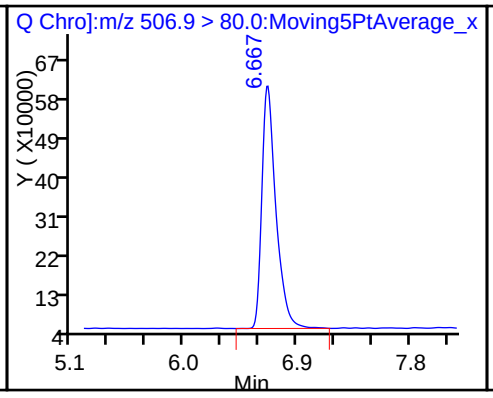
19 Perfluorooctane sulfonic acid



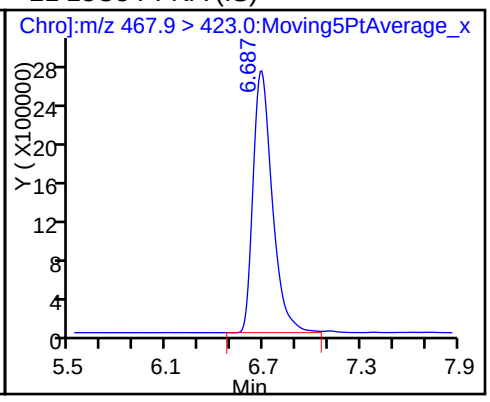
19 Perfluorooctane sulfonic acid



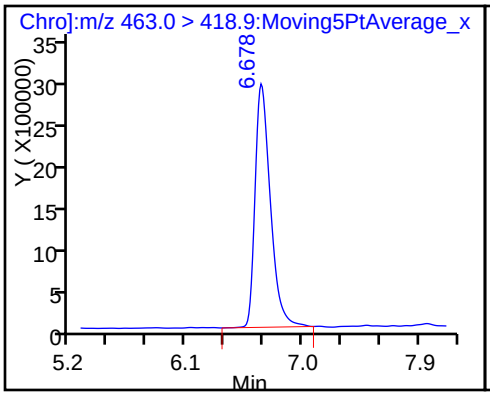
$ 18 13C8 PFOS



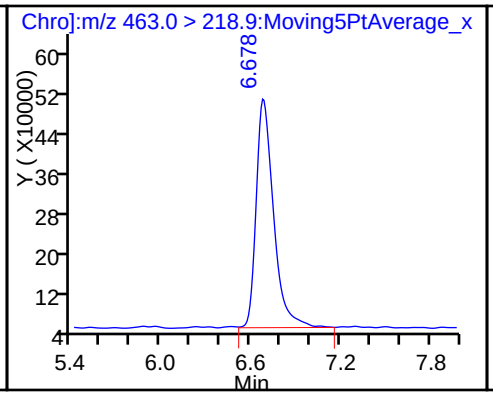
* 21 13C5 PFNA (IS)



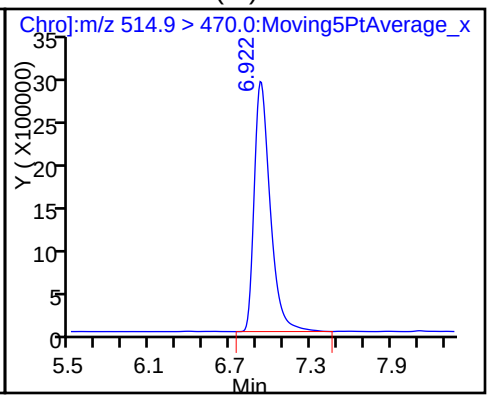
20 Perfluorononanoic acid



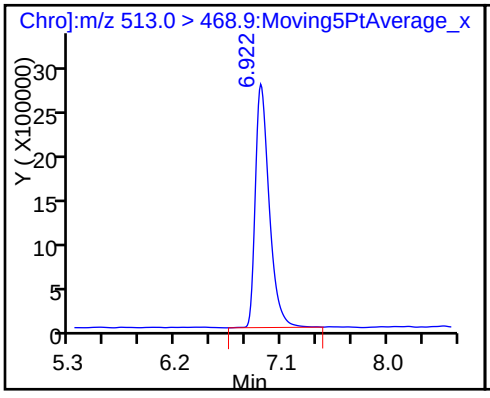
20 Perfluorononanoic acid



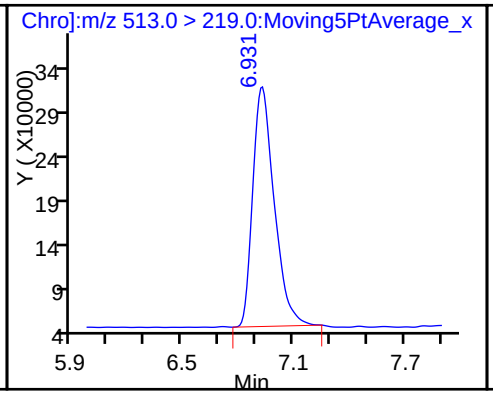
* 22 13C2 PFDA (IS)



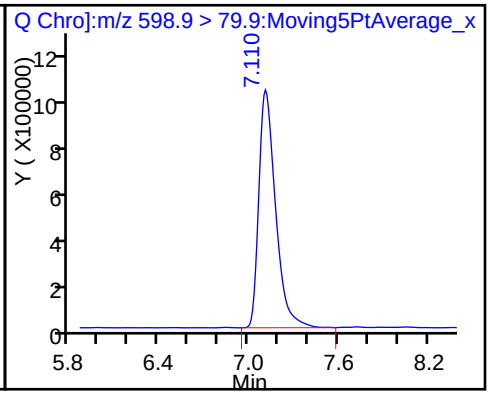
23 Perfluorodecanoic acid



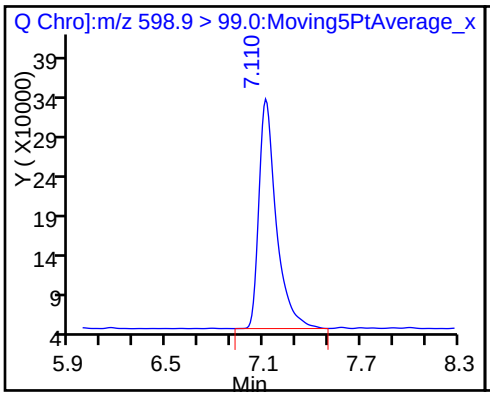
23 Perfluorodecanoic acid



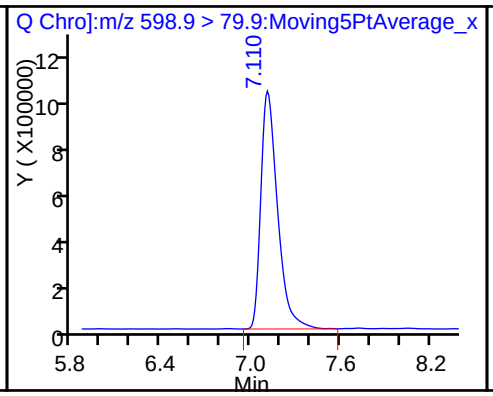
25 Perfluorodecane Sulfonate



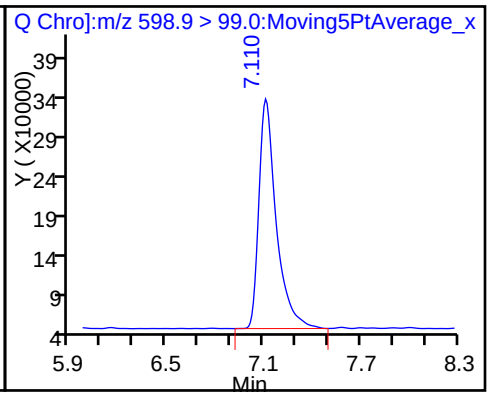
25 Perfluorodecane Sulfonate



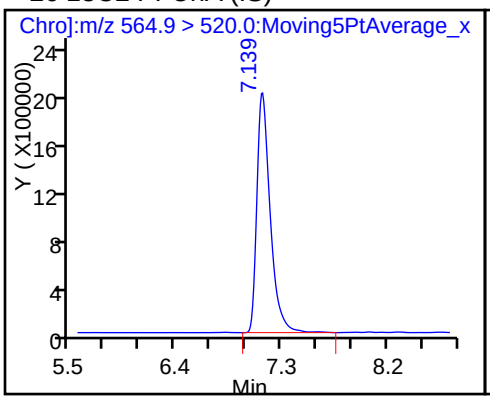
24 Perfluorodecane Sulfonic acid



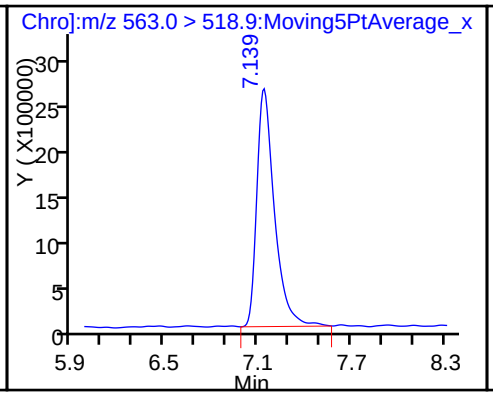
24 Perfluorodecane Sulfonic acid



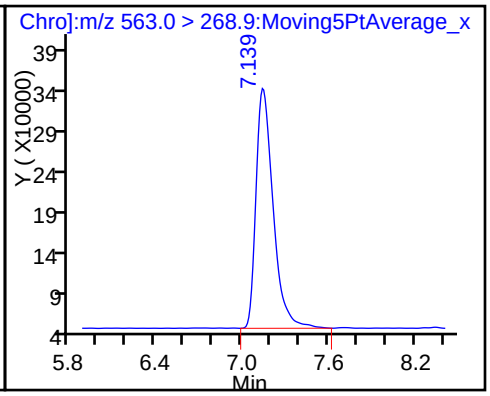
* 26 13C2 PFUnA (IS)



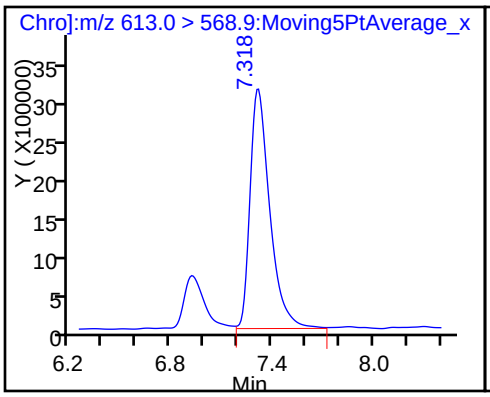
27 Perfluoroundecanoic acid



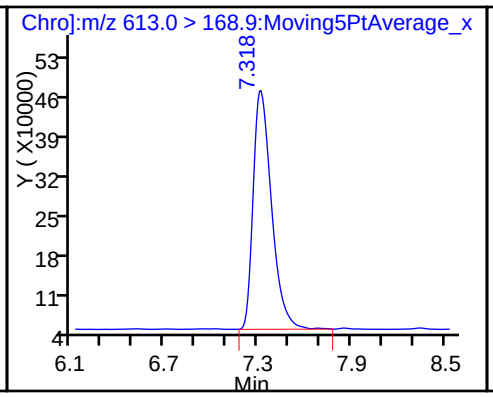
27 Perfluoroundecanoic acid



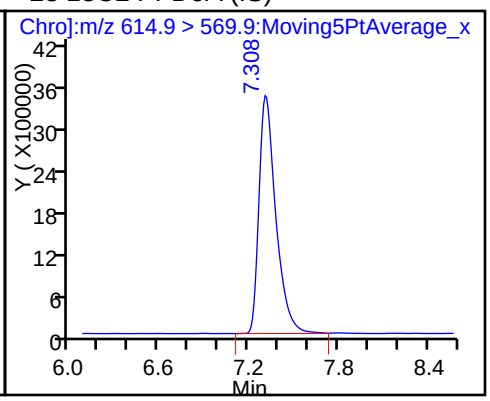
29 Perfluorododecanoic acid



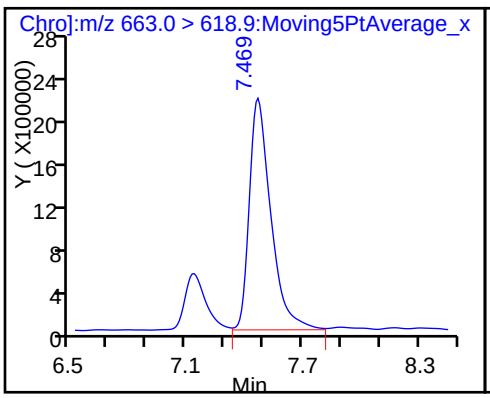
29 Perfluorododecanoic acid



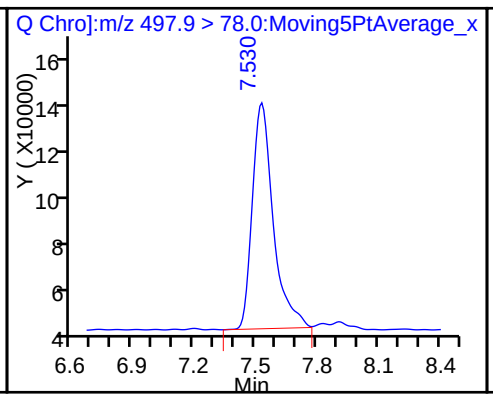
* 28 13C2 PFDoA (IS)



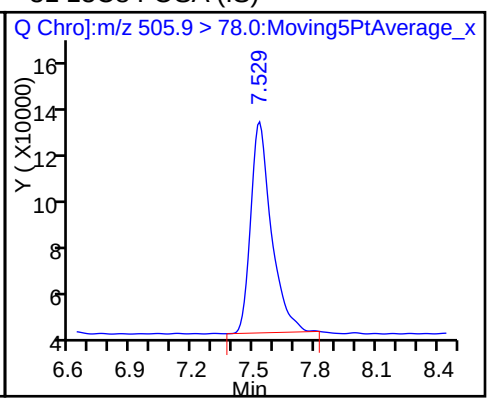
30 Perfluorotridecanoic acid



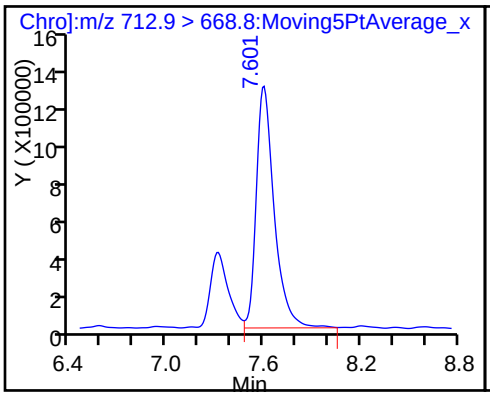
32 Perfluorooctane Sulfonamide



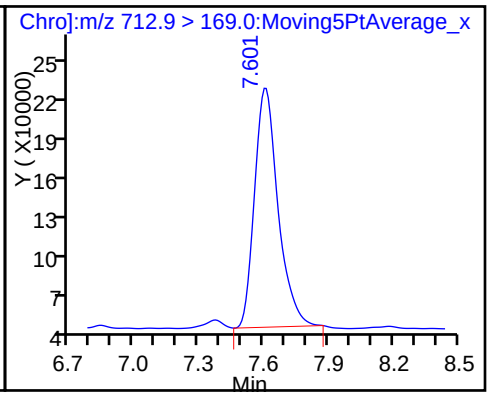
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: | Lab Sample ID: DLCK 280-343000/14

Matrix: Water | Lab File ID: PC516I020017.d

Analysis Method: DV-LC-0012 | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 09/20/2016 18:34

Con. Extract Vol.: | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 343000 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.398		0.35	0.10
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.490		0.35	0.10
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.502		0.35	0.10
375-95-1	Perfluorononanoic acid (PFNA)	0.513		0.35	0.10
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.539		0.35	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.465		0.35	0.10

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	107		60-155
STL01054	13C8 PFOS	105		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020017.d
Lims ID: DLCK L2
Client ID:
Sample Type: DLCK
Inject. Date: 20-Sep-2016 18:34:48 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: DLCK L2, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 21-Sep-2016 12:10:19 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK033

First Level Reviewer: fiedlerh Date: 21-Sep-2016 08:06:55

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.361	4.314	0.047		35458721	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.361	4.314	0.047	1.000	1994730	0.5261			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.346	5.327	0.019	0.908	1209310	0.4357			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.459	5.431	0.028	0.868	585693	0.3981			
298.9 > 98.9	5.478	5.431	0.047	0.871	212385		2.76(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.459	5.440	0.019	0.868	585693	0.3981			
298.9 > 98.9	5.478	5.440	0.038	0.871	212385		2.76(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.885	5.885	0.0		25385297	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.885	5.876	0.009	1.000	1280875	0.5163			
313.0 > 118.6	5.885	5.876	0.009	1.000	41353		30.97(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.291	6.291	0.0		2992412	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.291	6.291	0.0	1.000	599972	0.5021			
398.9 > 98.9	6.329	6.291	0.038	1.006	269260		2.23(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.291	6.339	-0.048	1.000	599972	0.5021			
398.9 > 98.9	6.329	6.339	-0.010	1.006	269260		2.23(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.301	6.292	0.009	0.950	1831347	0.4900			
363.0 > 168.9	6.292	6.292	0.0	0.949	547411		3.35(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									7
449.0 > 79.9	6.612	6.602	0.010	0.958	548805	0.4878			7
449.0 > 98.9	6.612	6.602	0.010	0.958	162127		3.39(0.00-0.00)		
LOD = 0.4950									
12 Perfluoroheptanesulfonic Acid									7
449.0 > 79.9	6.612	6.602	0.010	0.958	548805	0.4878			7
449.0 > 98.9	6.612	6.602	0.010	0.958	162127		3.39(0.00-0.00)		
LOD = 0.4950									
$ 14 13C8 PFOA									
421.0 > 375.9	6.622	6.622	0.0	0.999	1750732	0.5337			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.631	6.622	0.009		39615826	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.632	6.613	0.019	1.000	2325803	0.4645			
413.0 > 169.0	6.641	6.613	0.028	1.001	664428		3.50(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.904	6.875	0.029		9802299	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.914	6.866	0.048	1.001	665010	0.5393			
498.9 > 98.9	6.904	6.866	0.038	1.000	282215		2.36(1.31-2.43)		
$ 18 13C8 PFOS									M
506.9 > 80.0	6.894	6.875	0.019	0.999	287441	0.5013			M
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.924	6.905	0.019		29283498	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.924	6.895	0.029	1.000	1568096	0.5131			R
463.0 > 218.9	6.914	6.895	0.019	0.999	312588		5.02(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.168	7.140	0.028		31304092	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.178	7.140	0.038	1.001	1689060	0.5331			
513.0 > 219.0	7.178	7.140	0.038	1.001	113591		14.87(10.49-19.48)		
25 Perfluorodecane Sulfonate									M
598.9 > 79.9	7.356	7.328	0.028	1.066	671618	0.5275			
598.9 > 99.0	7.347	7.328	0.019	1.064	226467		2.97(1.99-3.69)		M
24 Perfluorodecane Sulfonic acid									M
598.9 > 79.9	7.356	7.479	-0.123	1.066	661766	0.5199			M
598.9 > 99.0	7.347	7.479	-0.132	1.064	226467		2.92(2.84-2.84)		M
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.385	7.347	0.038		23736552	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.385	7.357	0.028	1.000	1940024	0.5431			R
563.0 > 268.9	7.366	7.357	0.009	0.997	143241		13.54(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.555	7.536	0.019	0.999	2747125	0.5281			
613.0 > 168.9	7.564	7.536	0.028	1.000	343844		7.99(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.564	7.536	0.028		46479115	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.652	7.633	0.019		32878243	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.653	7.634	0.019	1.000	1667458	0.4851			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.706	7.706	0.0	1.019	2224797	0.5053			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.829	7.838	-0.009	1.035	1654542	0.4948			
712.9 > 169.0	7.838	7.838	0.0	1.036	111287		14.87(8.28-8.28)		

QC Flag Legend

Processing Flags
- R - Failed Signal Ratio Test
- 7 - Failed Limit of Detection

Review Flags
- M - Manually Integrated

Reagents:

PFC-IS_00023	Amount Added:	20.00	Units: uL
PFC_CAL_stock_00033	Amount Added:	25.00	Units: uL

Report Date: 21-Sep-2016 12:10:23 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020017.d

Injection Date: 20-Sep-2016 18:34:48 Instrument ID: LC_LCMS5

Lims ID: DLCK L2

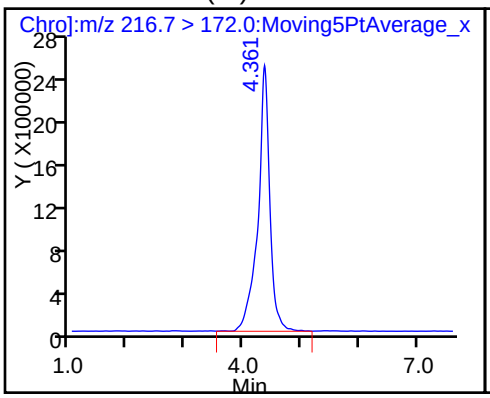
Client ID:

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 14

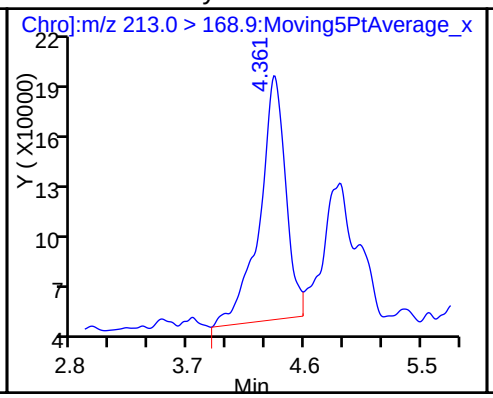
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

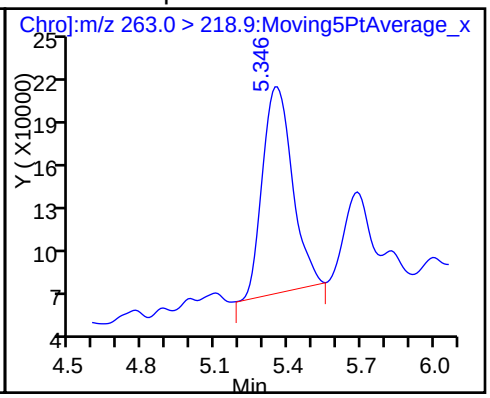
* 1 13C4 PFBA (IS)



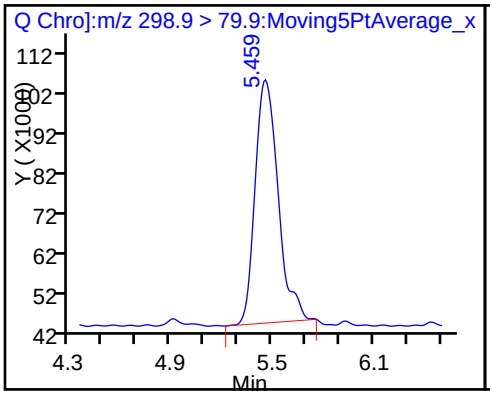
2 Perfluorobutyric acid



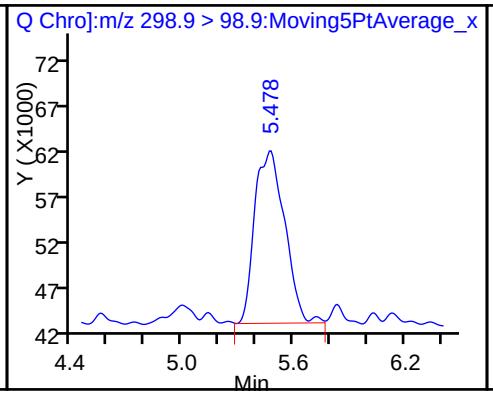
3 Perfluoropentanoic acid



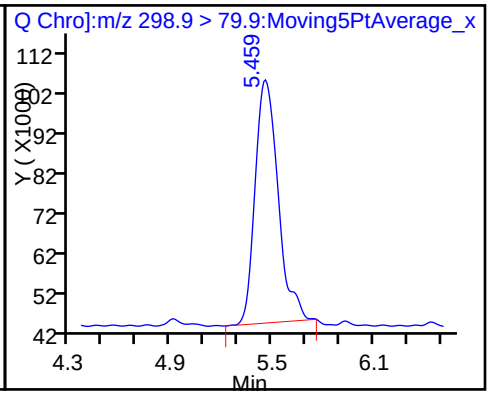
5 Perfluorobutanesulfonic acid



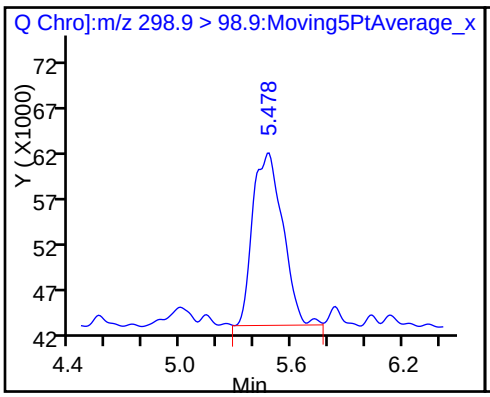
5 Perfluorobutanesulfonic acid



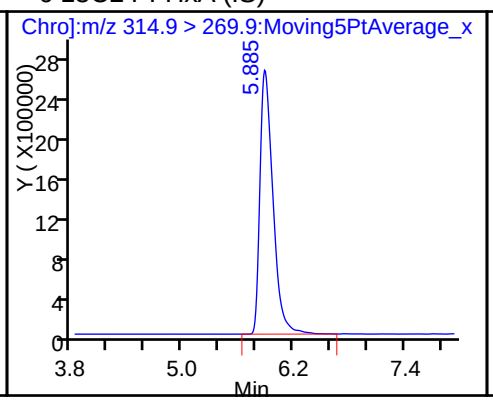
4 Perfluorobutane Sulfonate



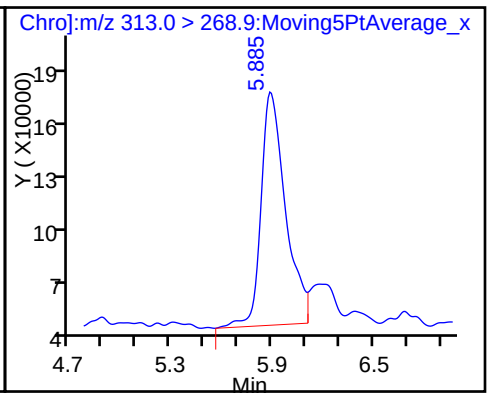
4 Perfluorobutane Sulfonate



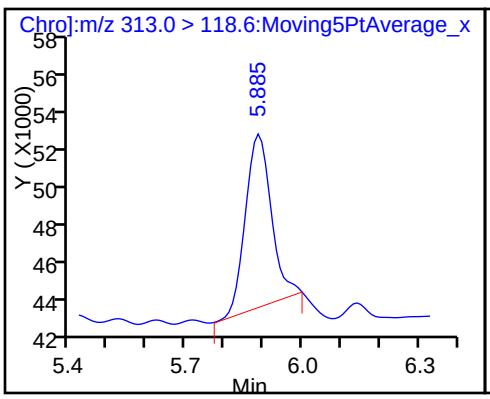
* 6 13C2 PFHxA (IS)



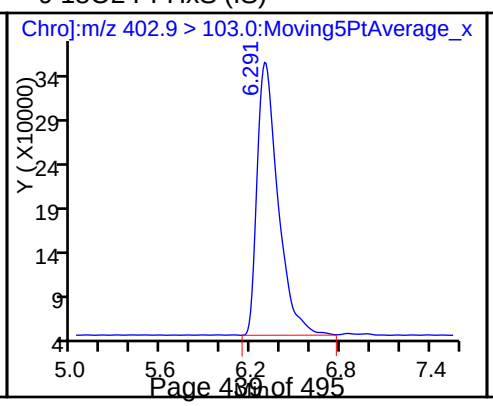
7 Perfluorohexanoic acid



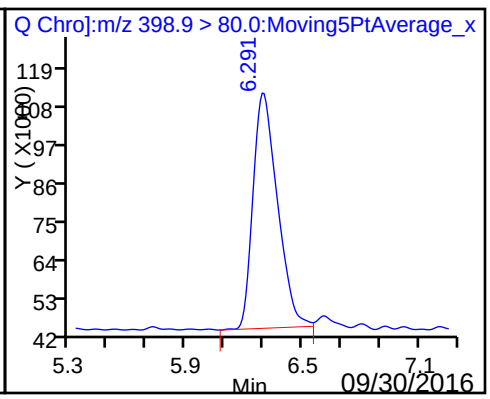
7 Perfluorohexanoic acid



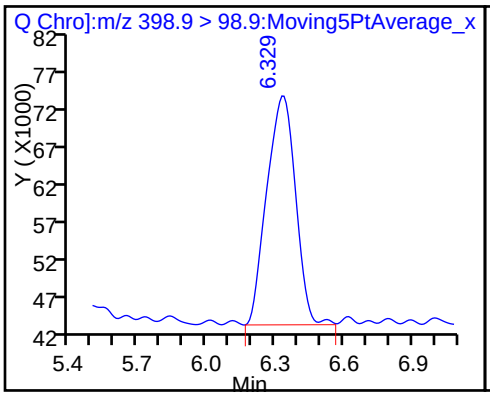
* 9 18O2 PFHxS (IS)



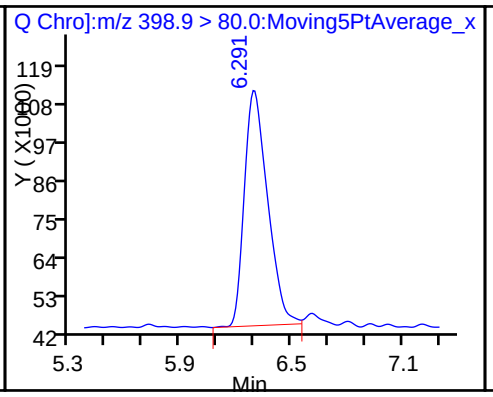
10 Perfluorohexane Sulfonate



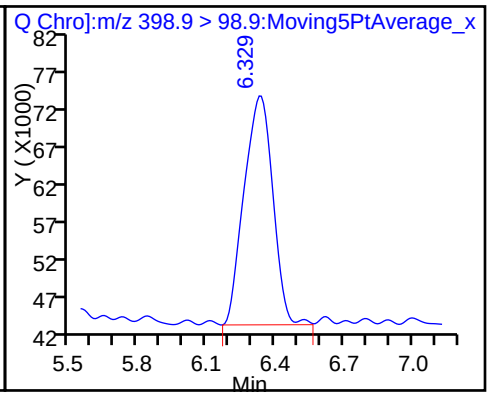
10 Perfluorohexane Sulfonate



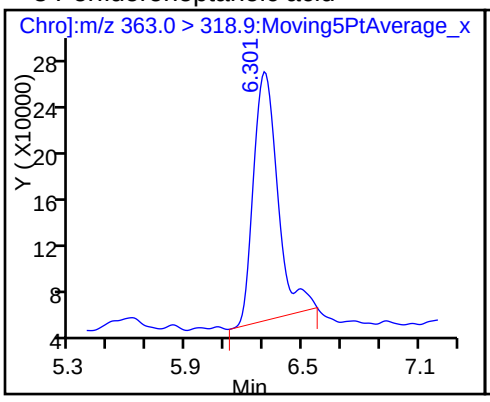
11 Perfluorohexanesulfonic acid



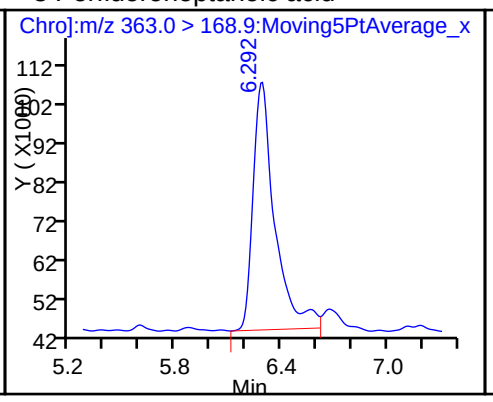
11 Perfluorohexanesulfonic acid



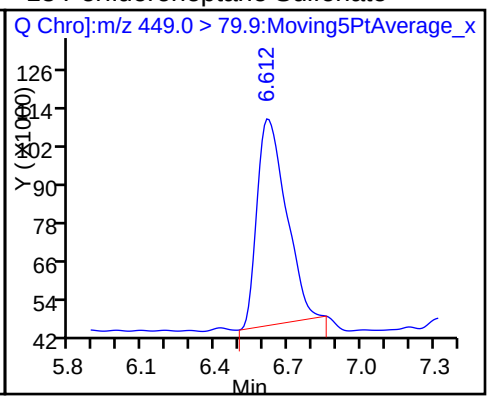
8 Perfluoroheptanoic acid



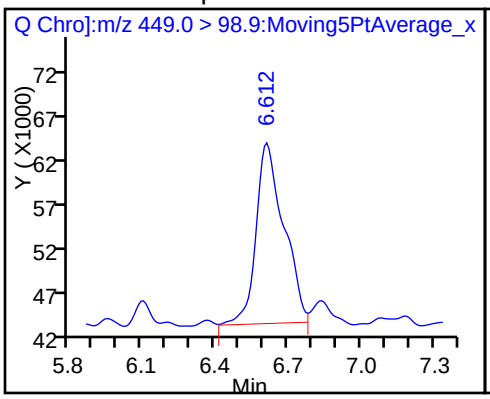
8 Perfluoroheptanoic acid



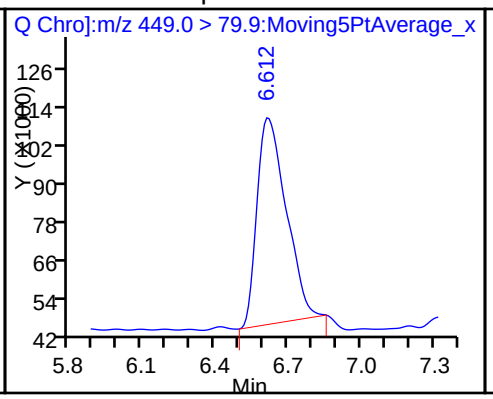
13 Perfluoroheptane Sulfonate



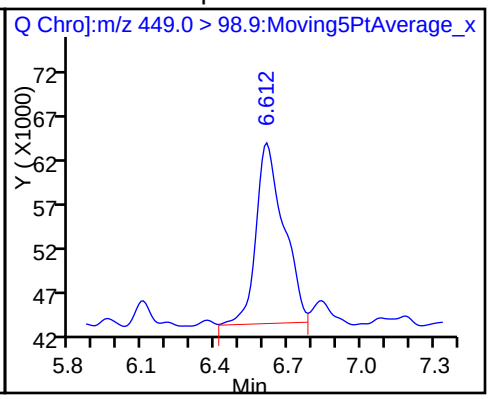
13 Perfluoroheptane Sulfonate



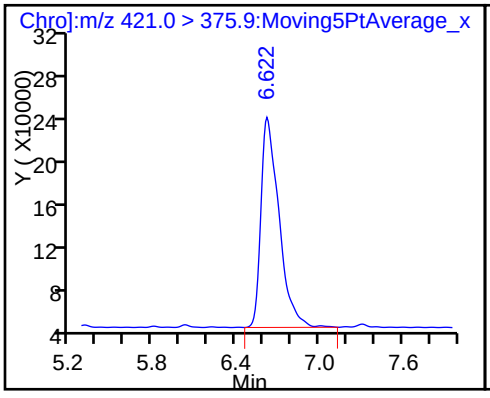
12 Perfluoroheptanesulfonic Acid



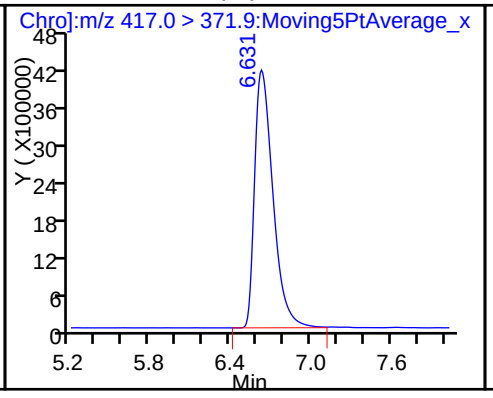
12 Perfluoroheptanesulfonic Acid



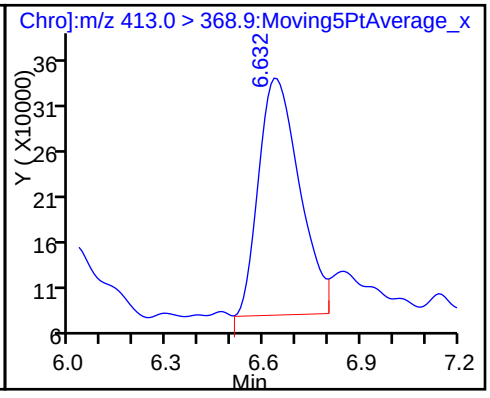
$ 14 13C8 PFOA



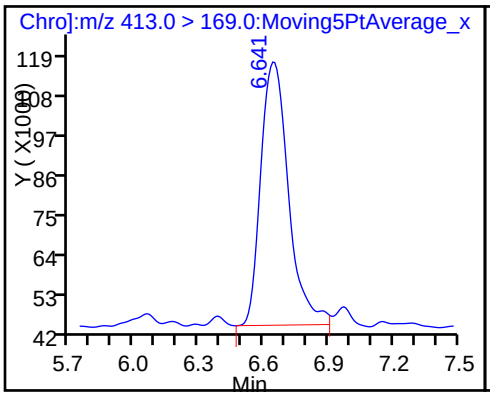
* 15 13C4 PFOA (IS)



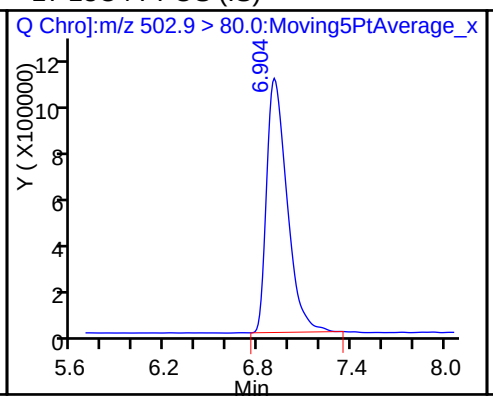
16 Perfluorooctanoic acid



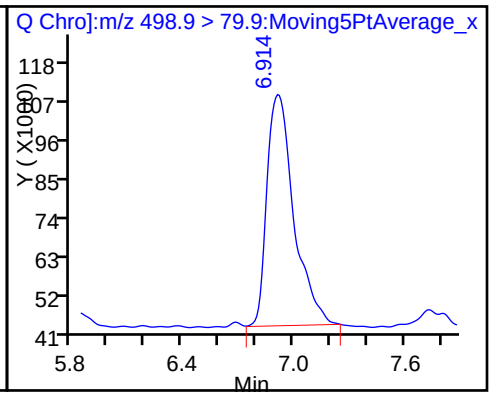
16 Perfluorooctanoic acid



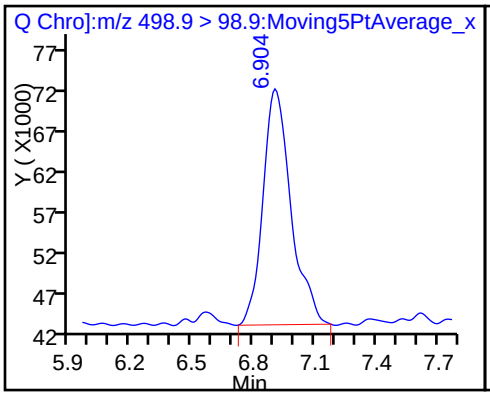
* 17 13C4 PFOS (IS)



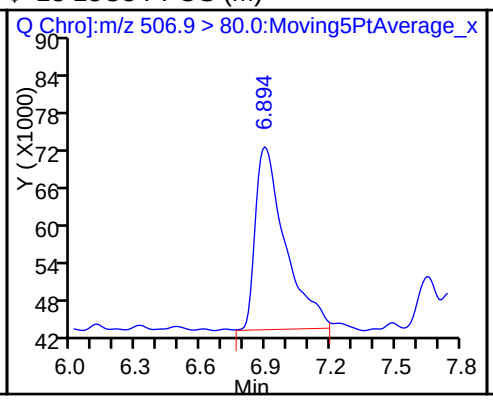
19 Perfluorooctane sulfonic acid



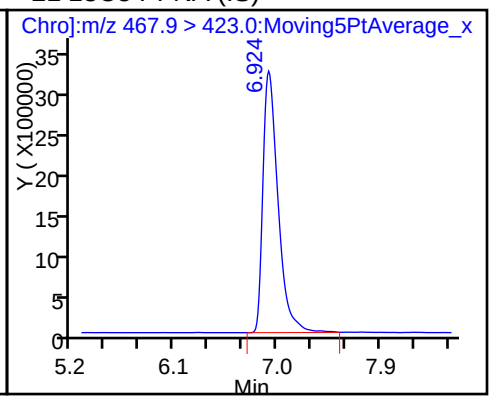
19 Perfluorooctane sulfonic acid



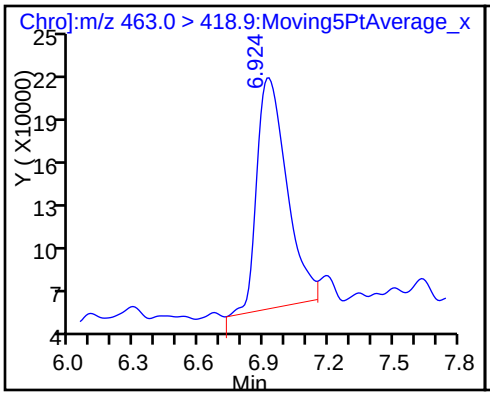
$ 18 13C8 PFOS (M)



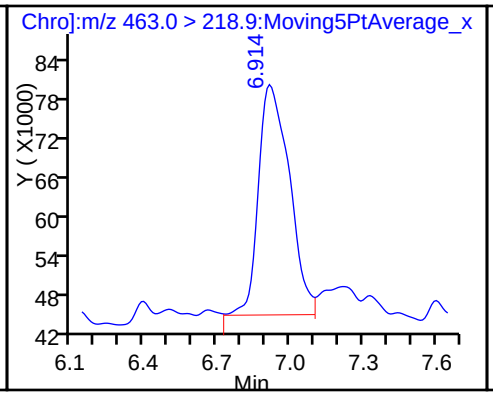
* 21 13C5 PFNA (IS)



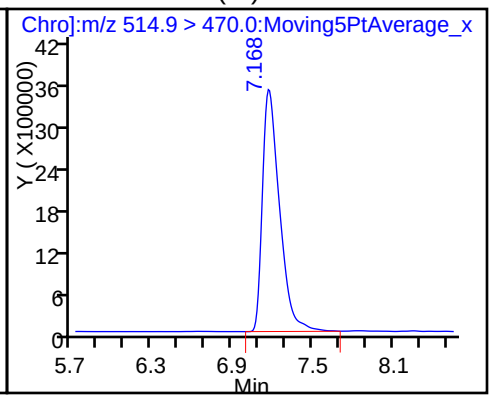
20 Perfluorononanoic acid



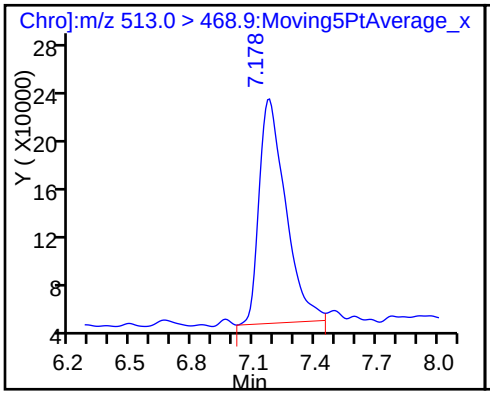
20 Perfluorononanoic acid



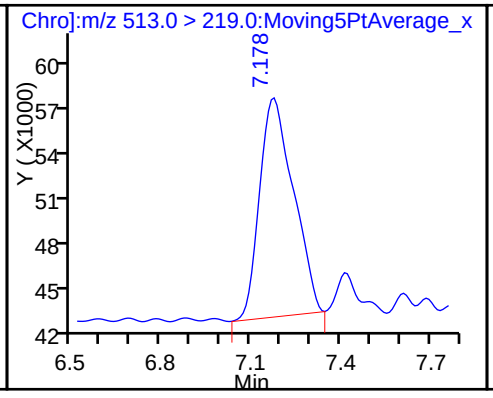
* 22 13C2 PFDA (IS)



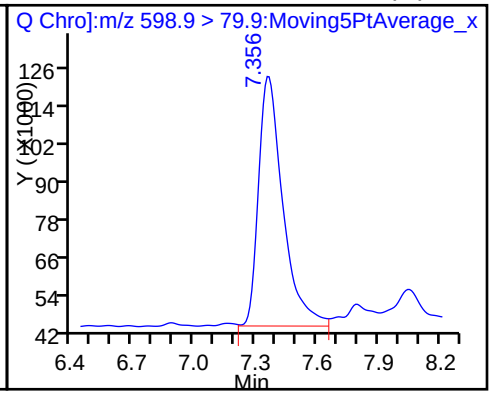
23 Perfluorodecanoic acid



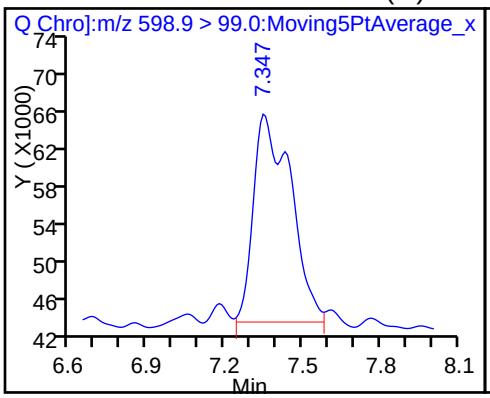
23 Perfluorodecanoic acid



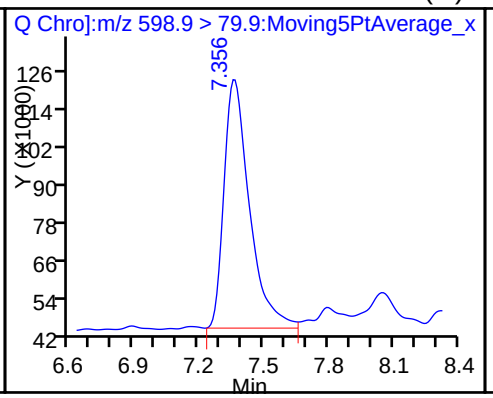
25 Perfluorodecane Sulfonate (M)



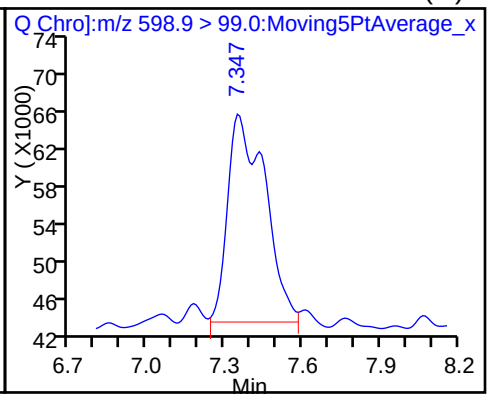
25 Perfluorodecane Sulfonate (M)



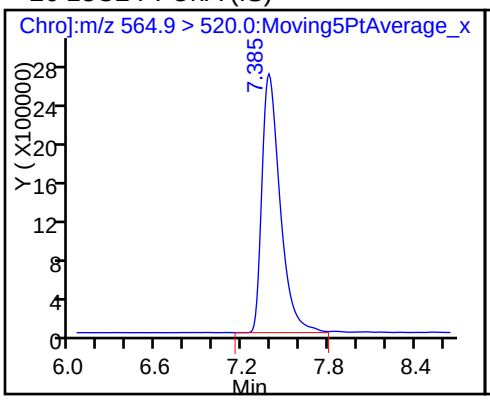
24 Perfluorodecane Sulfonic acid (M)



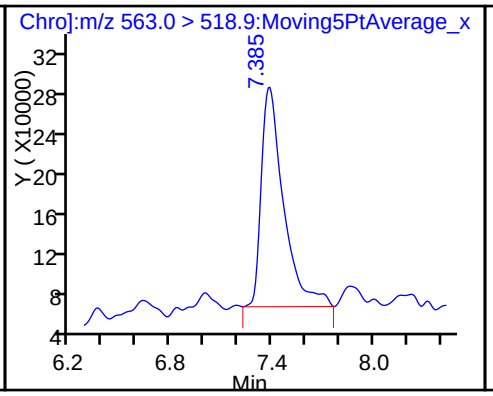
24 Perfluorodecane Sulfonic acid (M)



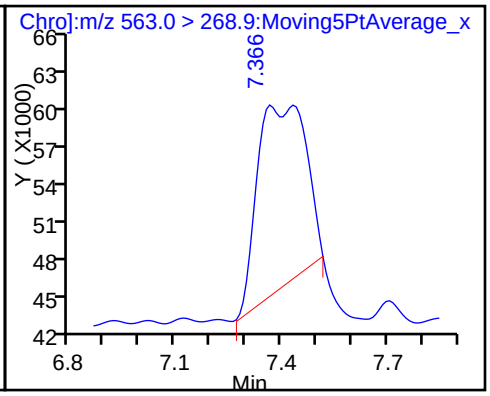
* 26 13C2 PFUnA (IS)



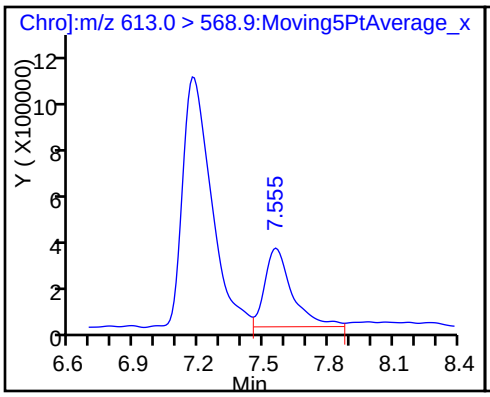
27 Perfluoroundecanoic acid



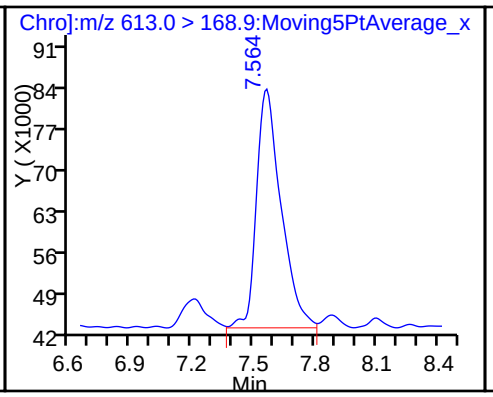
27 Perfluoroundecanoic acid



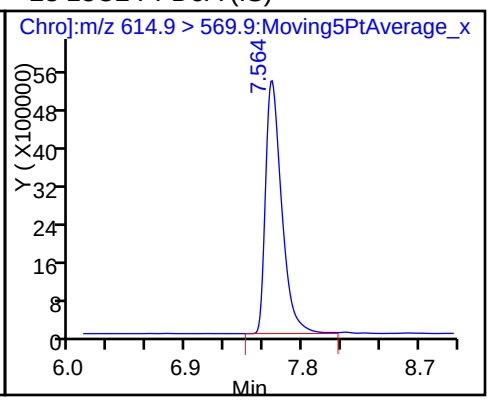
29 Perfluorododecanoic acid



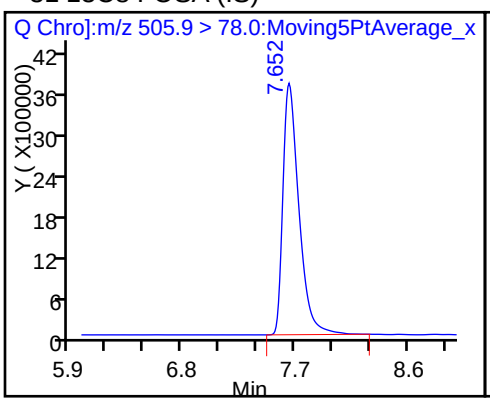
29 Perfluorododecanoic acid



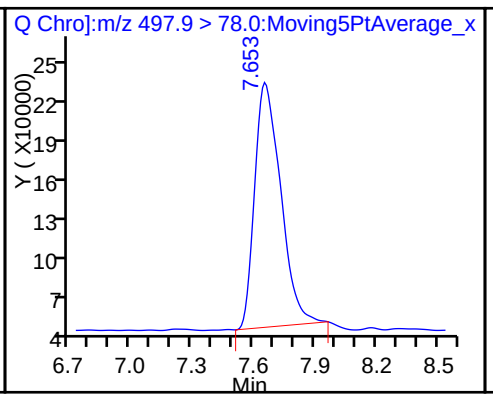
* 28 13C2 PFDoA (IS)



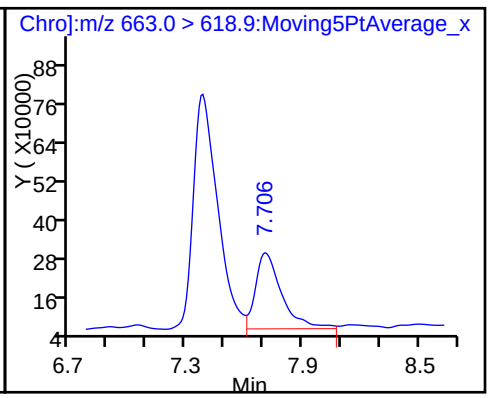
* 31 13C8 FOSA (IS)



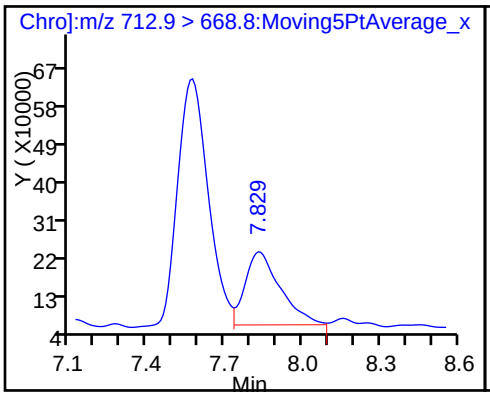
32 Perfluorooctane Sulfonamide



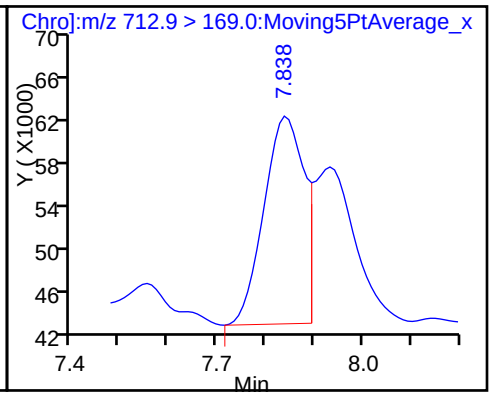
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver

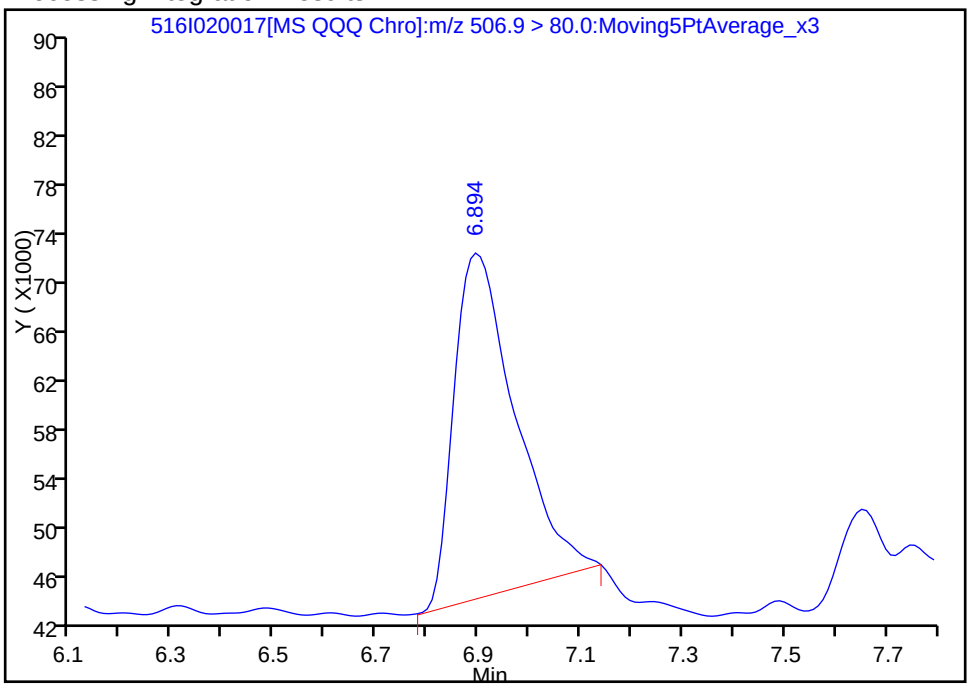
Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020017.d
Injection Date: 20-Sep-2016 18:34:48 Instrument ID: LC_LCMS5
Lims ID: DLCK L2
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

$ 18 13C8 PFOS, CAS: STL01054

Signal: 1

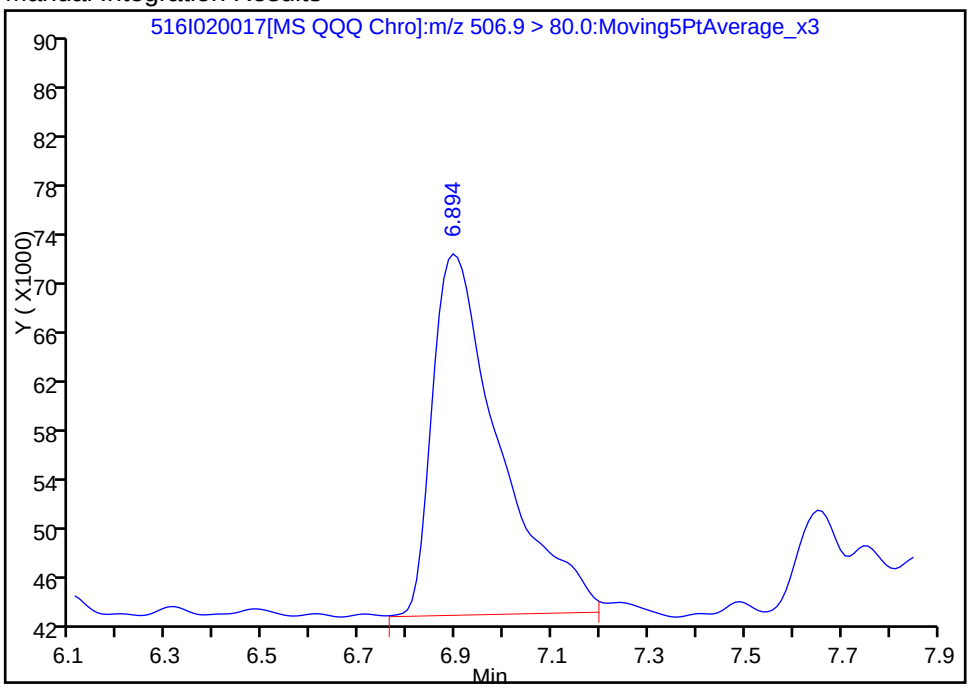
Processing Integration Results

RT: 6.89
Area: 237042
Amount: 0.406474
Amount Units: ug/L



Manual Integration Results

RT: 6.89
Area: 287441
Amount: 0.501296
Amount Units: ug/L



Reviewer: fiedlerh, 21-Sep-2016 08:06:55
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: CB MS | Lab Sample ID: 280-88381-11 MS

Matrix: Water | Lab File ID: PC516I028116.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 08:57

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 288.4(mL) | Date Analyzed: 09/29/2016 03:13

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.142		0.017	0.0071
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.166		0.026	0.011
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.187		0.026	0.0060
375-95-1	Perfluorononanoic acid (PFNA)	0.159		0.035	0.015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.189		0.026	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.182		0.017	0.0085

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	115		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028116.d
Lims ID: 280-88381-B-11-A MS
Client ID: CB
Sample Type: MS
Inject. Date: 29-Sep-2016 03:13:46 ALS Bottle#: 0 Worklist Smp#: 40
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-B-11-A MS, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 17:31:56 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK015

First Level Reviewer: tinkhams Date: 29-Sep-2016 17:31:55

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.916	3.906	0.010		26225530	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.925	3.907	0.018	1.002	28356675	9.58			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.071	5.024	0.047	0.898	23184744	12.1			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.194	5.156	0.038	0.854	8196375	8.19			
298.9 > 98.9	5.194	5.156	0.038	0.854	2393784		3.42(2.57-2.57)		
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.194	5.156	0.038	0.854	8196375	8.19			R
298.9 > 98.9	5.194	5.156	0.038	0.854	2393784		3.42(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.648	5.610	0.038		17495263	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.648	5.610	0.038	1.000	17331387	10.6			
313.0 > 118.6	5.639	5.610	0.029	0.998	539842		32.10(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.083	6.035	0.048		1915454	9.46			
10 Perfluorohexane Sulfonate									RM
398.9 > 80.0	6.083	6.035	0.048	1.000	8236833	10.8			R
398.9 > 98.9	6.083	6.035	0.048	1.000	2617921		3.15(1.30-2.41)		M
11 Perfluorohexanesulfonic acid									M
398.9 > 80.0	6.083	6.083	0.048	1.000	8236833	10.8			
398.9 > 98.9	6.083	6.083	0.048	1.000	1091076		7.55(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.074	6.036	0.038	0.946	26143550	9.59			
363.0 > 168.9	6.074	6.036	0.038	0.946	6634681		3.94(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.413	6.365	0.048	0.959	7144723	8.24			
449.0 > 98.9	6.422	6.365	0.057	0.961	2191554		3.26(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.413	6.365	0.048	0.959	7144723	8.24			
449.0 > 98.9	6.422	6.365	0.057	0.961	2191554		3.26(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.423	6.375	0.048	1.000	23240214	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.423	6.376	0.047		27620458	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.423	6.376	0.047	1.000	30140433	10.5			
413.0 > 169.0	6.423	6.376	0.047	1.000	9699086		3.11(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.686	6.648	0.038		6965757	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.686	6.648	0.038	1.000	9941515	10.9			R
498.9 > 98.9	6.696	6.648	0.048	1.001	3939521		2.52(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.695	6.657	0.038	1.001	4041753	10.7			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.706	6.668	0.038		21380099	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.706	6.668	0.038	1.000	22807452	9.17			
463.0 > 218.9	6.706	6.668	0.038	1.000	3511882		6.49(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.950	6.912	0.038		21432965	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.950	6.922	0.028	1.000	20347887	9.12			R
513.0 > 219.0	6.950	6.922	0.028	1.000	2097586		9.70(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.138	7.110	0.028	1.068	5410320	5.91			
598.9 > 99.0	7.138	7.110	0.028	1.068	1723035		3.14(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.138	7.110	0.028	1.068	5410320	5.91			
598.9 > 99.0	7.138	7.110	0.028	1.068	1723035		3.14(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.158	7.129	0.029		11383065	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.158	7.139	0.019	1.000	15612318	9.55			R
563.0 > 268.9	7.167	7.139	0.028	1.001	1912544		8.16(3.47-6.45)		
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.346	7.318	0.028		19499608	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.346	7.318	0.028	1.000	19290645	9.80			
613.0 > 168.9	7.337	7.318	0.019	0.999	2441857		7.90(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.497	7.469	0.028	1.021	15183423	9.11			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.567	7.519	0.048		1614232	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.558	7.520	0.038	0.999	1814097	10.6			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.630	7.601	0.029	1.039	10912562	8.11			
712.9 > 169.0	7.630	7.601	0.029	1.039	1751669		6.23(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

Report Date: 29-Sep-2016 17:31:57 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028116.d

Injection Date: 29-Sep-2016 03:13:46 Instrument ID: LC_LCMS5

Lims ID: 280-88381-B-11-A MS

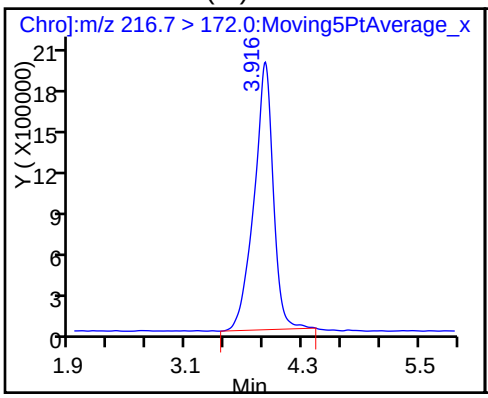
Client ID: CB

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 40

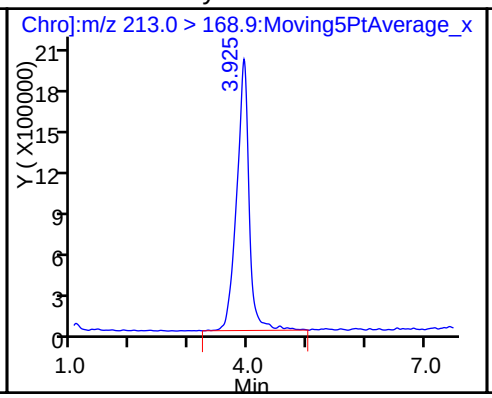
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

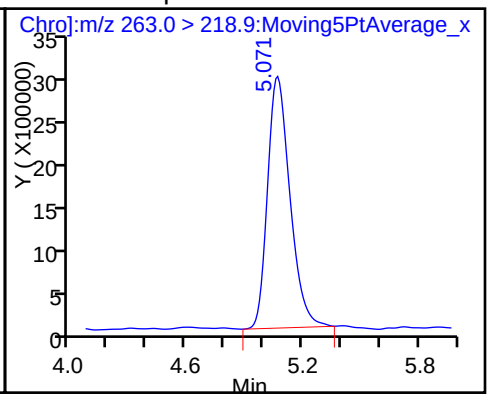
* 1 13C4 PFBA (IS)



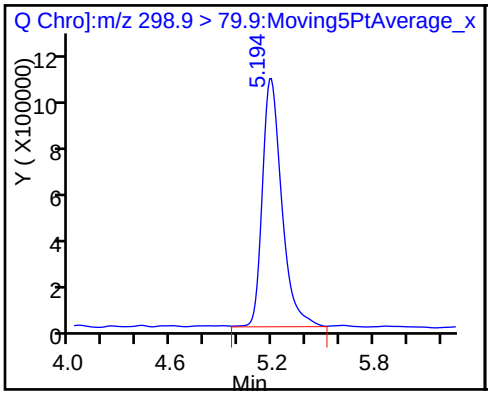
2 Perfluorobutyric acid



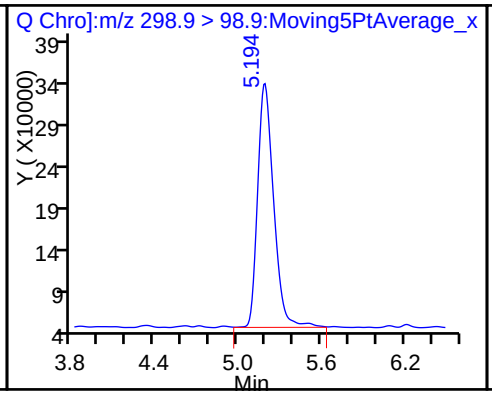
3 Perfluoropentanoic acid



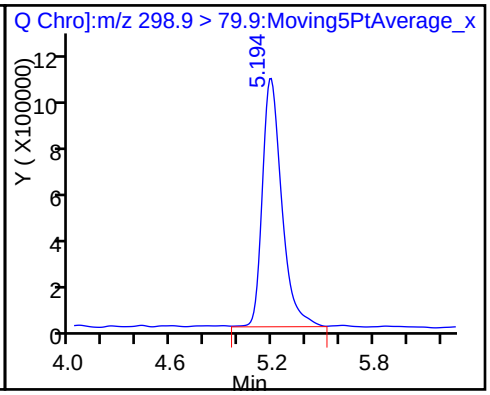
5 Perfluorobutanesulfonic acid



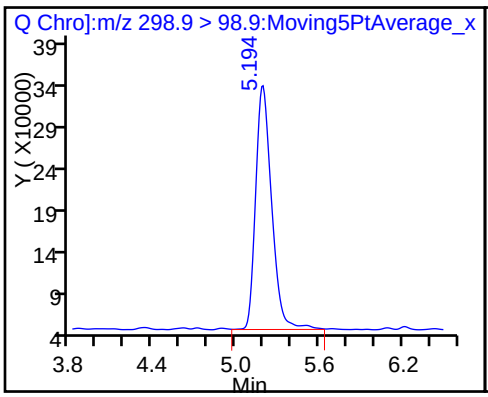
5 Perfluorobutanesulfonic acid



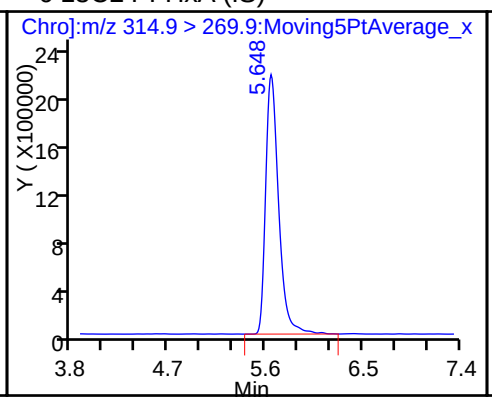
4 Perfluorobutane Sulfonate



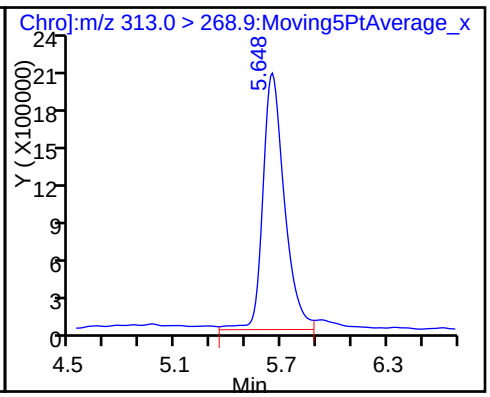
4 Perfluorobutane Sulfonate



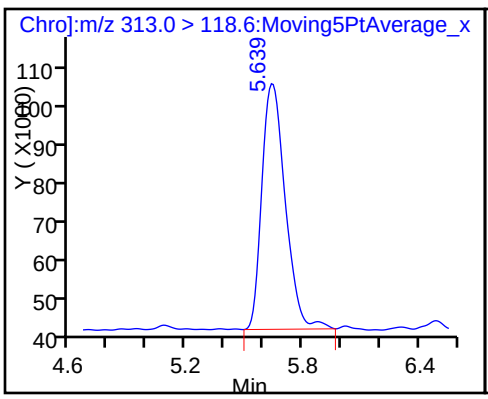
* 6 13C2 PFHxA (IS)



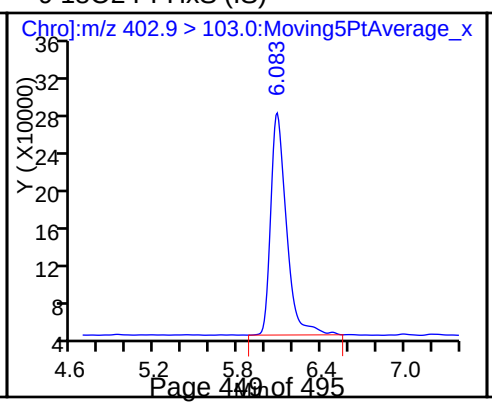
7 Perfluorohexanoic acid



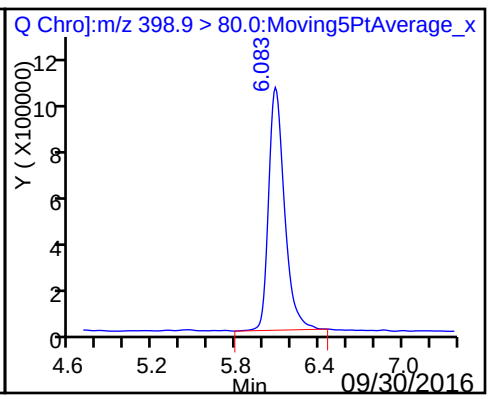
7 Perfluorohexanoic acid



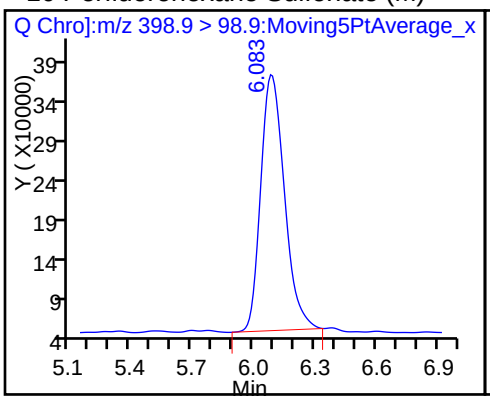
* 9 18O2 PFHxS (IS)



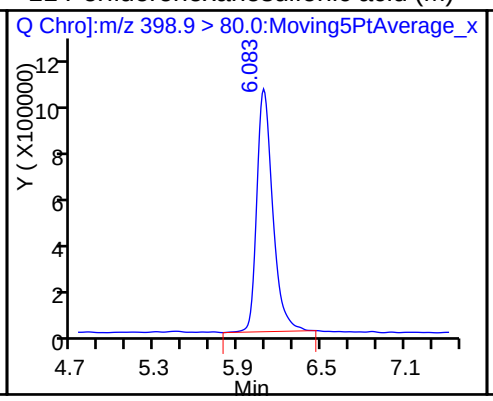
10 Perfluorohexane Sulfonate



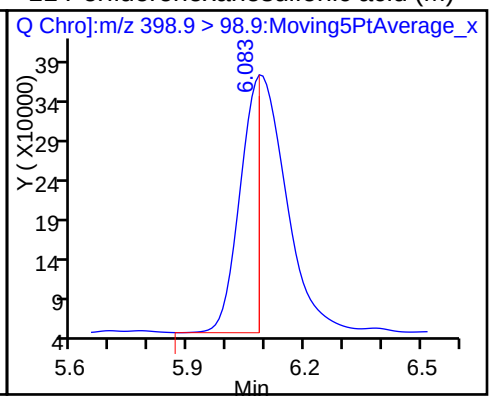
10 Perfluorohexane Sulfonate (M)



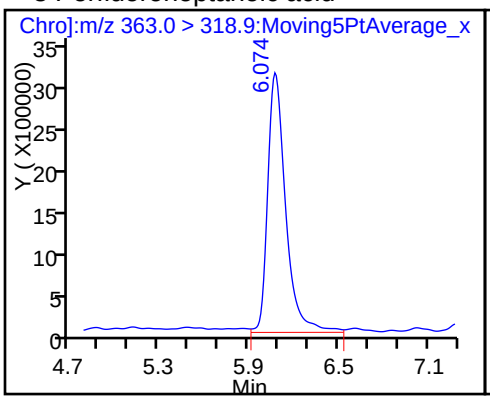
11 Perfluorohexanesulfonic acid (M)



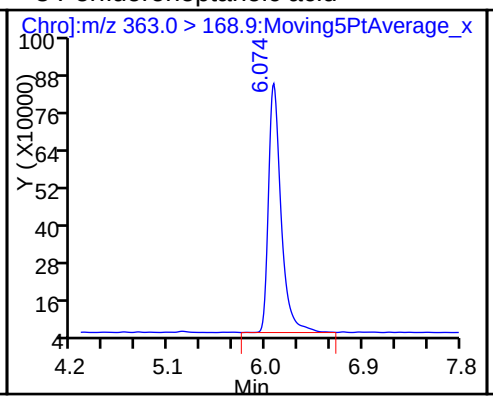
11 Perfluorohexanesulfonic acid (M)



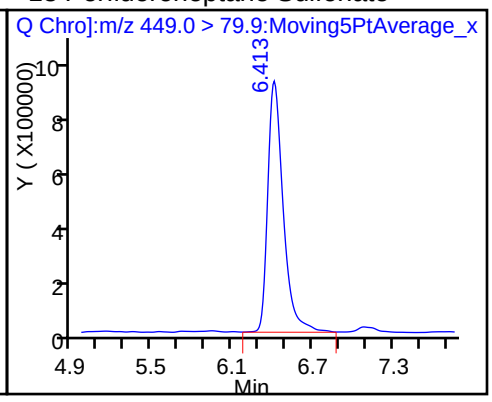
8 Perfluoroheptanoic acid



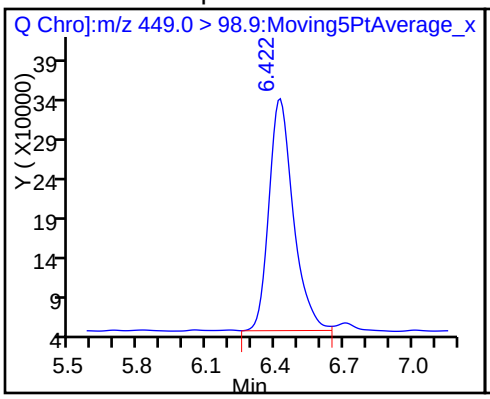
8 Perfluoroheptanoic acid



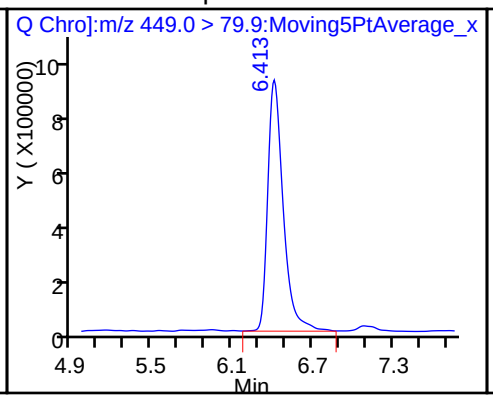
13 Perfluoroheptane Sulfonate



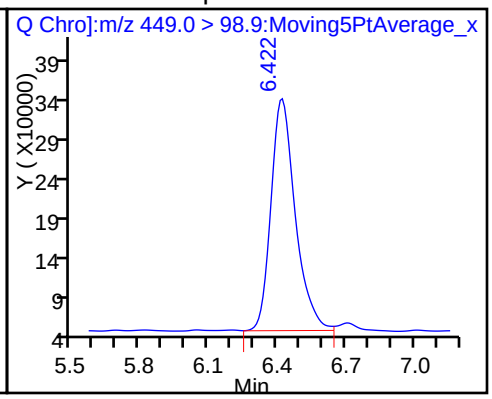
13 Perfluoroheptane Sulfonate



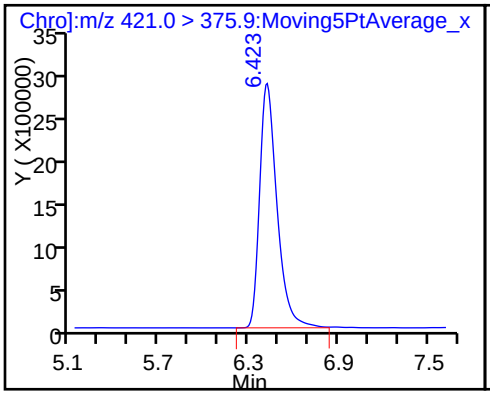
12 Perfluoroheptanesulfonic Acid



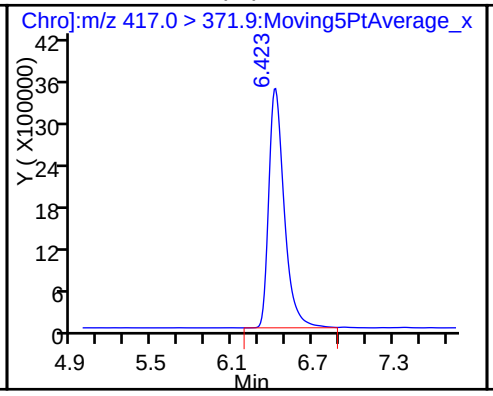
12 Perfluoroheptanesulfonic Acid



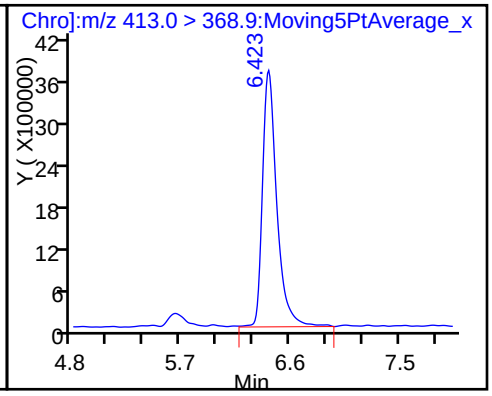
$ 14 13C8 PFOA



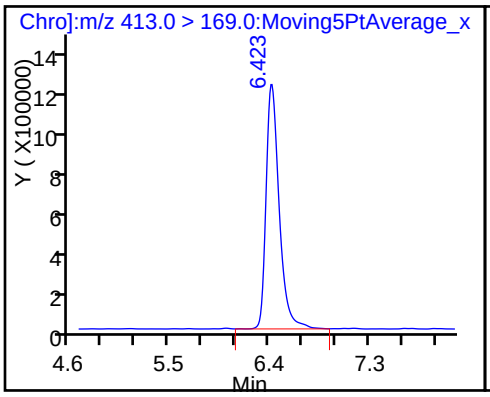
* 15 13C4 PFOA (IS)



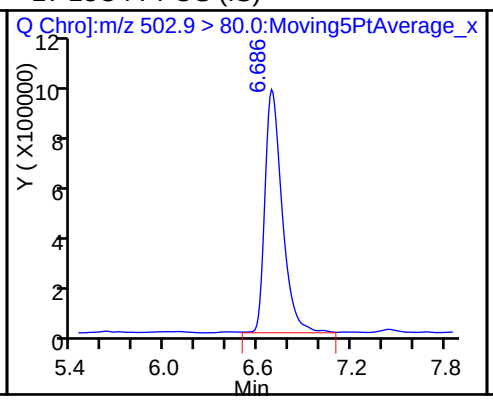
16 Perfluorooctanoic acid



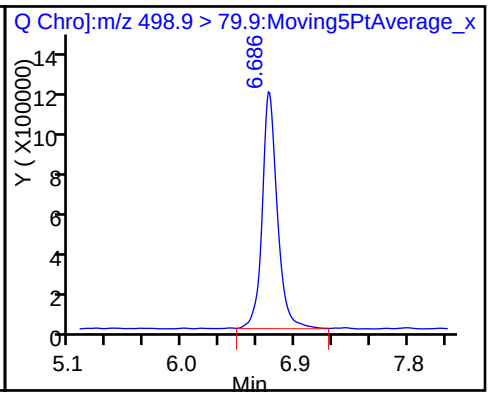
16 Perfluorooctanoic acid



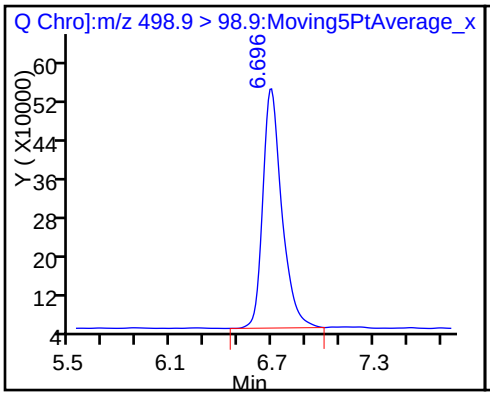
* 17 13C4 PFOS (IS)



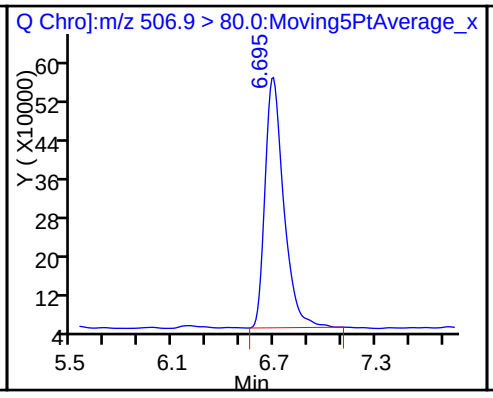
19 Perfluorooctane sulfonic acid



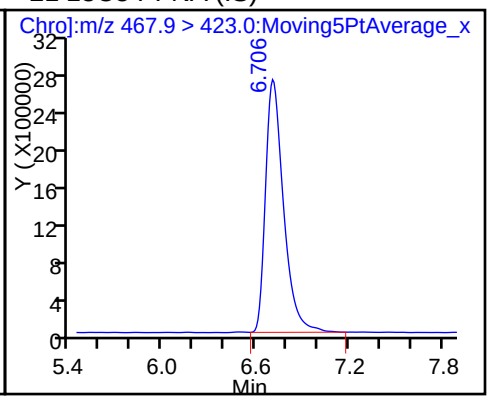
19 Perfluorooctane sulfonic acid



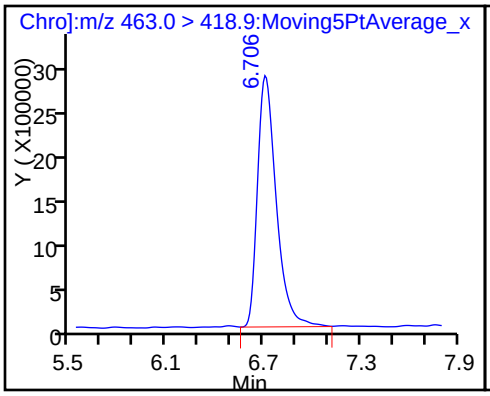
$ 18 13C8 PFOS



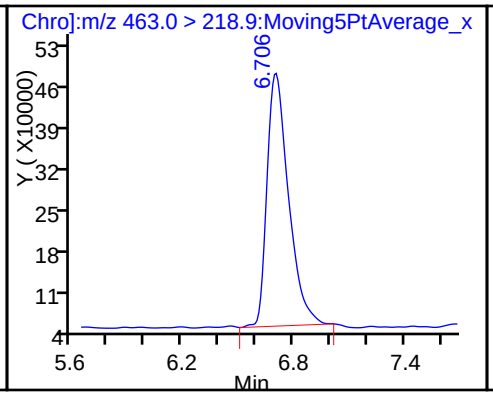
* 21 13C5 PFNA (IS)



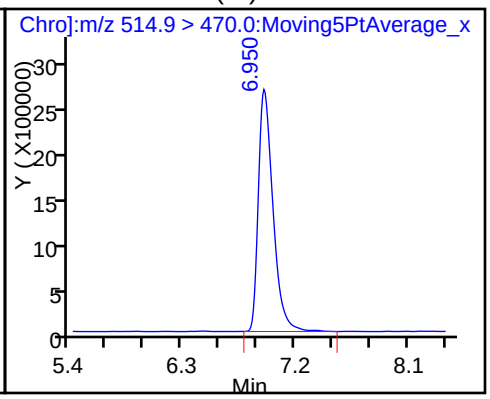
20 Perfluorononanoic acid



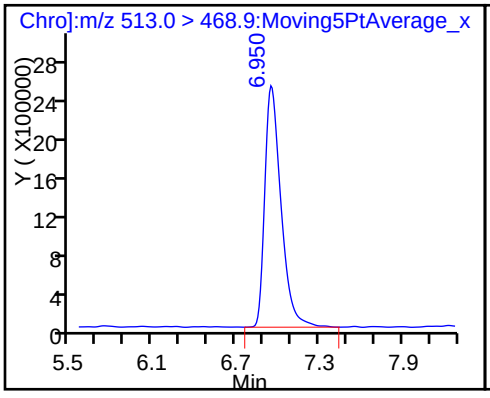
20 Perfluorononanoic acid



* 22 13C2 PFDA (IS)



23 Perfluorodecanoic acid



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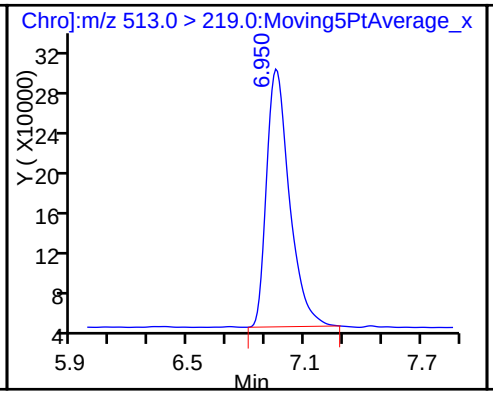
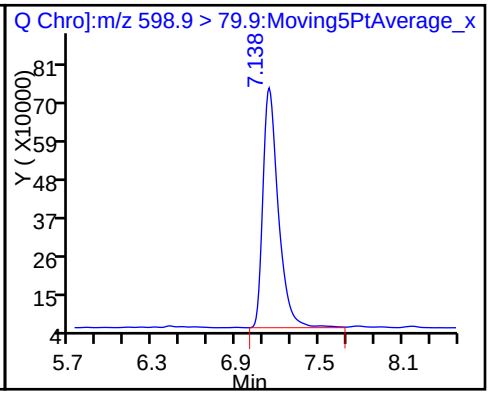
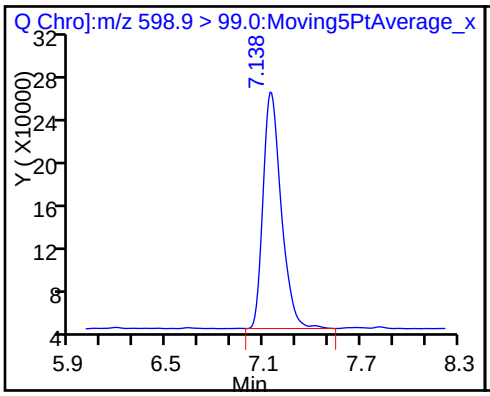


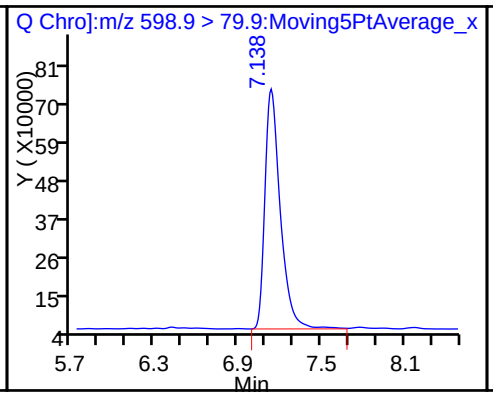
25 Perfluorodecane Sulfonate



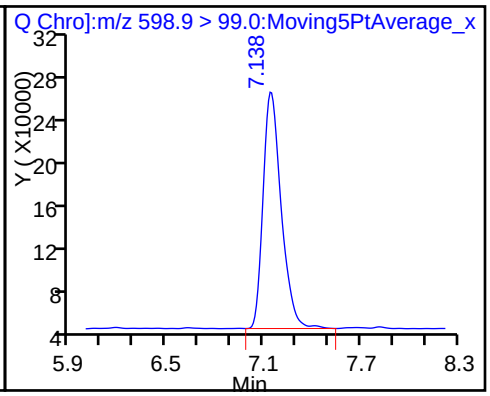
25 Perfluorodecane Sulfonate



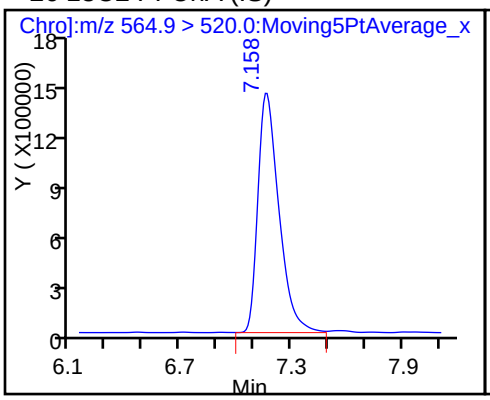
24 Perfluorodecane Sulfonic acid



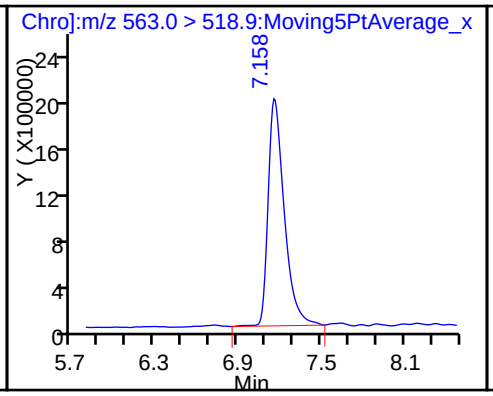
24 Perfluorodecane Sulfonic acid



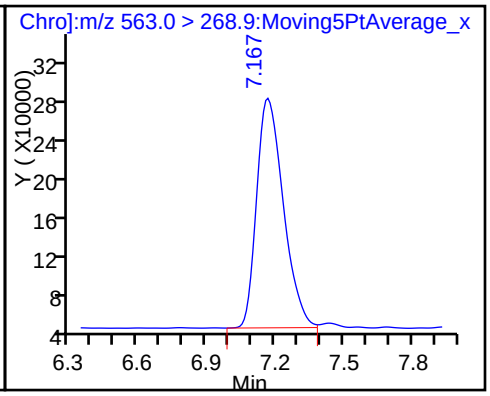
* 26 13C2 PFUnA (IS)



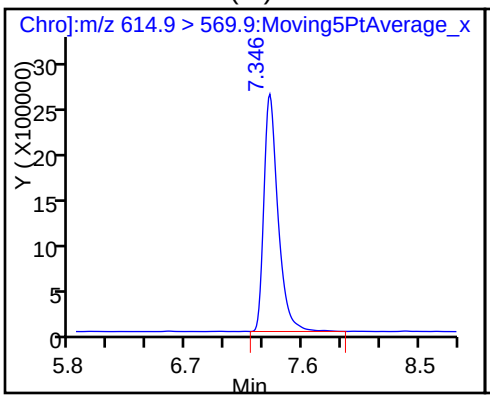
27 Perfluoroundecanoic acid



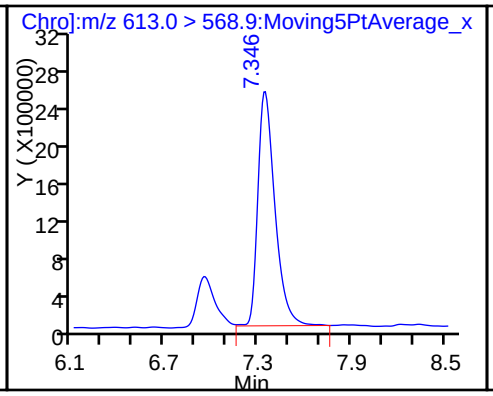
27 Perfluoroundecanoic acid



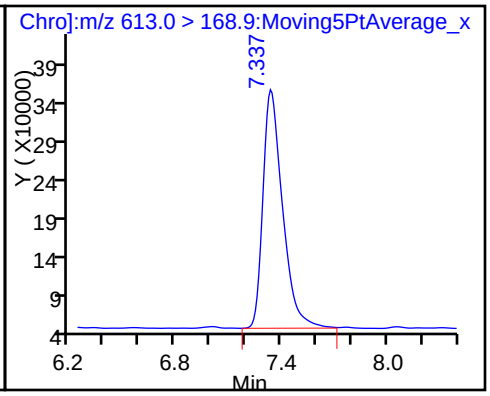
* 28 13C2 PFDoA (IS)



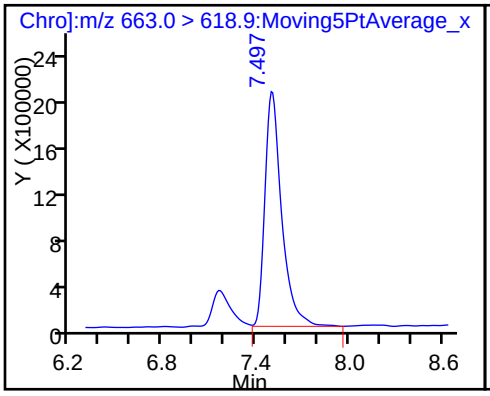
29 Perfluorododecanoic acid



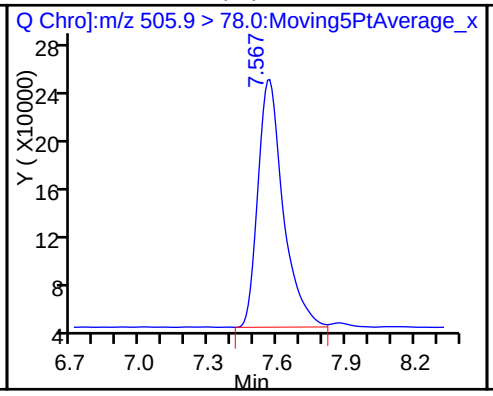
29 Perfluorododecanoic acid



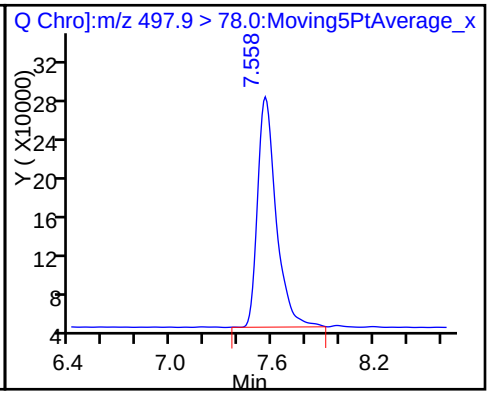
30 Perfluorotridecanoic acid



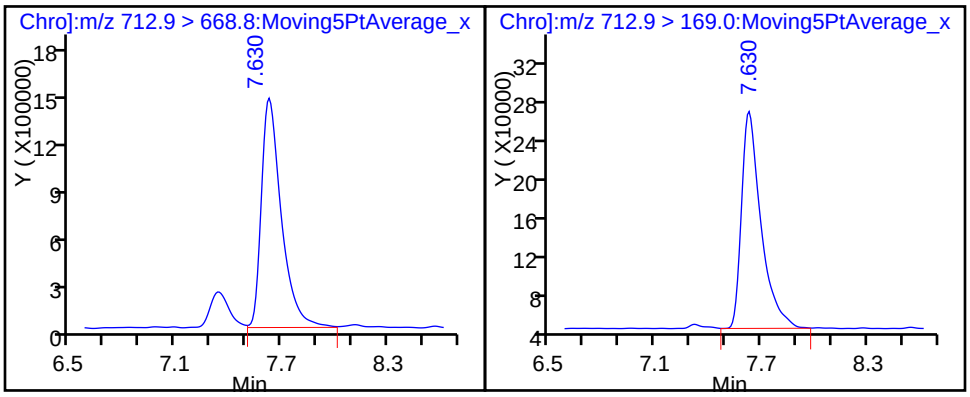
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid

TestAmerica Denver

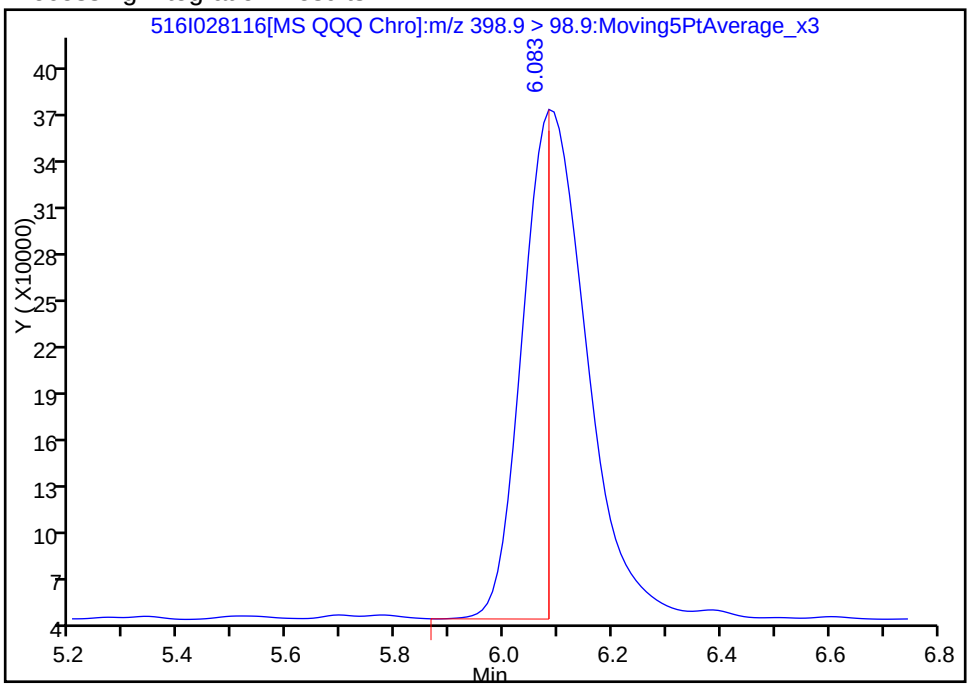
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028116.d				
Injection Date:	29-Sep-2016 03:13:46	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-B-11-A MS				
Client ID:	CB				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	40
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

10 Perfluorohexane Sulfonate, CAS: 108427-53-8

Signal: 2

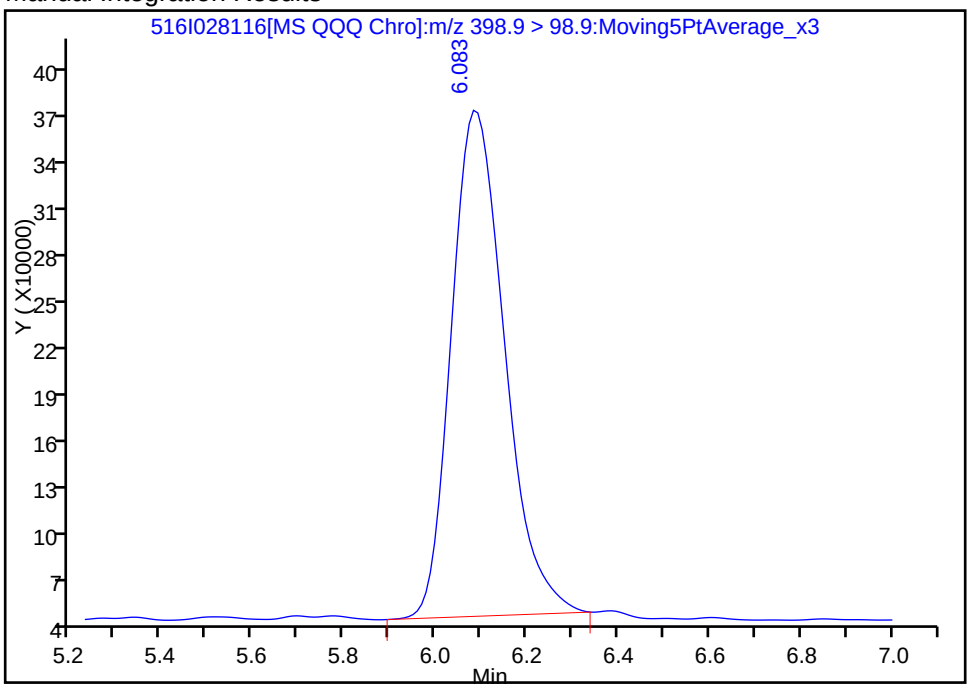
Processing Integration Results

RT: 6.08
Area: 1091076
Amount: 10.813028
Amount Units: ug/L



Manual Integration Results

RT: 6.08
Area: 2617921
Amount: 10.813028
Amount Units: ug/L



Reviewer: tinkhams, 29-Sep-2016 17:31:55
Audit Action: Manually Integrated Audit Reason:

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: PFC-MW-3 MS | Lab Sample ID: 280-88381-17 MS

Matrix: Water | Lab File ID: PC516I028086.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 16:25

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 260.6(mL) | Date Analyzed: 09/28/2016 21:04

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.279		0.019	0.0079
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.219		0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.331		0.029	0.0067
375-95-1	Perfluorononanoic acid (PFNA)	0.177		0.038	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.200		0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.225		0.019	0.0094

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	122		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028086.d
Lims ID: 280-88381-A-17-A MS
Client ID: PFC-MW-3
Sample Type: MS
Inject. Date: 28-Sep-2016 21:04:10 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-A-17-A MS, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:41:35

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.812	3.963	-0.151		24661247	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.812	3.963	-0.151	1.000	60802661	21.8			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.005	5.062	-0.057	0.895	80313129	43.4			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.128	5.175	-0.047	0.851	15009823	14.5			
298.9 > 98.9	5.137	5.175	-0.038	0.853	4502691		3.33(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.128	5.175	-0.047	0.851	15009823	14.5			
298.9 > 98.9	5.137	5.175	-0.038	0.853	4502691		3.33(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.591	5.638	-0.047		16957738	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.582	5.629	-0.047	0.998	58682036	37.0			
313.0 > 118.6	5.591	5.629	-0.038	1.000	1624462		36.12(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.026	6.073	-0.047		1975225	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.016	6.064	-0.048	0.998	13555404	17.3			R
398.9 > 98.9	6.016	6.064	-0.048	0.998	5157955		2.63(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.016	6.064	-0.048	0.998	13555404	17.3			
398.9 > 98.9	6.016	6.064	-0.048	0.998	5157955		2.63(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.017	6.064	-0.047	0.945	30923578	11.4			
363.0 > 168.9	6.017	6.064	-0.047	0.945	8660285		3.57(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.356	6.403	-0.047	0.957	8013905	10.1			
449.0 > 98.9	6.356	6.403	-0.047	0.957	2344950		3.42(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.356	6.403	-0.047	0.957	8013905	10.1			
449.0 > 98.9	6.356	6.403	-0.047	0.957	2344950		3.42(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.366	6.413	-0.047	1.000	23061887	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.366	6.404	-0.038		27421517	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.366	6.414	-0.048	1.000	33290156	11.7			
413.0 > 169.0	6.366	6.414	-0.048	1.000	10115220		3.29(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.639	6.676	-0.037		6381064	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.639	6.677	-0.038	1.000	8693249	10.4			R
498.9 > 98.9	6.639	6.677	-0.038	1.000	3025492		2.87(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.638	6.685	-0.047	1.000	3926400	11.3			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.658	6.696	-0.038		21658956	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.659	6.697	-0.038	1.000	23225912	9.21			
463.0 > 218.9	6.659	6.697	-0.038	1.000	3638621		6.38(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.903	6.941	-0.038		20229735	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.903	6.941	-0.038	1.000	19764028	9.39			R
513.0 > 219.0	6.903	6.941	-0.038	1.000	1906442		10.37(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.091	7.129	-0.038	1.068	3889103	4.64			
598.9 > 99.0	7.091	7.129	-0.038	1.068	1176928		3.30(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.091	7.129	-0.038	1.068	3889103	4.64			
598.9 > 99.0	7.091	7.129	-0.038	1.068	1176928		3.30(2.84-2.84)		
* 26 13C2 PFUnA (IS)									s
564.9 > 520.0	7.110	7.148	-0.038		9836950	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.111	7.149	-0.038	1.000	13723797	9.71			R
563.0 > 268.9	7.111	7.149	-0.038	1.000	1771158		7.75(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.299	7.327	-0.028	1.000	12425969	9.26			
613.0 > 168.9	7.299	7.327	-0.028	1.000	1634923		7.60(5.96-11.06)		
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.299	7.327	-0.028		13286737	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.450	7.488	-0.038	1.021	6942503	6.09			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.501	7.539	-0.038	0.999	580053	9.47			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.510	7.538	-0.028		575937	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.582	7.611	-0.029	1.039	3689350	4.01			
712.9 > 169.0	7.573	7.611	-0.038	1.038	490889		7.52(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 29-Sep-2016 11:09:26 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028086.d

Injection Date: 28-Sep-2016 21:04:10 Instrument ID: LC_LCMS5

Lims ID: 280-88381-A-17-A MS

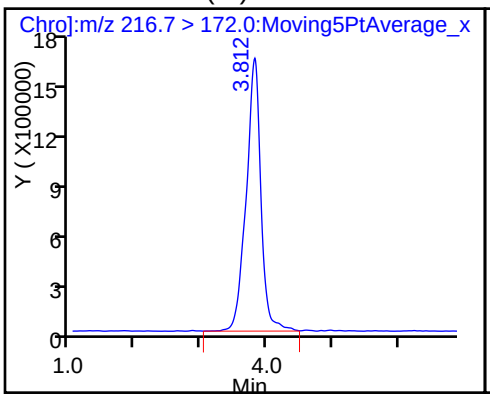
Client ID: PFC-MW-3

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 10

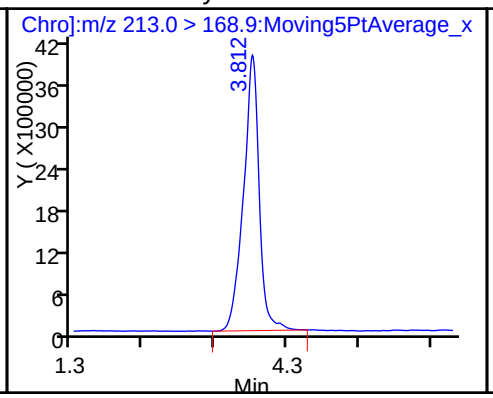
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

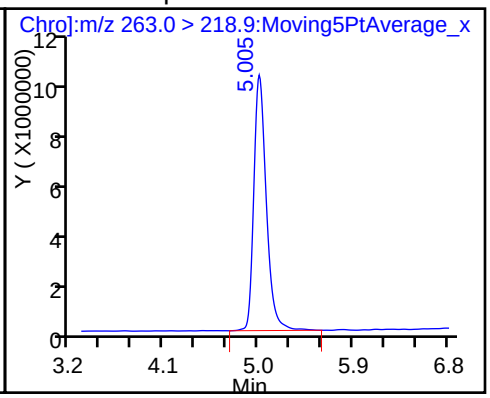
* 1 13C4 PFBA (IS)



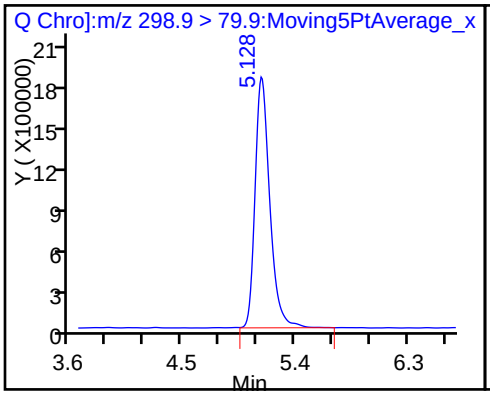
2 Perfluorobutyric acid



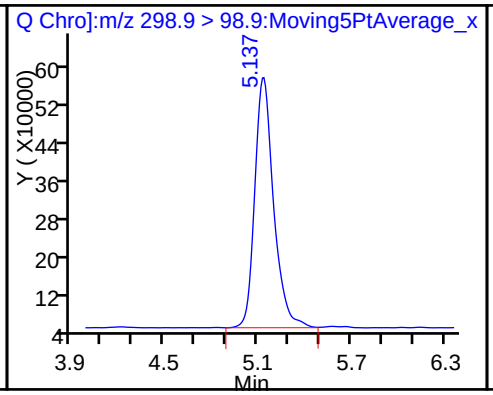
3 Perfluoropentanoic acid



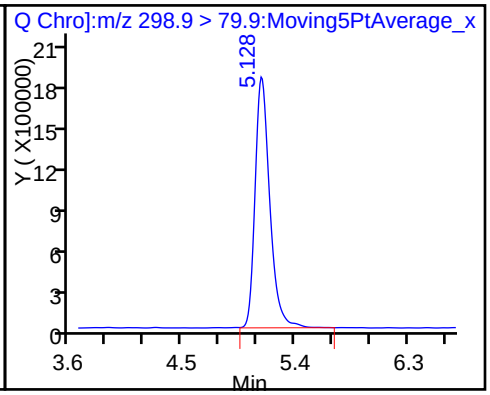
5 Perfluorobutanesulfonic acid



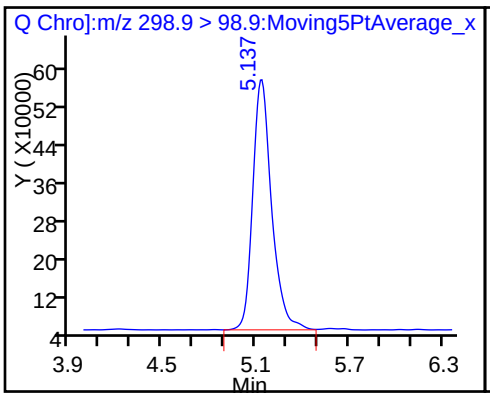
5 Perfluorobutanesulfonic acid



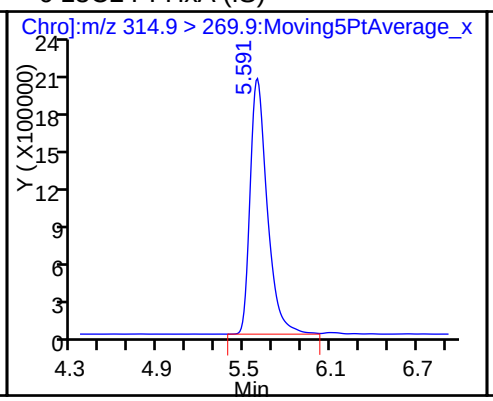
4 Perfluorobutane Sulfonate



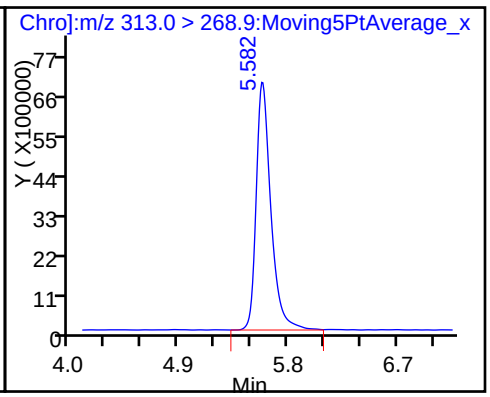
4 Perfluorobutane Sulfonate



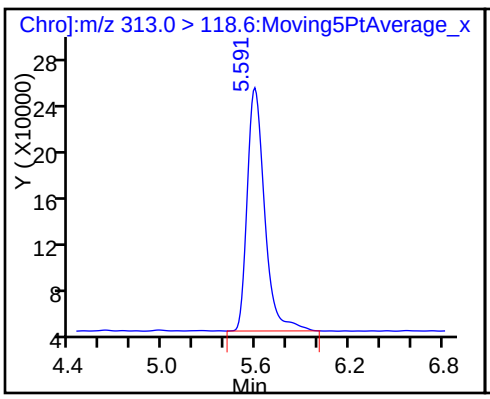
* 6 13C2 PFHxA (IS)



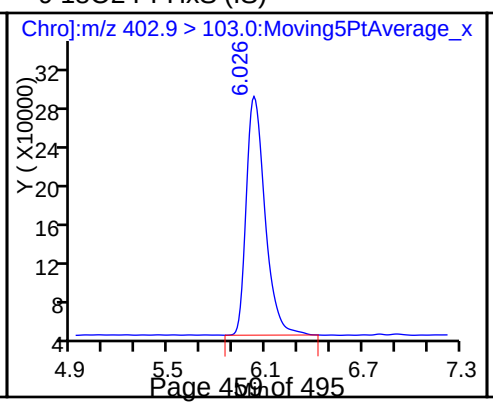
7 Perfluorohexanoic acid



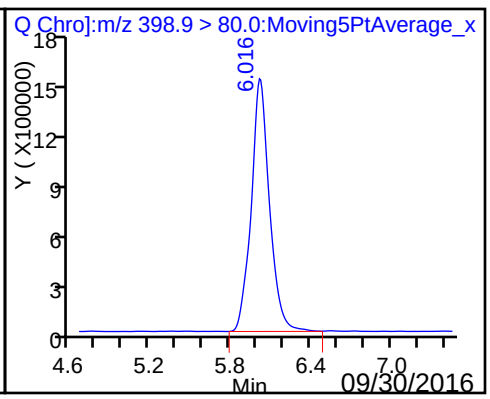
7 Perfluorohexanoic acid



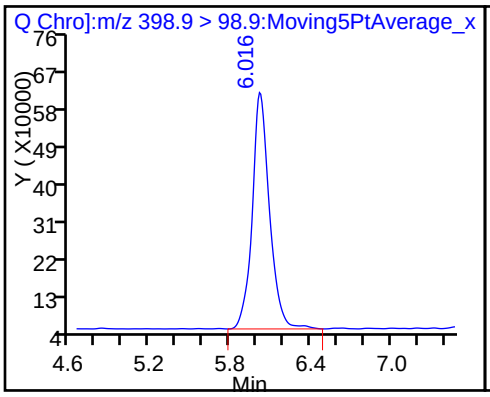
* 9 18O2 PFHxS (IS)



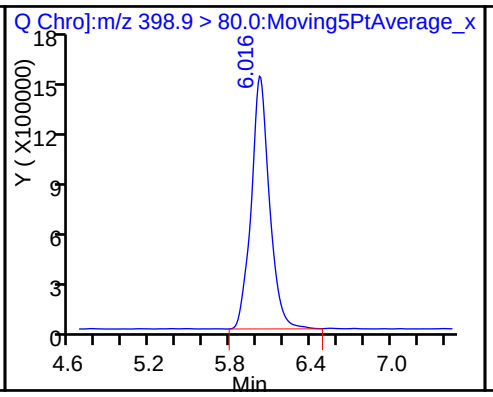
10 Perfluorohexane Sulfonate



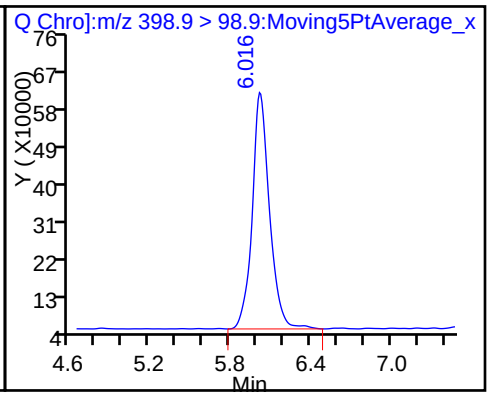
10 Perfluorohexane Sulfonate



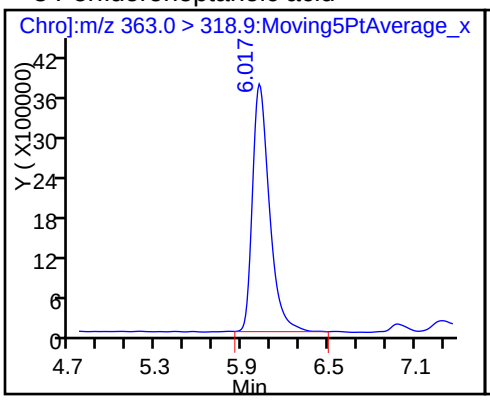
11 Perfluorohexanesulfonic acid



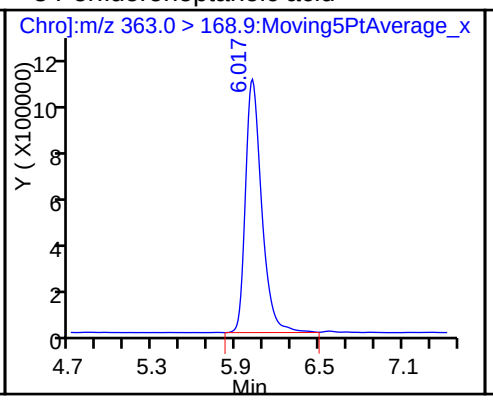
11 Perfluorohexanesulfonic acid



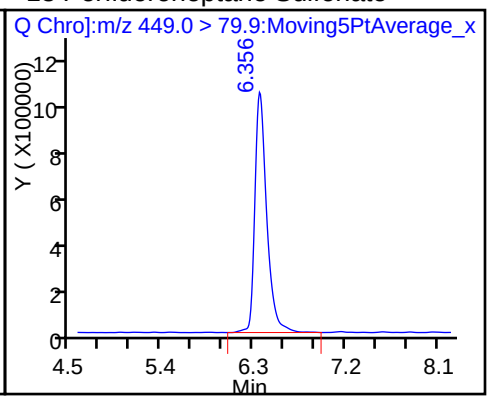
8 Perfluoroheptanoic acid



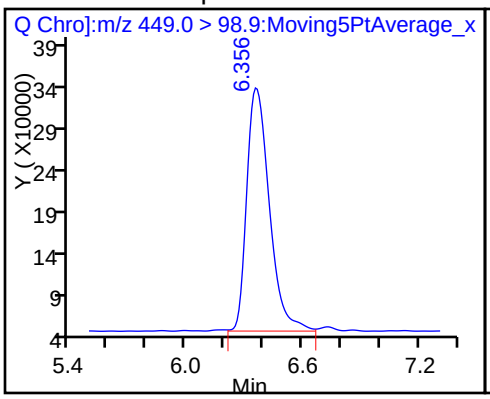
8 Perfluoroheptanoic acid



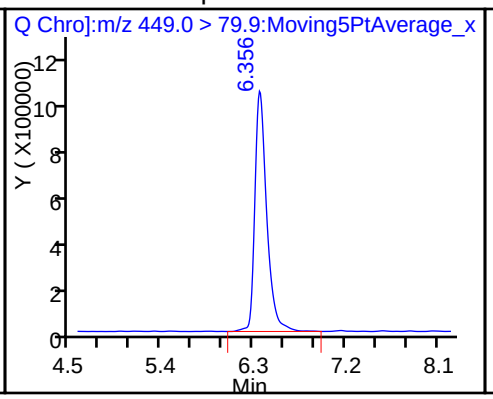
13 Perfluoroheptane Sulfonate



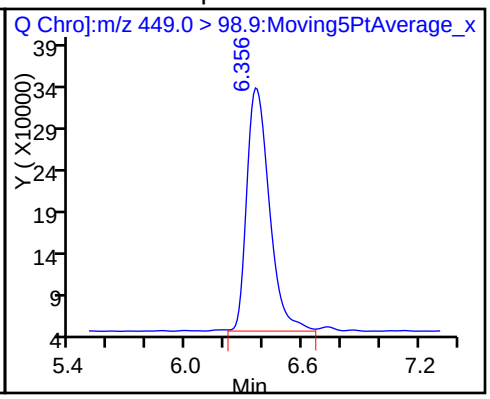
13 Perfluoroheptane Sulfonate



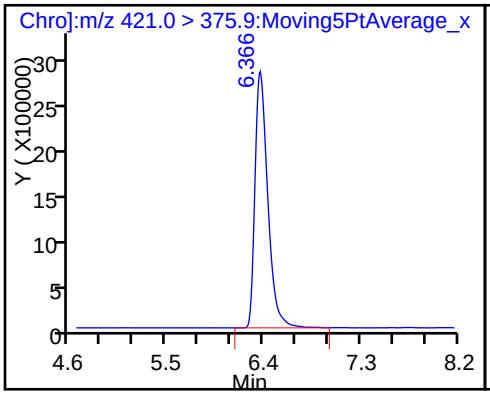
12 Perfluoroheptanesulfonic Acid



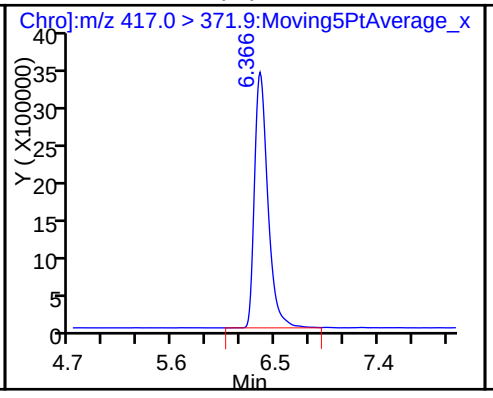
12 Perfluoroheptanesulfonic Acid



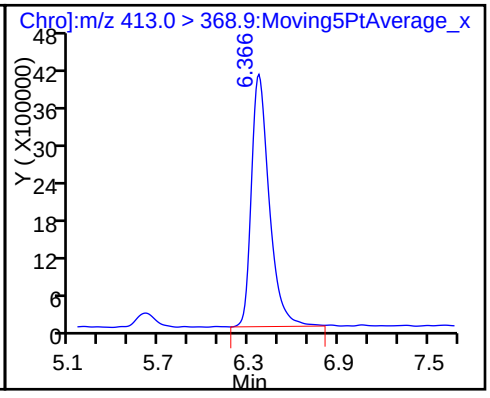
$ 14 13C8 PFOA



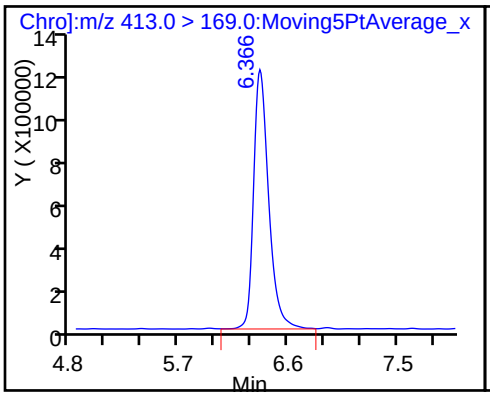
* 15 13C4 PFOA (IS)



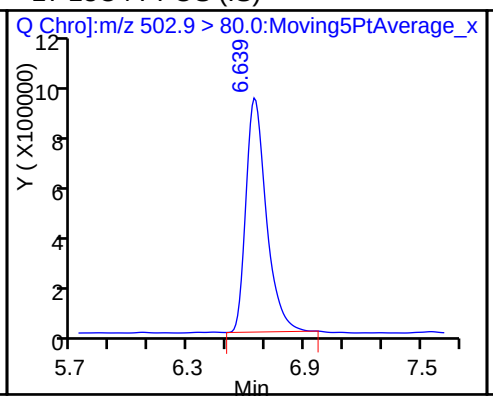
16 Perfluorooctanoic acid



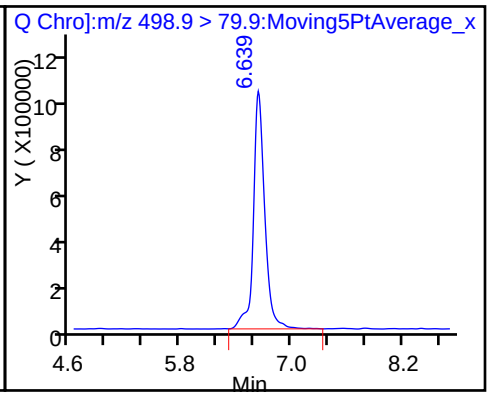
16 Perfluorooctanoic acid



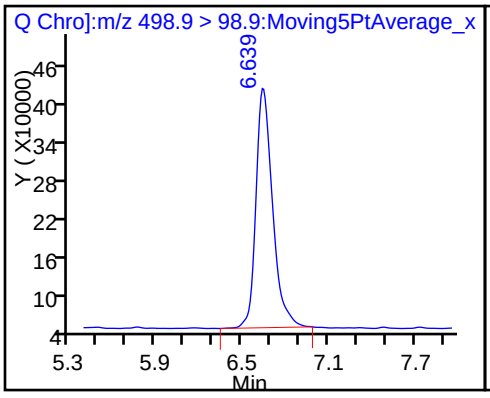
* 17 13C4 PFOS (IS)



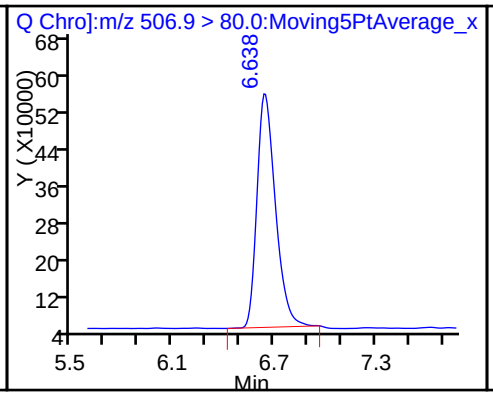
19 Perfluorooctane sulfonic acid



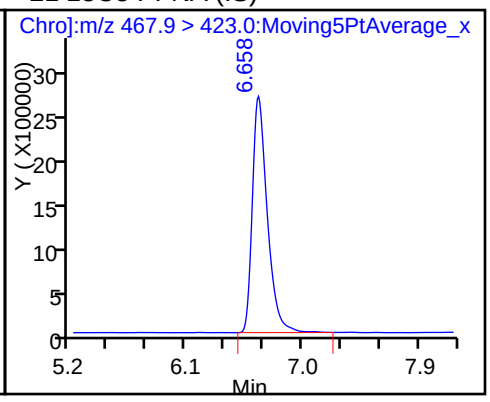
19 Perfluorooctane sulfonic acid



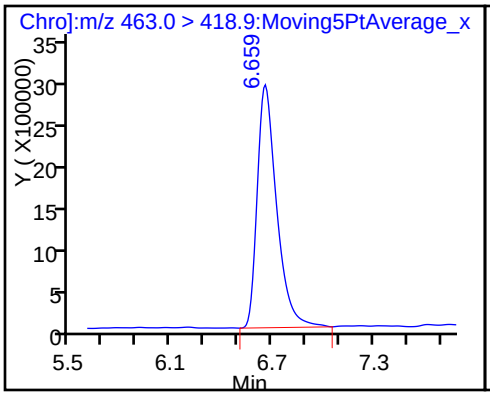
$ 18 13C8 PFOS



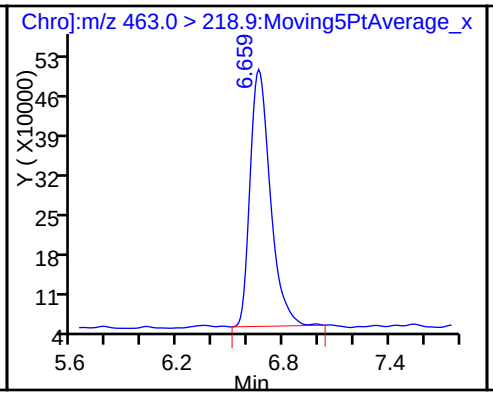
* 21 13C5 PFNA (IS)



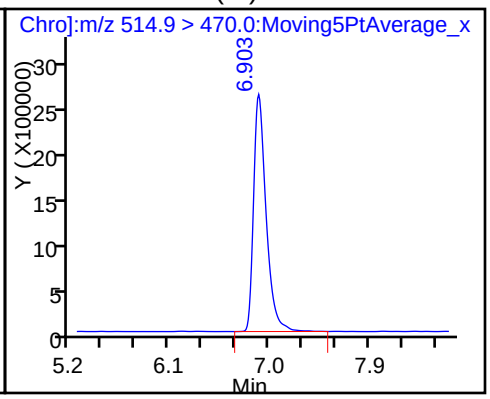
20 Perfluorononanoic acid



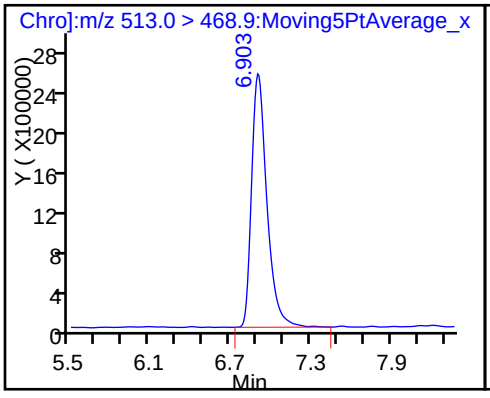
20 Perfluorononanoic acid



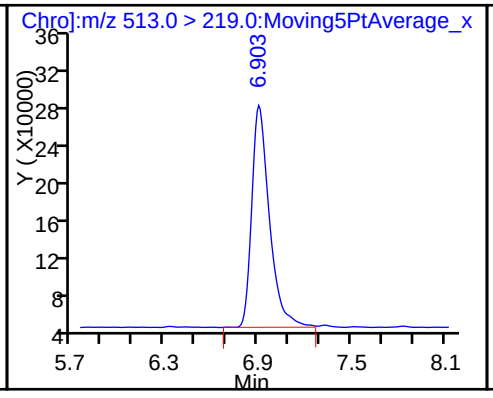
* 22 13C2 PFDA (IS)



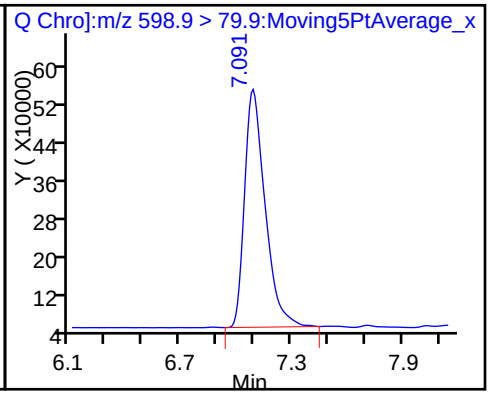
23 Perfluorodecanoic acid



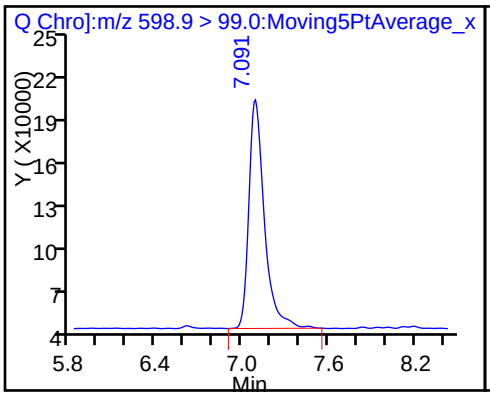
23 Perfluorodecanoic acid



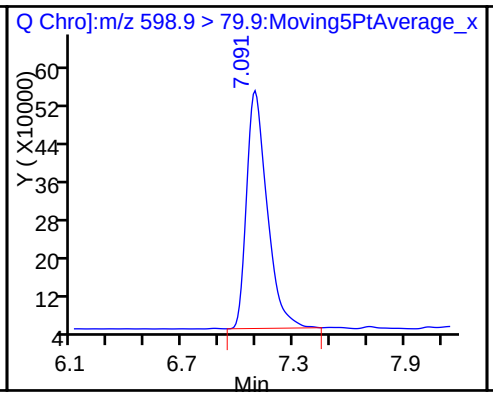
25 Perfluorodecane Sulfonate



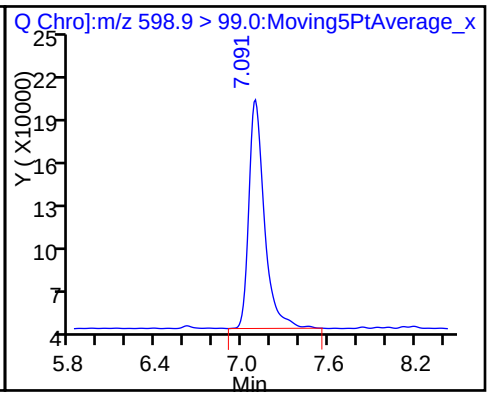
25 Perfluorodecane Sulfonate



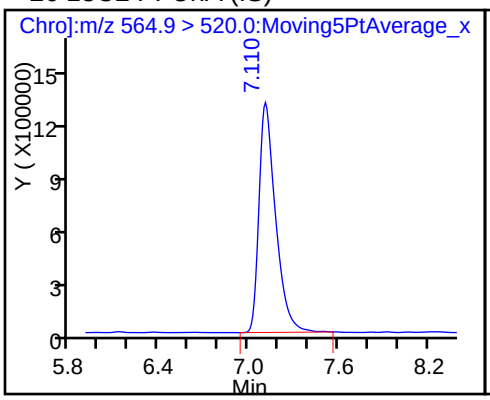
24 Perfluorodecane Sulfonic acid



24 Perfluorodecane Sulfonic acid



* 26 13C2 PFUnA (IS)



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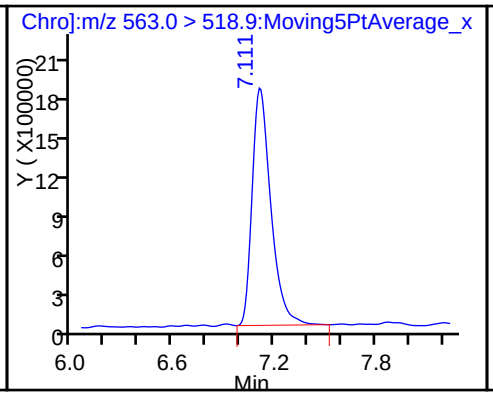
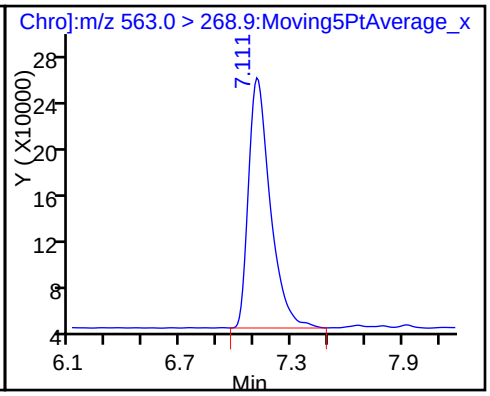
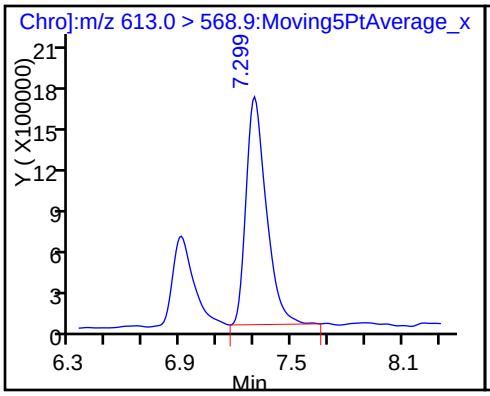


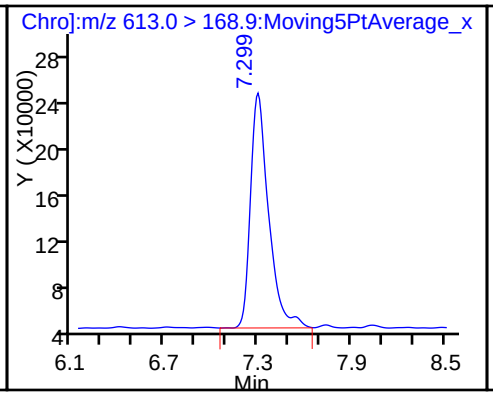
27 Perfluoroundecanoic acid



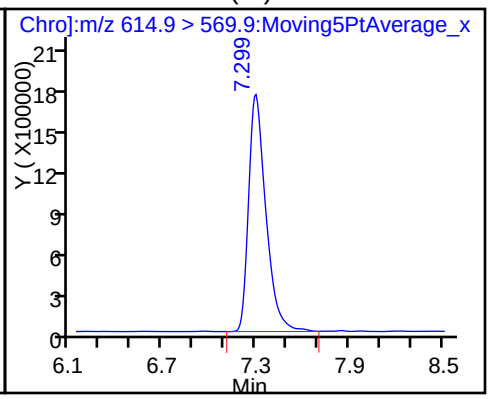
29 Perfluorododecanoic acid



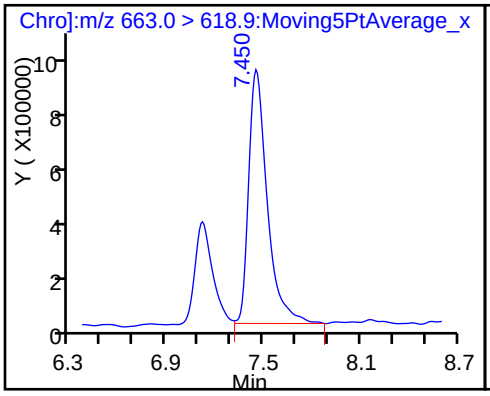
29 Perfluorododecanoic acid



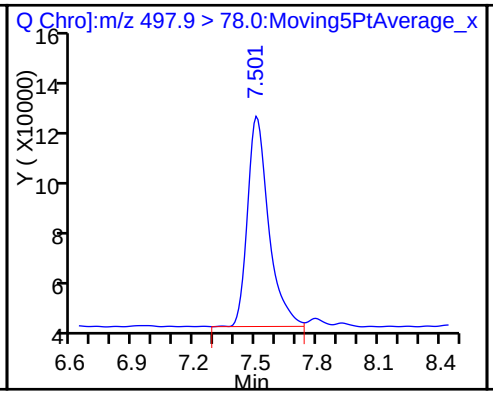
* 28 13C2 PFDoA (IS)



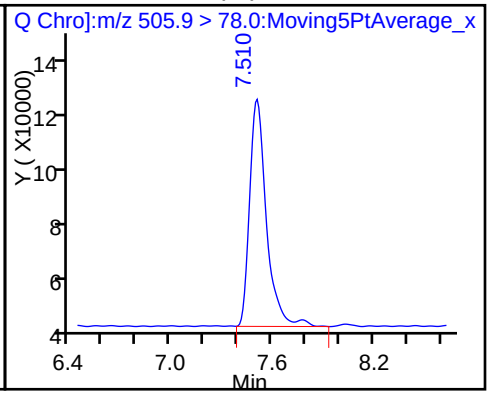
30 Perfluorotridecanoic acid



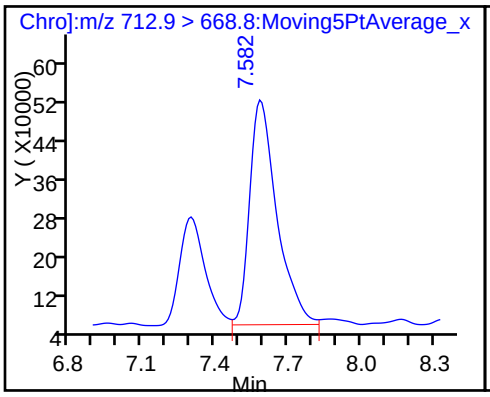
32 Perfluorooctane Sulfonamide



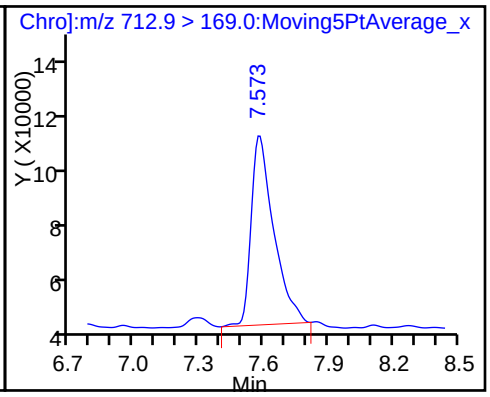
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: CB MSD | Lab Sample ID: 280-88381-11 MSD

Matrix: Water | Lab File ID: PC516I028117.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 08:57

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:45

Sample wt/vol: 307.8(mL) | Date Analyzed: 09/29/2016 03:26

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344280 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.129		0.016	0.0067
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.156		0.024	0.011
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.175		0.024	0.0057
375-95-1	Perfluorononanoic acid (PFNA)	0.149		0.032	0.014
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.191		0.024	0.011
335-67-1	Perfluorooctanoic acid (PFOA)	0.176		0.016	0.0080

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	128		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028117.d
Lims ID: 280-88381-C-11-A MSD
Client ID: CB
Sample Type: MSD
Inject. Date: 29-Sep-2016 03:26:04 ALS Bottle#: 0 Worklist Smp#: 41
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-C-11-A MSD, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:42:15 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 11:36:02

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.859	4.029	-0.170		25502335	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.859	4.030	-0.171	1.000	27147870	9.43			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.024	5.119	-0.095	0.897	23139447	12.7			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.137	5.232	-0.095	0.851	7745142	7.94			
298.9 > 98.9	5.156	5.232	-0.076	0.854	2437306		3.18(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.137	5.232	-0.095	0.851	7745142	7.94			
298.9 > 98.9	5.156	5.232	-0.076	0.854	2437306		3.18(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.601	5.686	-0.085		16750541	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.591	5.686	-0.095	0.998	17190799	11.0			
313.0 > 118.6	5.601	5.686	-0.085	1.000	513346		33.49(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.035	6.111	-0.076		1866364	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.045	6.111	-0.066	1.002	7978152	10.7			R
398.9 > 98.9	6.035	6.111	-0.076	1.000	2774276		2.88(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.045	6.111	-0.066	1.002	7978152	10.7			
398.9 > 98.9	6.035	6.111	-0.076	1.000	2774276		2.88(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.026	6.112	-0.086	0.945	24198781	9.58			
363.0 > 168.9	6.026	6.112	-0.086	0.945	6078951		3.98(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.365	6.441	-0.076	0.957	6779992	8.73			
449.0 > 98.9	6.375	6.441	-0.066	0.959	2137746		3.17(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.365	6.441	-0.076	0.957	6779992	8.73			
449.0 > 98.9	6.375	6.441	-0.066	0.959	2137746		3.17(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.375	6.442	-0.067	1.000	21513572	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.376	6.442	-0.066		25578159	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.376	6.442	-0.066	1.000	28775059	10.8			
413.0 > 169.0	6.376	6.442	-0.066	1.000	9003451		3.20(2.86-5.31)		
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.648	6.705	-0.057		6240008	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.648	6.705	-0.057	1.000	9590362	11.7			R
498.9 > 98.9	6.648	6.705	-0.057	1.000	3734634		2.57(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.638	6.704	-0.066	0.999	4036832	11.9			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.658	6.725	-0.067		21183665	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.659	6.725	-0.066	1.000	22571276	9.15			
463.0 > 218.9	6.659	6.725	-0.066	1.000	3483256		6.48(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.912	6.960	-0.048		20066097	10.0			
23 Perfluorodecanoic acid									R
513.0 > 468.9	6.903	6.960	-0.057	0.999	19079508	9.14			R
513.0 > 219.0	6.912	6.960	-0.048	1.000	1982505		9.62(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.100	7.138	-0.038	1.068	4665440	5.69			
598.9 > 99.0	7.091	7.138	-0.047	1.067	1491736		3.13(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.100	7.138	-0.038	1.068	4665440	5.69			
598.9 > 99.0	7.091	7.138	-0.047	1.067	1491736		3.13(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.120	7.167	-0.047		11493235	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.120	7.167	-0.047	1.000	14917588	9.03			R
563.0 > 268.9	7.120	7.167	-0.047	1.000	1887292		7.90(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.299	7.346	-0.047	1.001	16224832	8.94			
613.0 > 168.9	7.299	7.346	-0.047	1.001	2187405		7.42(5.96-11.06)		
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.289	7.346	-0.057		17964136	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.450	7.497	-0.047	1.022	12215410	7.95			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.511	7.568	-0.057	1.001	1530049	9.12			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.500	7.567	-0.067		1577326	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.582	7.630	-0.048	1.040	9003137	7.26			
712.9 > 169.0	7.582	7.630	-0.048	1.040	1287230		6.99(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Report Date: 29-Sep-2016 11:42:34 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028117.d

Injection Date: 29-Sep-2016 03:26:04 Instrument ID: LC_LCMS5

Lims ID: 280-88381-C-11-A MSD

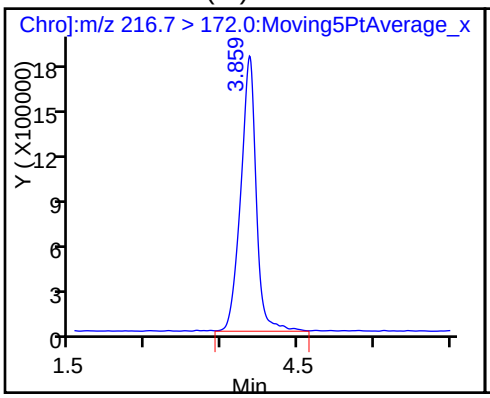
Client ID: CB

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 41

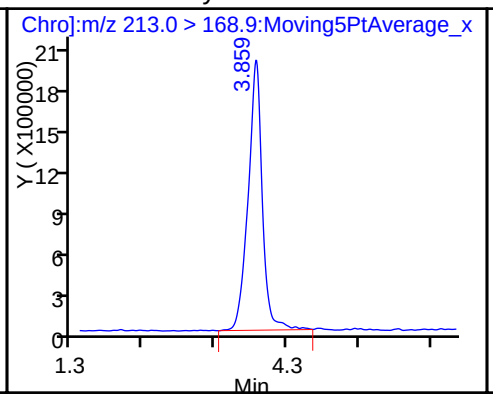
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

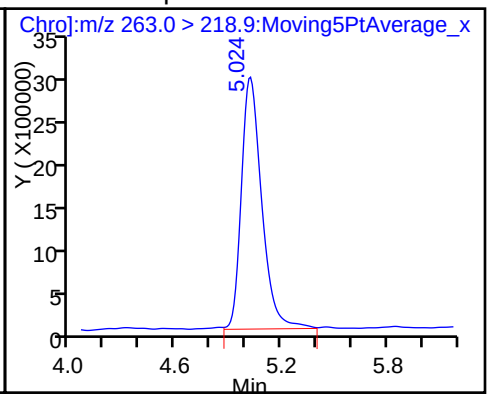
* 1 13C4 PFBA (IS)



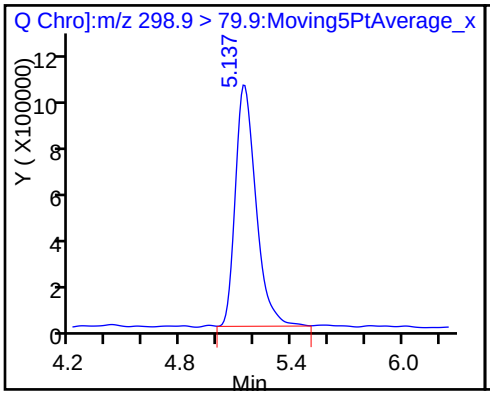
2 Perfluorobutyric acid



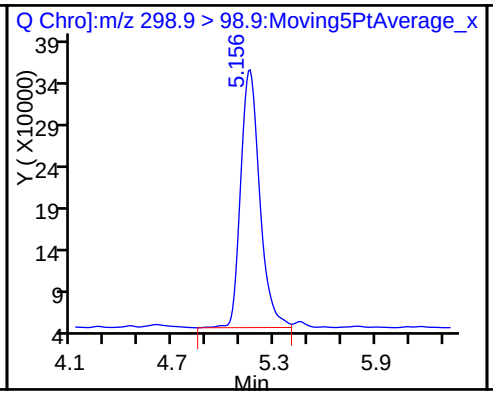
3 Perfluoropentanoic acid



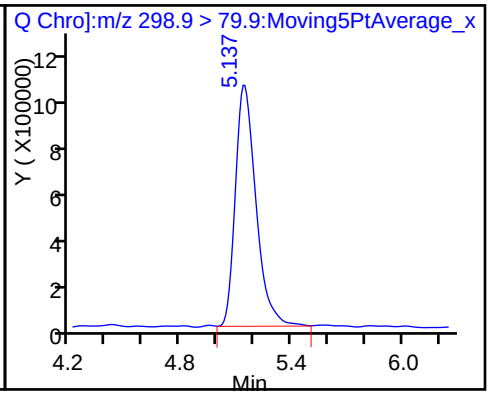
5 Perfluorobutanesulfonic acid



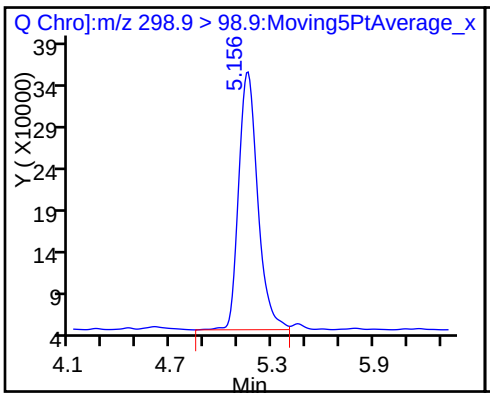
5 Perfluorobutanesulfonic acid



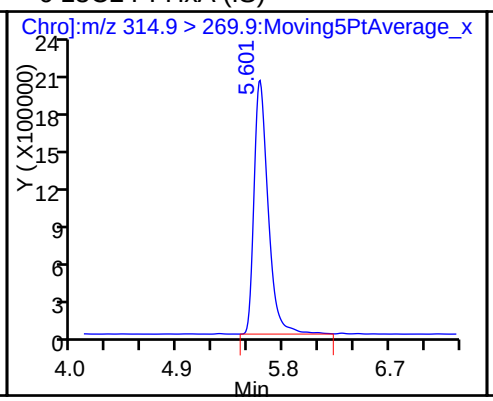
4 Perfluorobutane Sulfonate



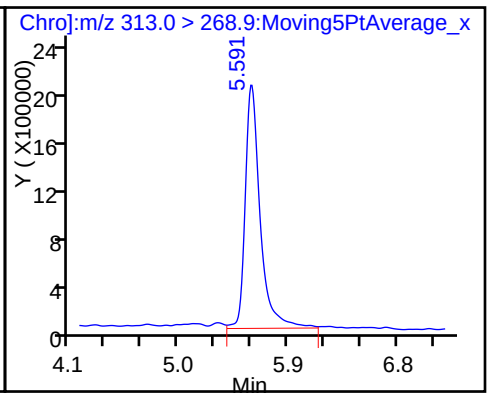
4 Perfluorobutane Sulfonate



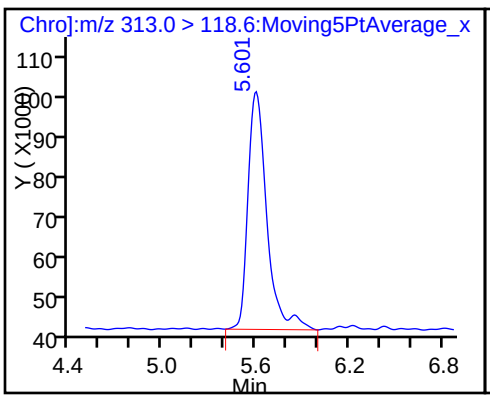
* 6 13C2 PFHxA (IS)



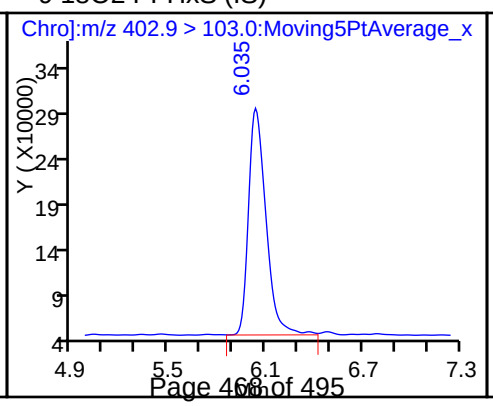
7 Perfluorohexanoic acid



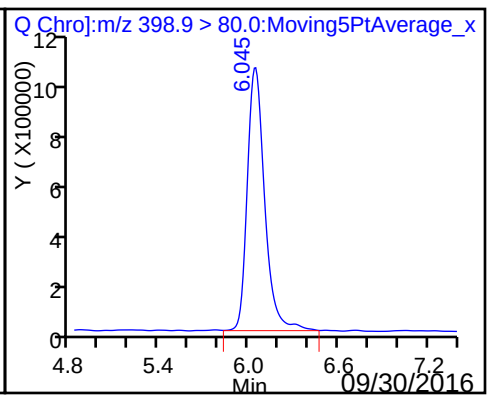
7 Perfluorohexanoic acid



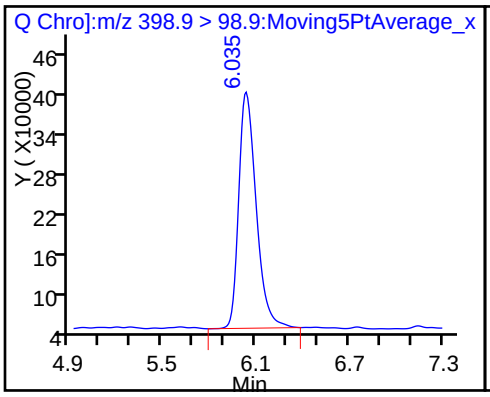
* 9 18O2 PFHxS (IS)



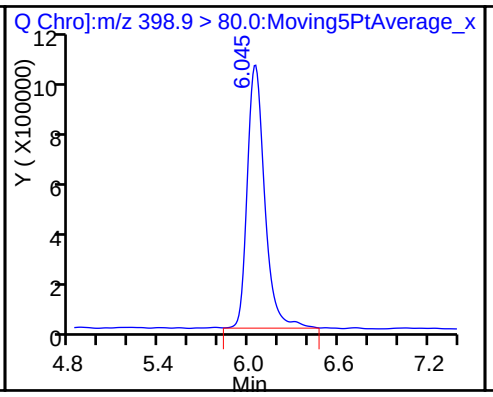
10 Perfluorohexane Sulfonate



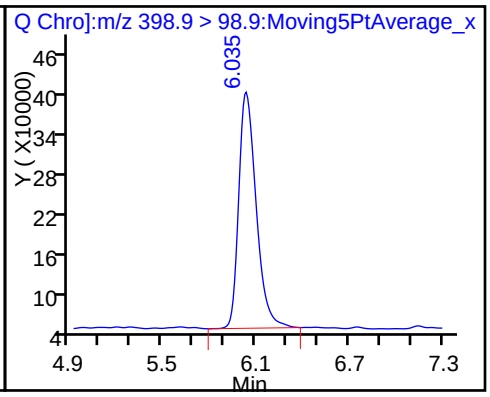
10 Perfluorohexane Sulfonate



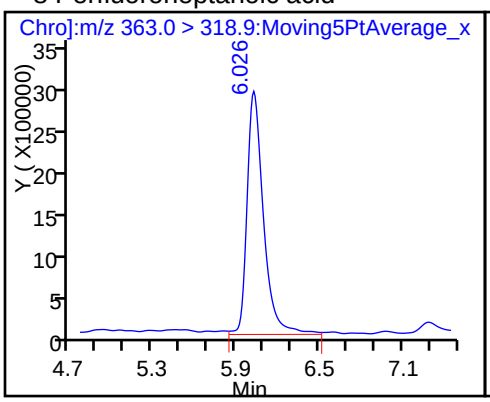
11 Perfluorohexanesulfonic acid



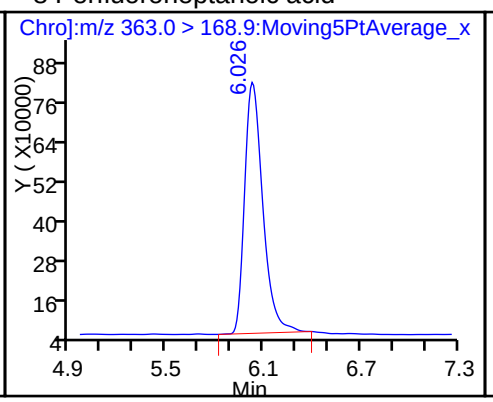
11 Perfluorohexanesulfonic acid



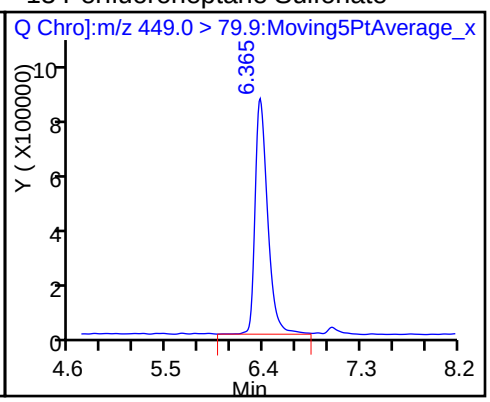
8 Perfluoroheptanoic acid



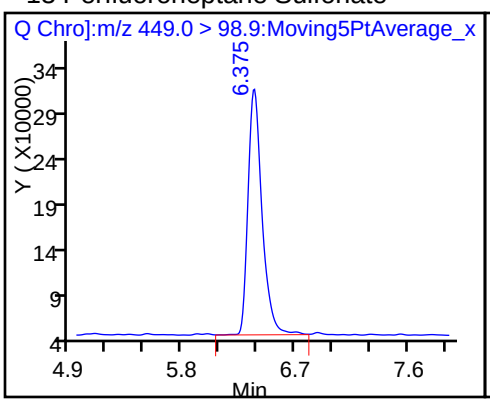
8 Perfluoroheptanoic acid



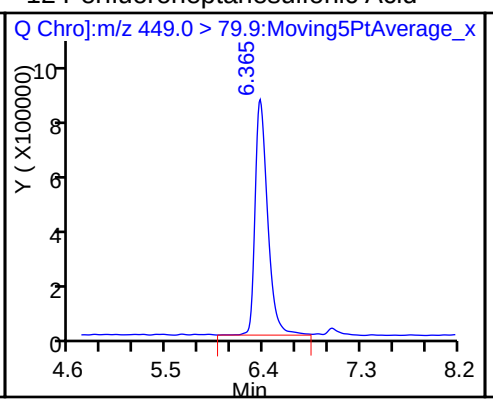
13 Perfluoroheptane Sulfonate



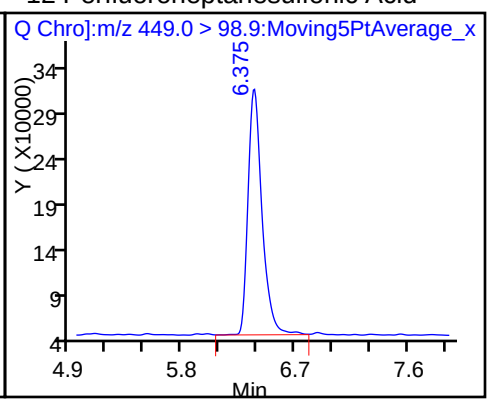
13 Perfluoroheptane Sulfonate



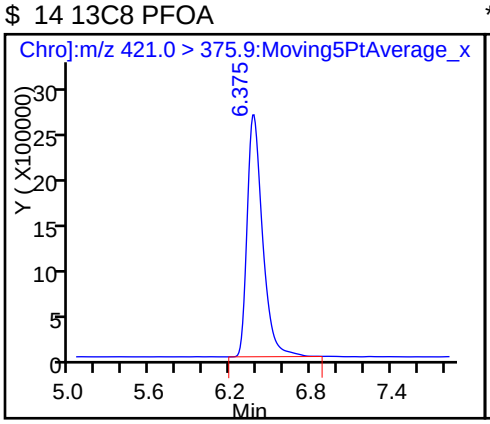
12 Perfluoroheptanesulfonic Acid



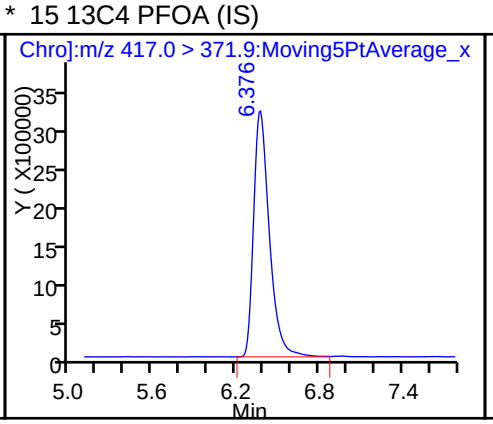
12 Perfluoroheptanesulfonic Acid



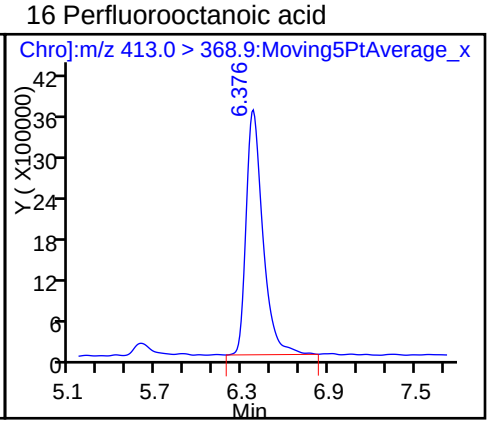
$ 14 13C8 PFOA



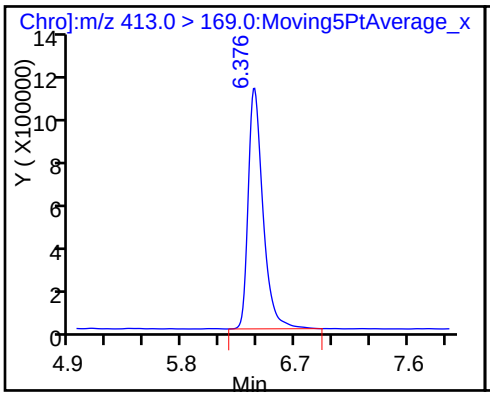
* 15 13C4 PFOA (IS)



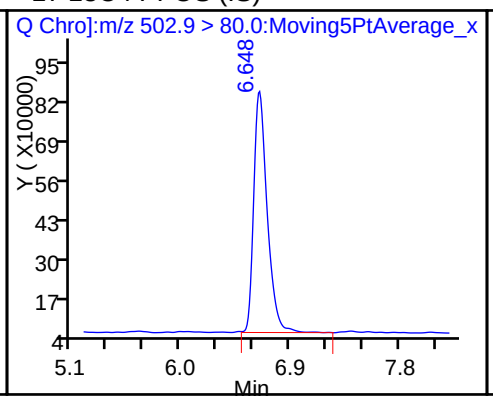
16 Perfluorooctanoic acid



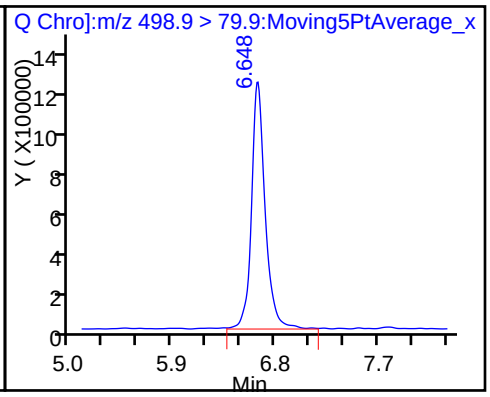
16 Perfluorooctanoic acid



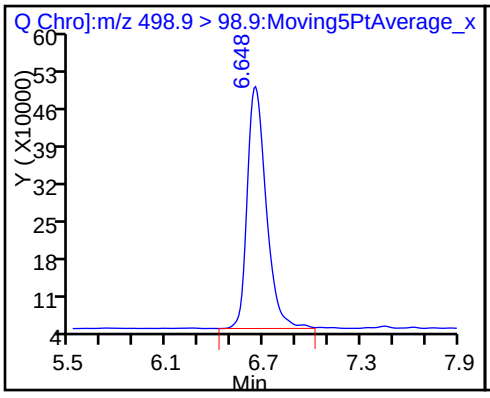
* 17 13C4 PFOS (IS)



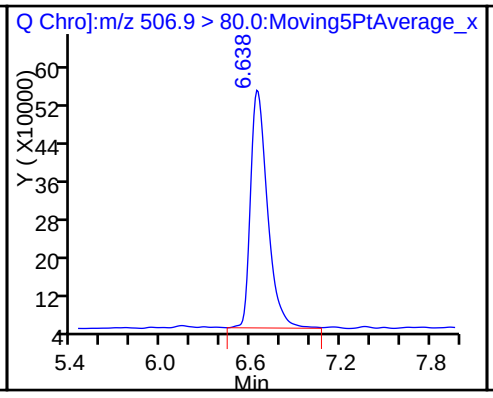
19 Perfluorooctane sulfonic acid



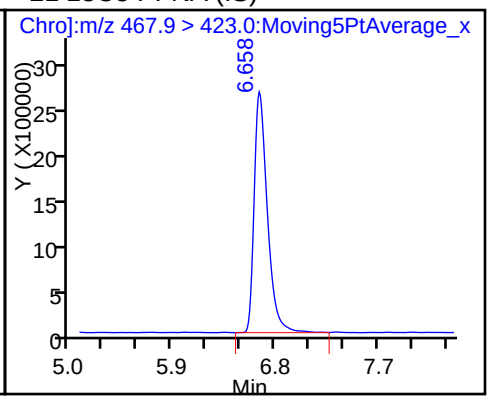
19 Perfluorooctane sulfonic acid



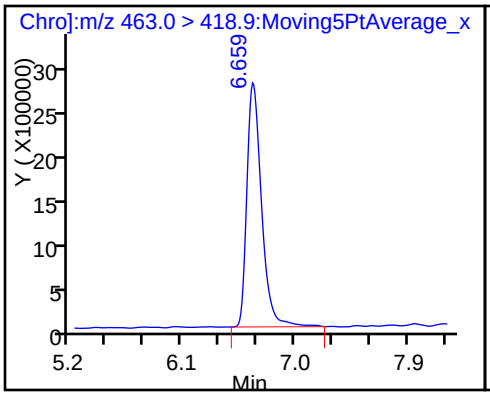
$ 18 13C8 PFOS



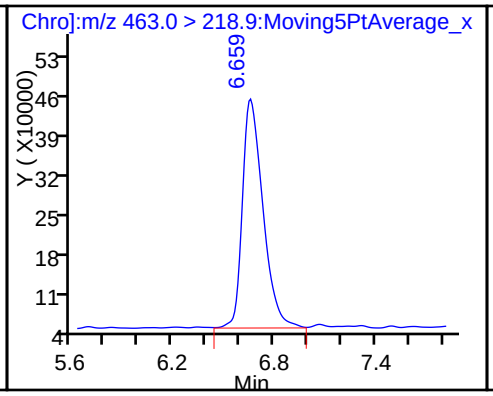
* 21 13C5 PFNA (IS)



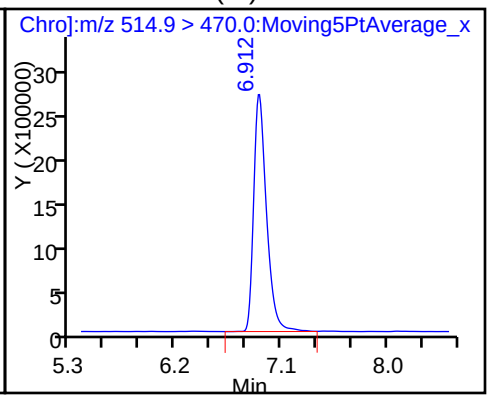
20 Perfluorononanoic acid



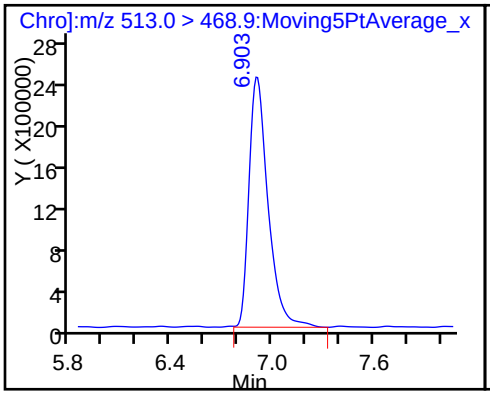
20 Perfluorononanoic acid



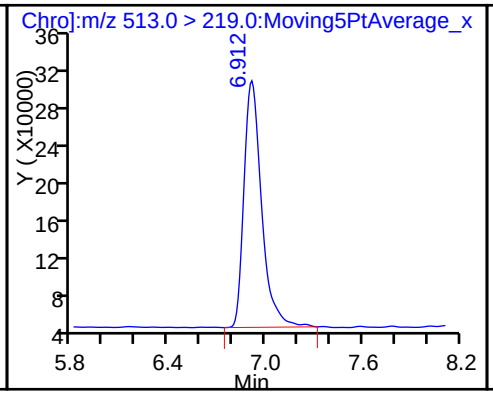
* 22 13C2 PFDA (IS)



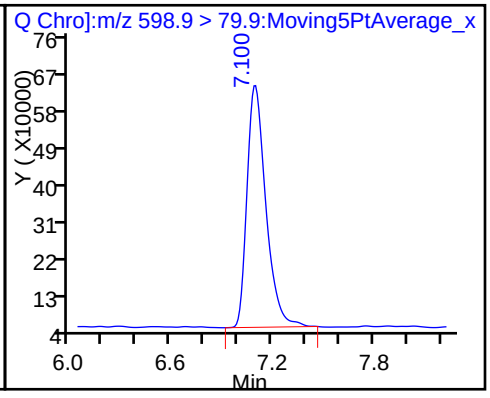
23 Perfluorodecanoic acid



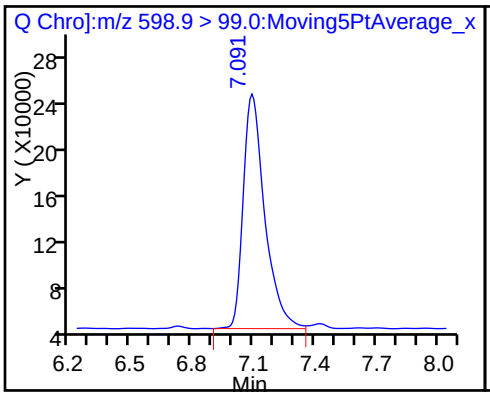
23 Perfluorodecanoic acid



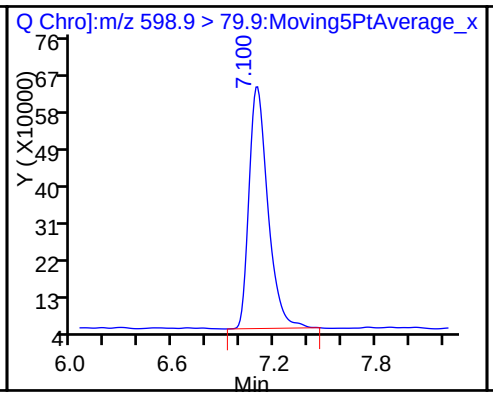
25 Perfluorodecane Sulfonate



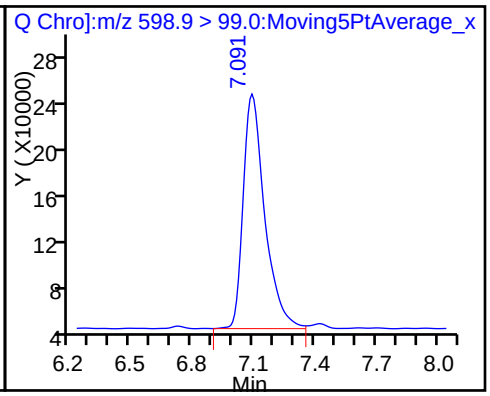
25 Perfluorodecane Sulfonate



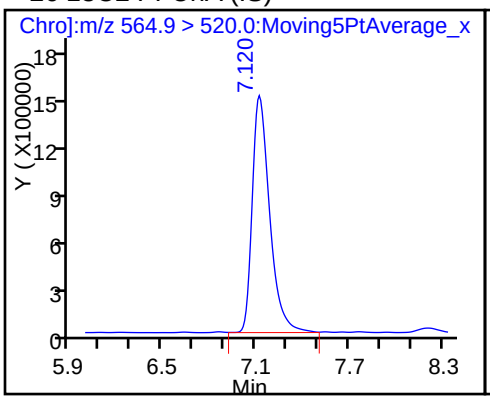
24 Perfluorodecane Sulfonic acid



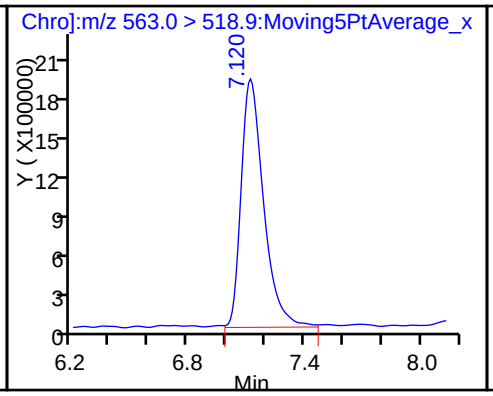
24 Perfluorodecane Sulfonic acid



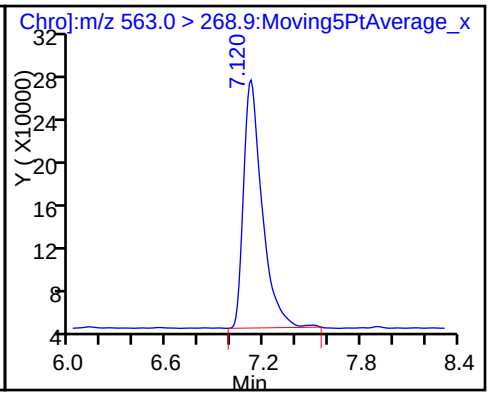
* 26 13C2 PFUnA (IS)



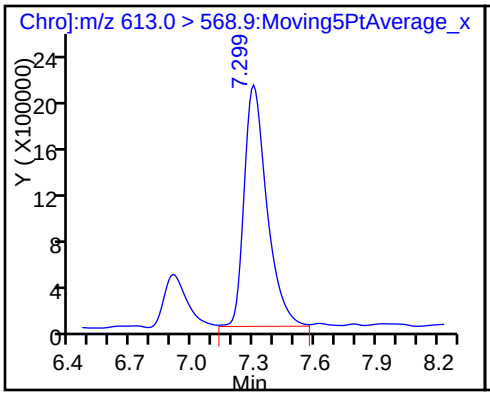
27 Perfluoroundecanoic acid



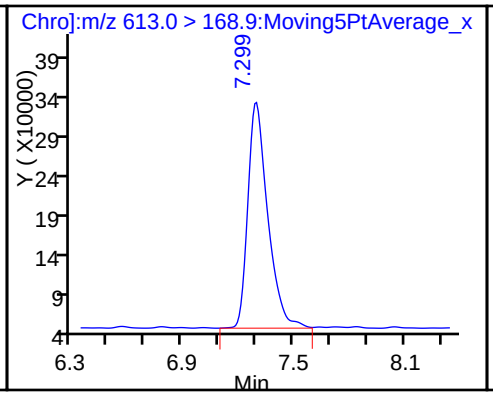
27 Perfluoroundecanoic acid



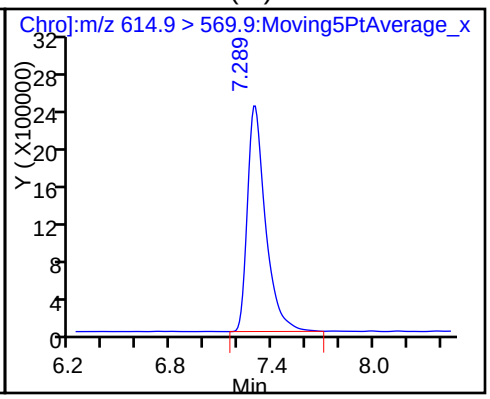
29 Perfluorododecanoic acid



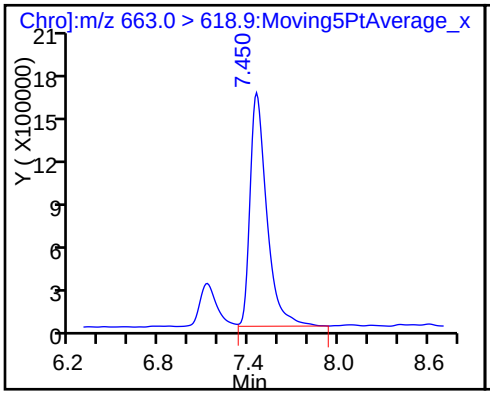
29 Perfluorododecanoic acid



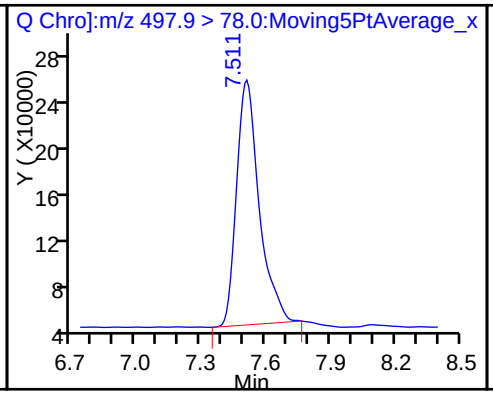
* 28 13C2 PFDoA (IS)



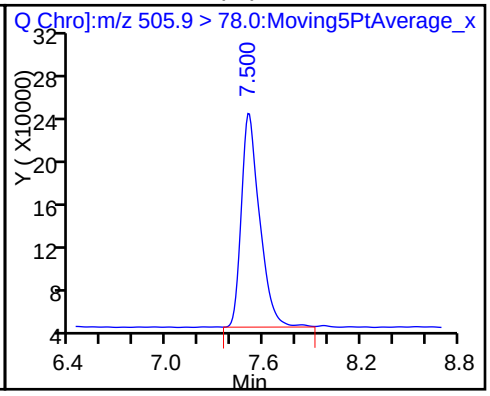
30 Perfluorotridecanoic acid



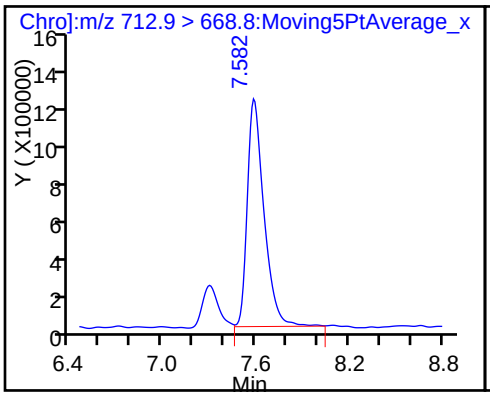
32 Perfluorooctane Sulfonamide



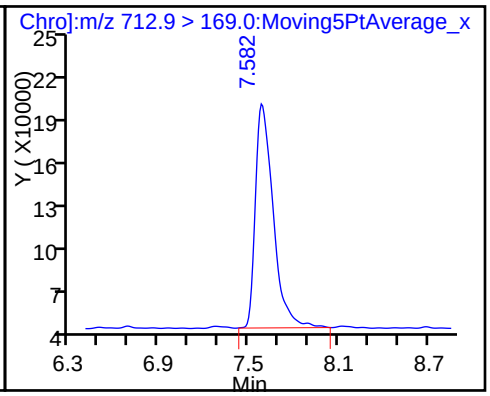
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-88381-1

SDG No.:

Client Sample ID: PFC-MW-3 MSD | Lab Sample ID: 280-88381-17 MSD

Matrix: Water | Lab File ID: PC516I028087.d

Analysis Method: DV-LC-0012 | Date Collected: 09/14/2016 16:25

Extraction Method: 3535 | Date Extracted: 09/27/2016 10:55

Sample wt/vol: 266(mL) | Date Analyzed: 09/28/2016 21:16

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 25(uL) | GC Column: Gemini-NX ID:

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 344279 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.276		0.019	0.0077
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.234		0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.330		0.028	0.0066
375-95-1	Perfluorononanoic acid (PFNA)	0.169		0.038	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.181		0.028	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.231		0.019	0.0092

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	113		60-155
STL01054	13C8 PFOS	122		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028087.d
Lims ID: 280-88381-C-17-A MSD
Client ID: PFC-MW-3
Sample Type: MSD
Inject. Date: 28-Sep-2016 21:16:27 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-88381-C-17-A MSD, Sample
Operator ID: ACM Instrument ID: LC_LCMS5

Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\8321_PFC.m
Limit Group: LC - PFC
Last Update: 29-Sep-2016 11:09:03 Calib Date: 20-Sep-2016 17:57:50
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160920-51066.b\PC516I020014.d

Column 1 : Det: MS QQQ
Process Host: XAWRK019

First Level Reviewer: fiedlerh Date: 29-Sep-2016 09:42:39

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									s
216.7 > 172.0	3.745	3.963	-0.218		24796660	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.745	3.963	-0.218	1.000	62432631	22.3			
3 Perfluoropentanoic acid									
263.0 > 218.9	4.958	5.062	-0.104	0.894	81783793	41.5			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.090	5.175	-0.085	0.849	15290473	14.7			
298.9 > 98.9	5.090	5.175	-0.085	0.849	4705661		3.25(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.090	5.175	-0.085	0.849	15290473	14.7			
298.9 > 98.9	5.090	5.175	-0.085	0.849	4705661		3.25(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.544	5.638	-0.094		18061180	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.544	5.629	-0.085	1.000	61539852	36.4			
313.0 > 118.6	5.553	5.629	-0.076	1.002	1550571		39.69(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	5.997	6.073	-0.076		1991401	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	5.988	6.064	-0.076	0.998	13889523	17.5			R
398.9 > 98.9	5.998	6.064	-0.066	1.000	5316710		2.61(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	5.988	6.064	-0.076	0.998	13889523	17.5			
398.9 > 98.9	5.998	6.064	-0.066	1.000	5316710		2.61(1.85-1.85)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	5.989	6.064	-0.075	0.945	33485872	12.5			
363.0 > 168.9	5.989	6.064	-0.075	0.945	8546950		3.92(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.328	6.403	-0.075	0.957	7888255	9.61			
449.0 > 98.9	6.328	6.403	-0.075	0.957	2657042		2.97(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.328	6.403	-0.075	0.957	7888255	9.61			
449.0 > 98.9	6.328	6.403	-0.075	0.957	2657042		2.97(0.00-0.00)		
$ 14 13C8 PFOA									
421.0 > 375.9	6.337	6.413	-0.076	1.000	22954385	11.1			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.338	6.404	-0.066		27210447	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.338	6.414	-0.076	1.000	34640802	12.3			
413.0 > 169.0	6.338	6.414	-0.076	1.000	10142747		3.42(2.86-5.31)		
* 17 13C4 PFOS (IS)									M
502.9 > 80.0	6.610	6.676	-0.066		6589929	9.56			M
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.610	6.677	-0.067	1.000	8315259	9.64			R
498.9 > 98.9	6.610	6.677	-0.067	1.000	3079873		2.70(1.31-2.43)		
$ 18 13C8 PFOS									
506.9 > 80.0	6.610	6.685	-0.075	1.000	4045220	11.3			
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.630	6.696	-0.066		21477847	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.630	6.697	-0.067	1.000	22498895	9.00			
463.0 > 218.9	6.630	6.697	-0.067	1.000	3799334		5.92(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.884	6.941	-0.057		19806042	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.874	6.941	-0.067	0.999	20134924	9.77			
513.0 > 219.0	6.884	6.941	-0.057	1.000	1897716		10.61(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.063	7.129	-0.066	1.068	4038577	4.67			
598.9 > 99.0	7.063	7.129	-0.066	1.068	1107651		3.65(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.063	7.129	-0.066	1.068	4038577	4.67			
598.9 > 99.0	7.063	7.129	-0.066	1.068	1107651		3.65(2.84-2.84)		
* 26 13C2 PFUnA (IS)									s
564.9 > 520.0	7.082	7.148	-0.066		10554744	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.082	7.149	-0.067	1.000	13722438	9.05			R
563.0 > 268.9	7.082	7.149	-0.067	1.000	1833302		7.49(3.47-6.45)		
29 Perfluorododecanoic acid									
613.0 > 568.9	7.271	7.327	-0.056	1.000	12458972	9.57			
613.0 > 168.9	7.271	7.327	-0.056	1.000	1744246		7.14(5.96-11.06)		
* 28 13C2 PFDoA (IS)									s
614.9 > 569.9	7.270	7.327	-0.057		12888801	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.422	7.488	-0.066	1.021	7967909	7.22			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.482	7.539	-0.057	1.003	681732	9.22			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.462	7.538	-0.076		695338	10.0			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.563	7.611	-0.048	1.040	4706017	5.28			
712.9 > 169.0	7.563	7.611	-0.048	1.040	634771		7.41(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

Report Date: 29-Sep-2016 11:09:29 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028087.d

Injection Date: 28-Sep-2016 21:16:27 Instrument ID: LC_LCMS5

Lims ID: 280-88381-C-17-A MSD

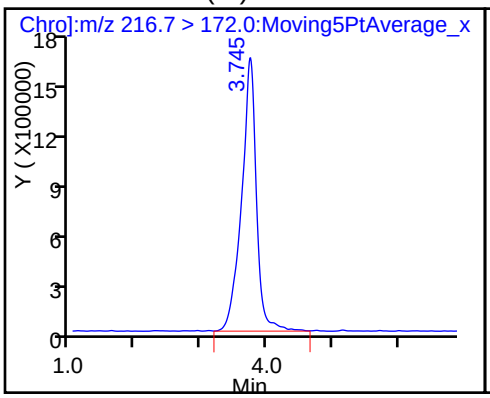
Client ID: PFC-MW-3

Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 11

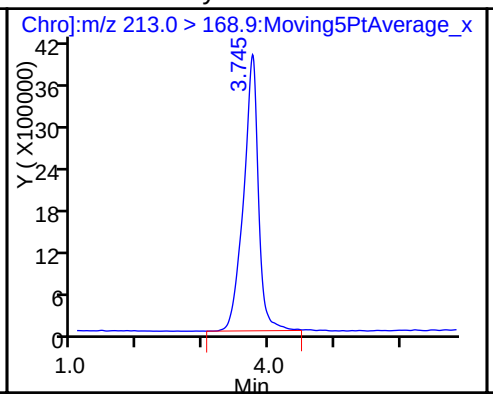
Injection Vol: 25.0 ul Dil. Factor: 1.0000

Method: 8321_PFC Limit Group: LC - PFC

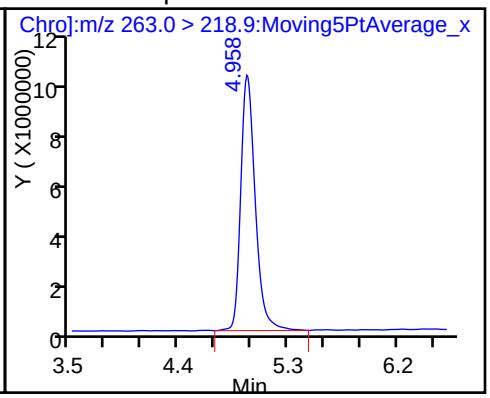
* 1 13C4 PFBA (IS)



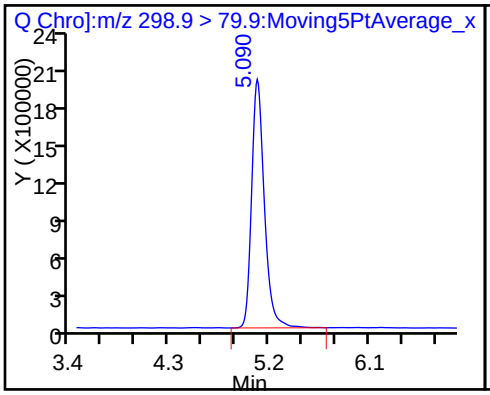
2 Perfluorobutyric acid



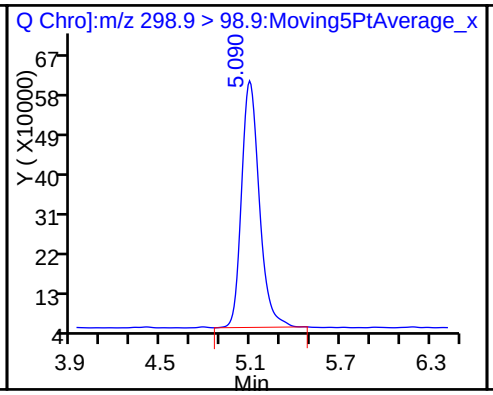
3 Perfluoropentanoic acid



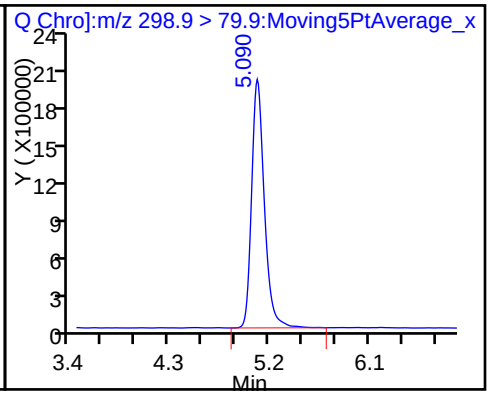
5 Perfluorobutanesulfonic acid



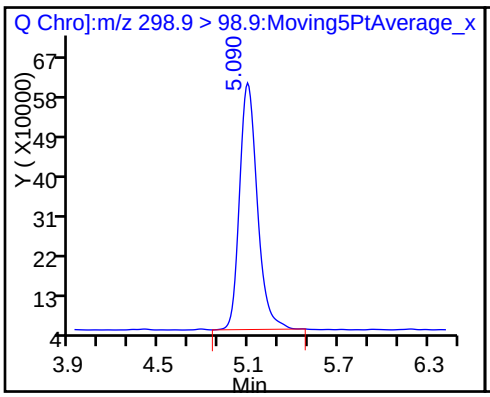
5 Perfluorobutanesulfonic acid



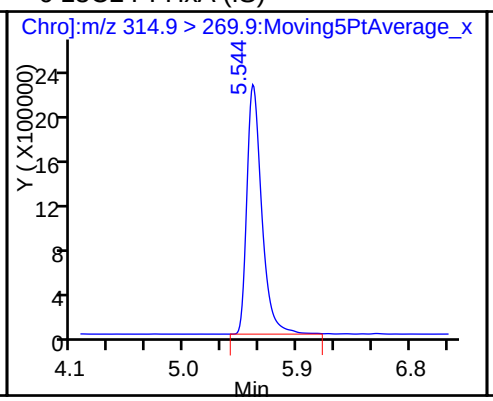
4 Perfluorobutane Sulfonate



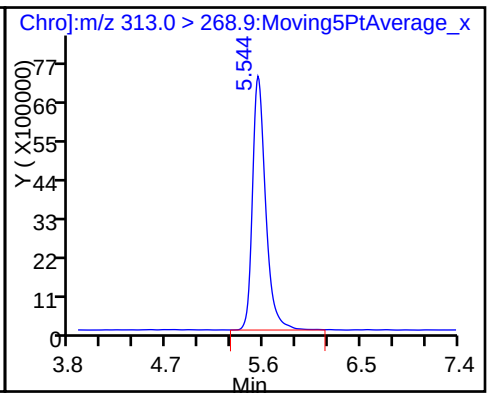
4 Perfluorobutane Sulfonate



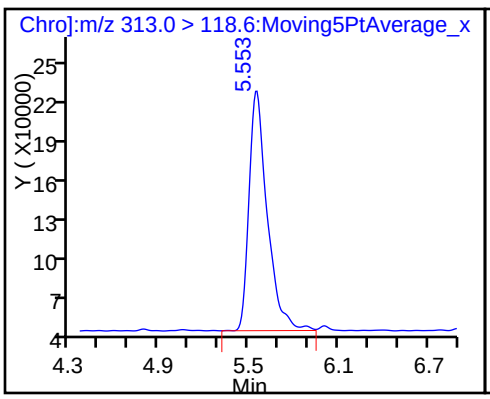
* 6 13C2 PFHxA (IS)



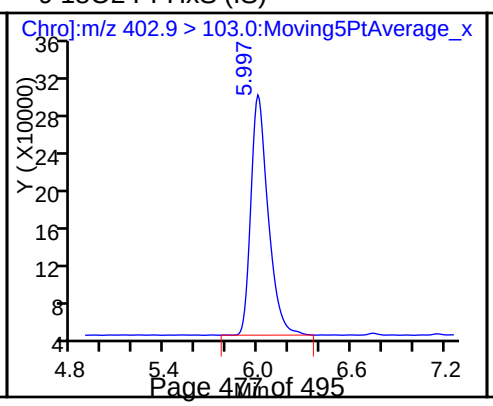
7 Perfluorohexanoic acid



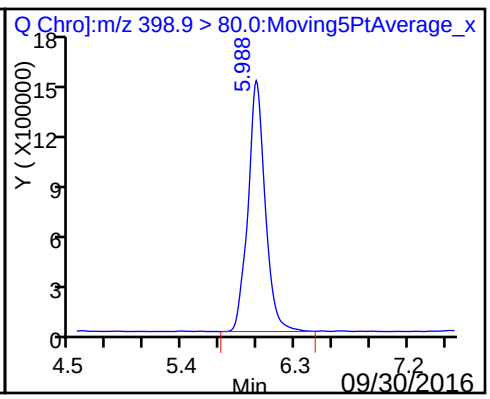
7 Perfluorohexanoic acid



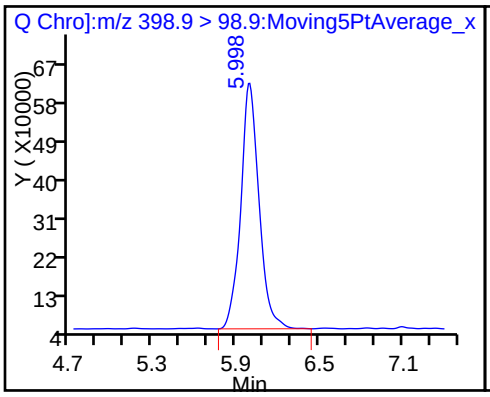
* 9 18O2 PFHxS (IS)



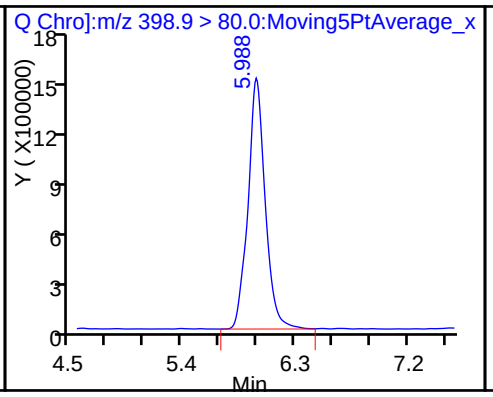
10 Perfluorohexane Sulfonate



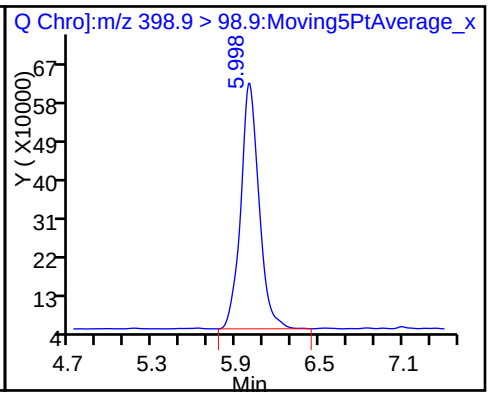
10 Perfluorohexane Sulfonate



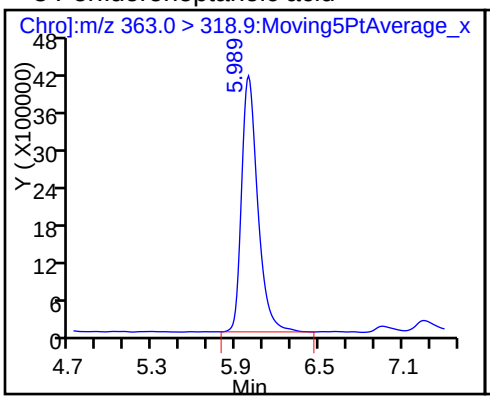
11 Perfluorohexanesulfonic acid



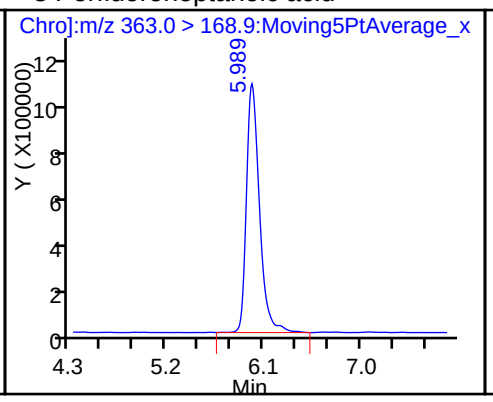
11 Perfluorohexanesulfonic acid



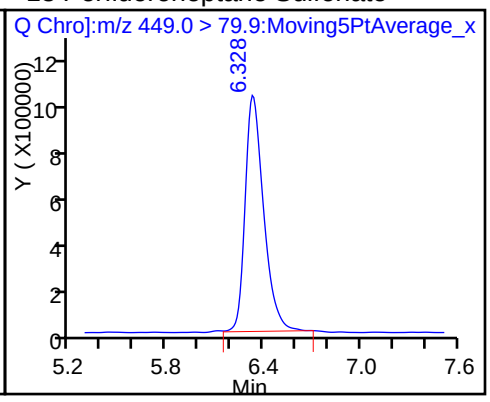
8 Perfluoroheptanoic acid



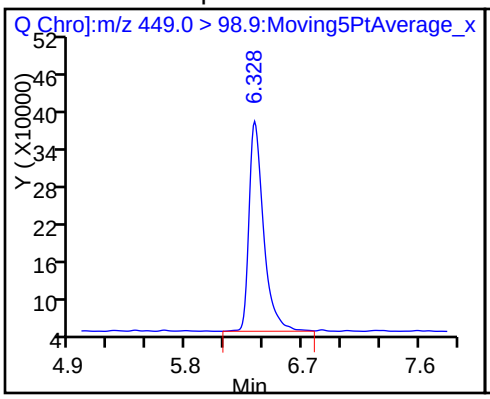
8 Perfluoroheptanoic acid



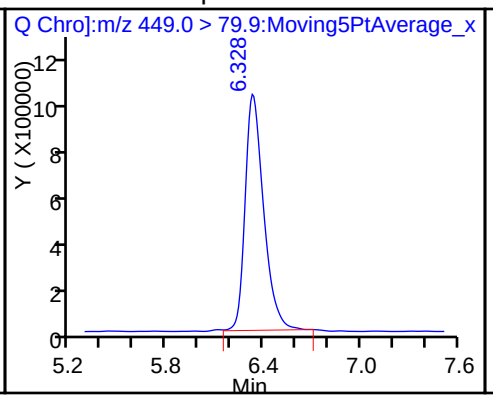
13 Perfluoroheptane Sulfonate



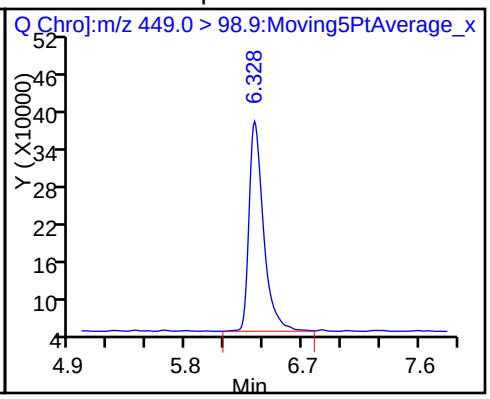
13 Perfluoroheptane Sulfonate



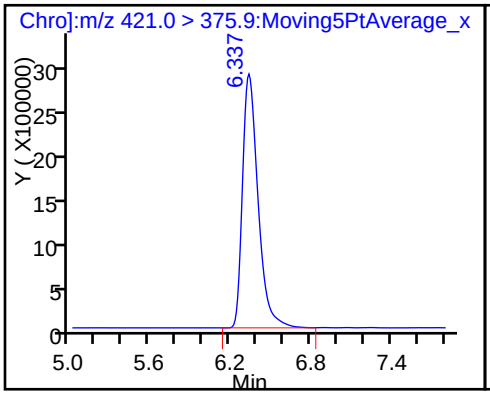
12 Perfluoroheptanesulfonic Acid



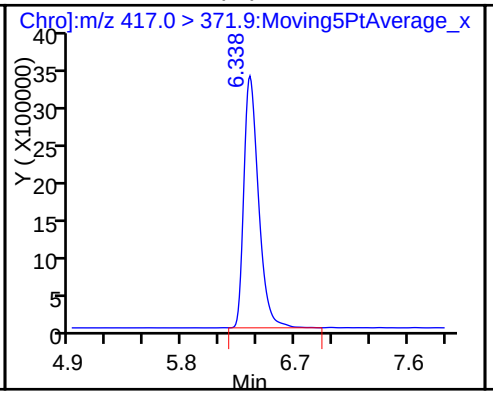
12 Perfluoroheptanesulfonic Acid



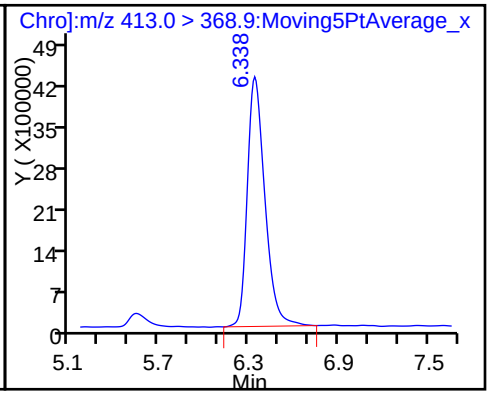
$ 14 13C8 PFOA



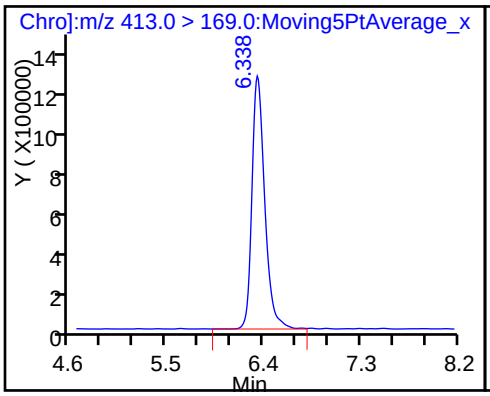
* 15 13C4 PFOA (IS)



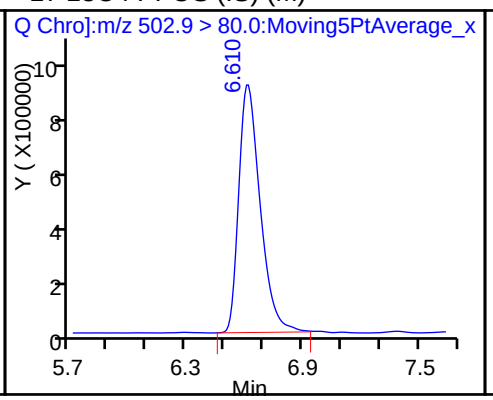
16 Perfluorooctanoic acid



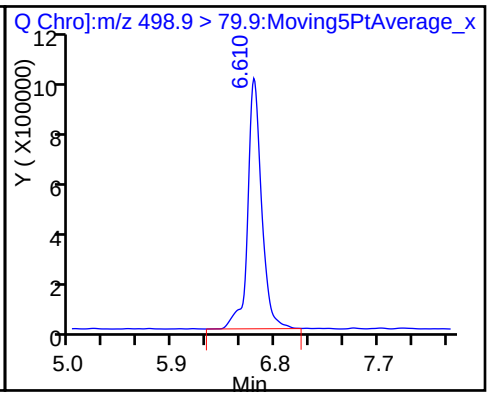
16 Perfluorooctanoic acid



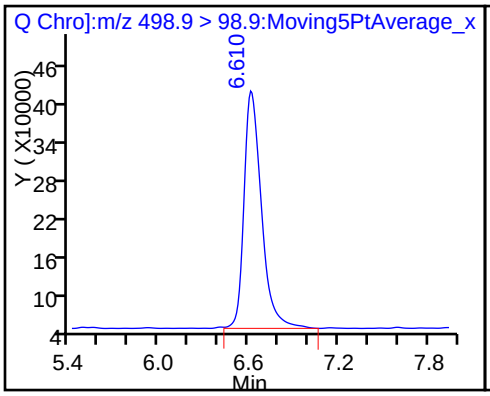
* 17 13C4 PFOS (IS) (M)



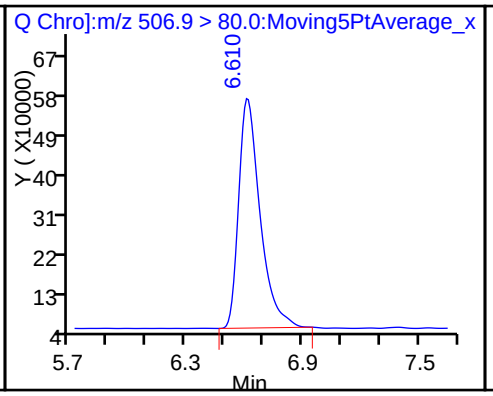
19 Perfluorooctane sulfonic acid



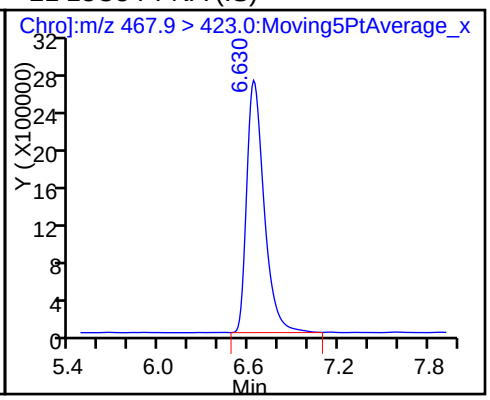
19 Perfluorooctane sulfonic acid



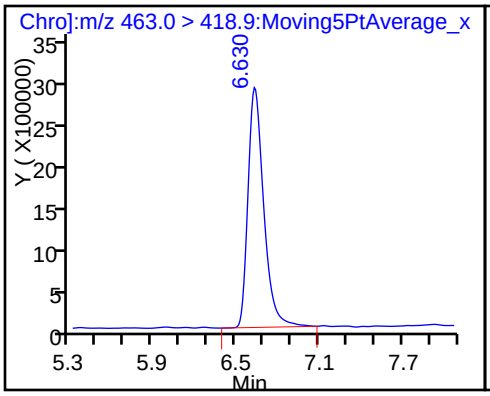
$ 18 13C8 PFOS



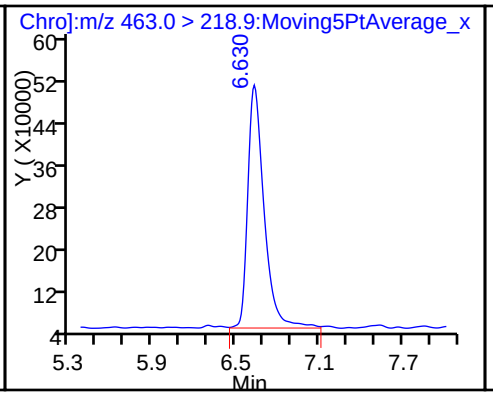
* 21 13C5 PFNA (IS)



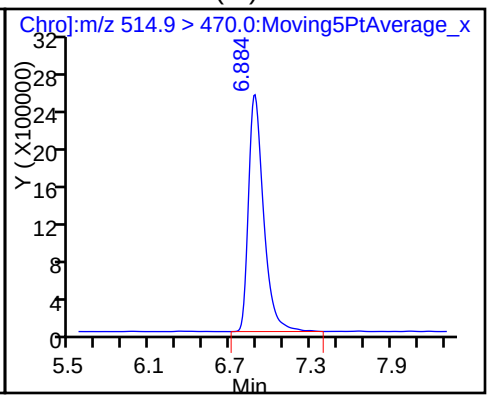
20 Perfluorononanoic acid



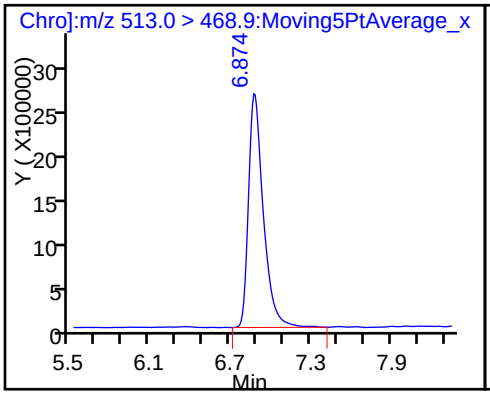
20 Perfluorononanoic acid



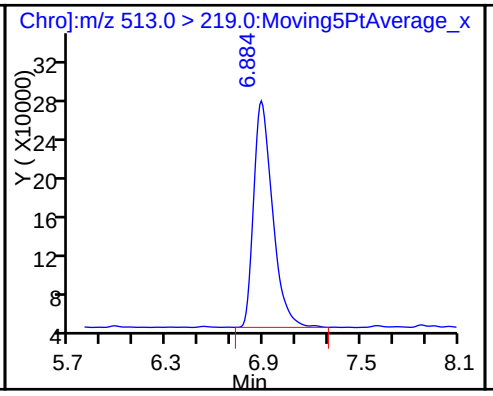
* 22 13C2 PFDA (IS)



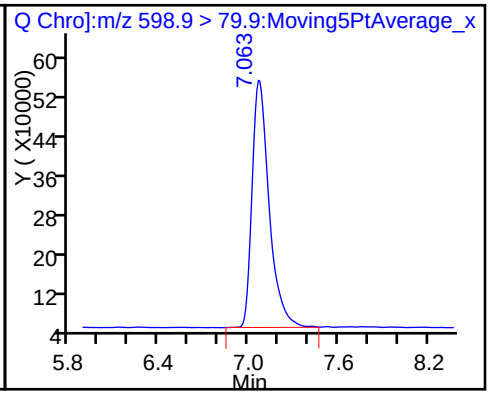
23 Perfluorodecanoic acid



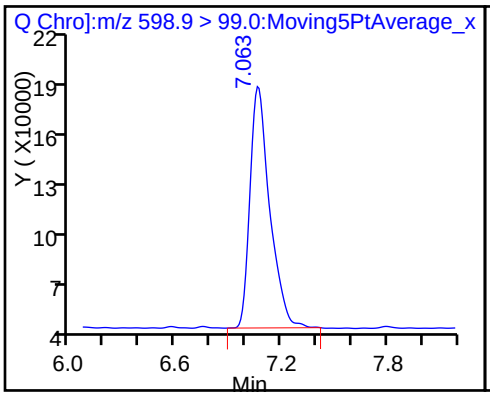
23 Perfluorodecanoic acid



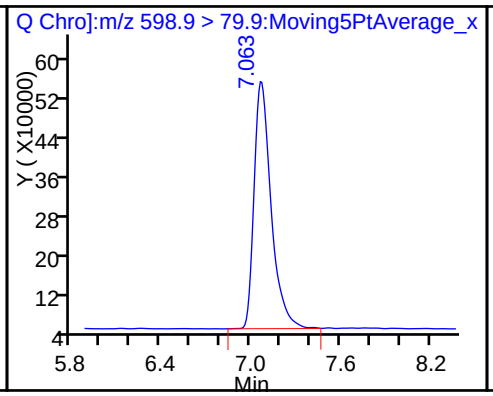
25 Perfluorodecane Sulfonate



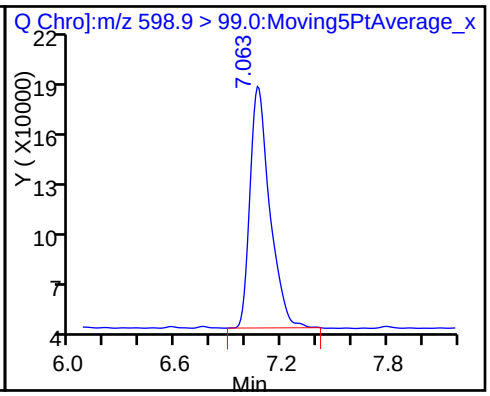
25 Perfluorodecane Sulfonate



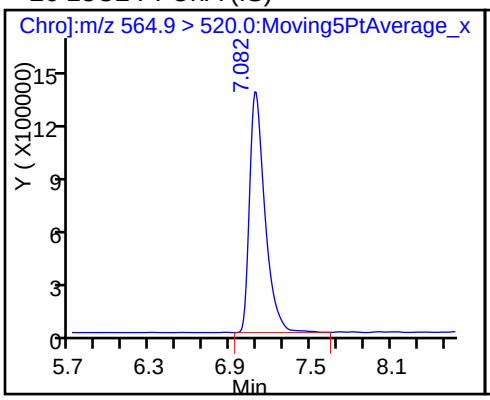
24 Perfluorodecane Sulfonic acid



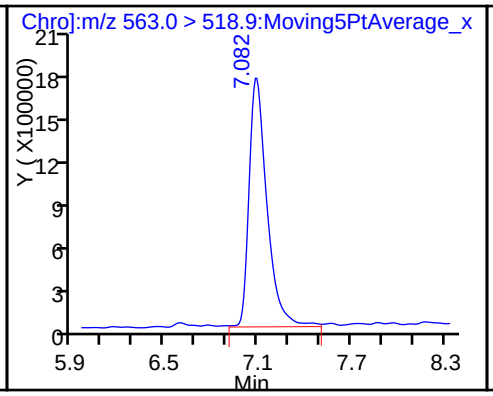
24 Perfluorodecane Sulfonic acid



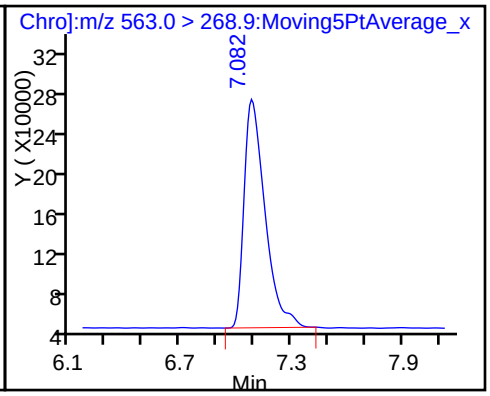
* 26 13C2 PFUnA (IS)



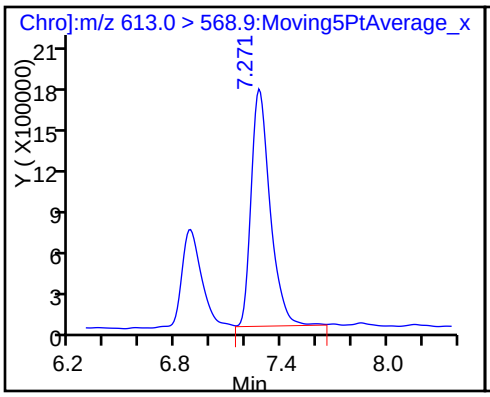
27 Perfluoroundecanoic acid



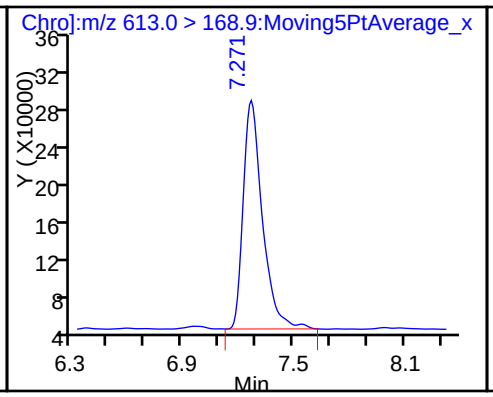
27 Perfluoroundecanoic acid



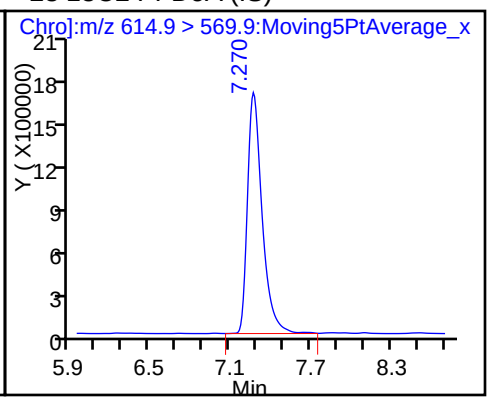
29 Perfluorododecanoic acid



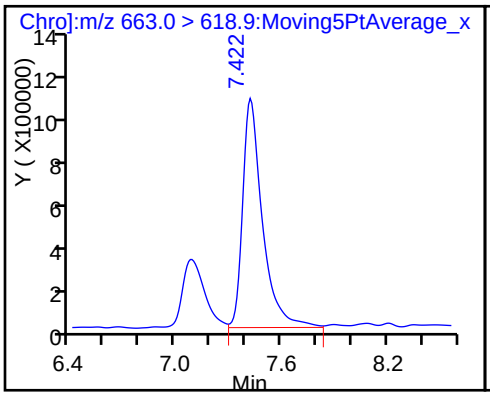
29 Perfluorododecanoic acid



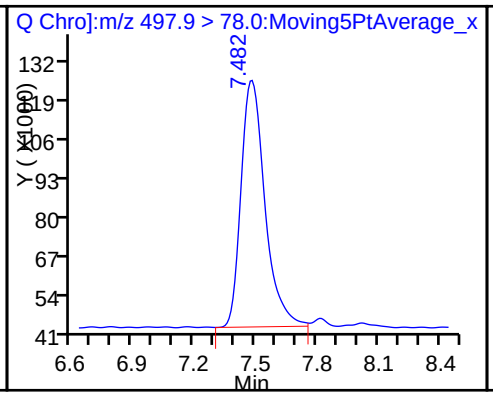
* 28 13C2 PFDoA (IS)



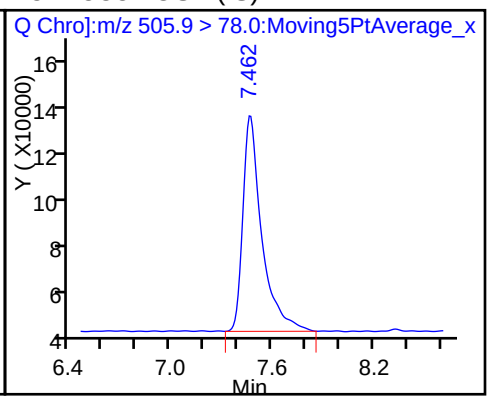
30 Perfluorotridecanoic acid



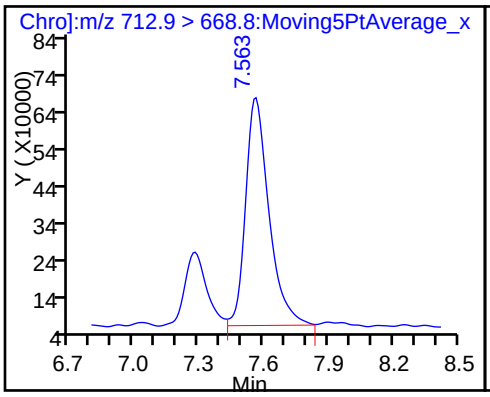
32 Perfluorooctane Sulfonamide



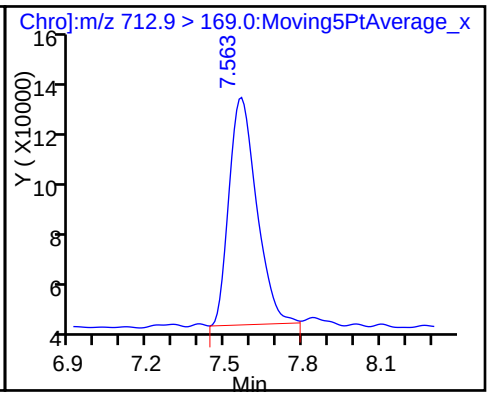
* 31 13C8 FOSA (IS)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Denver

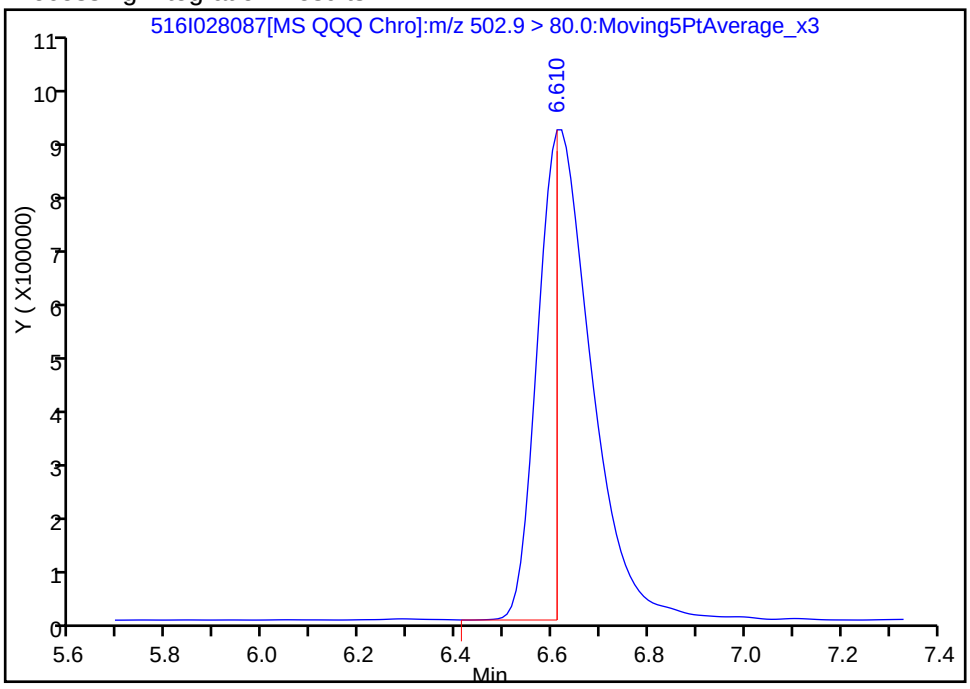
Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160929-51378.b\PC516I028087.d				
Injection Date:	28-Sep-2016 21:16:27	Instrument ID:	LC_LCMS5		
Lims ID:	280-88381-C-17-A MSD				
Client ID:	PFC-MW-3				
Operator ID:	ACM	ALS Bottle#:	0	Worklist Smp#:	11
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

* 17 13C4 PFOS (IS), CAS: STL01002

Signal: 1

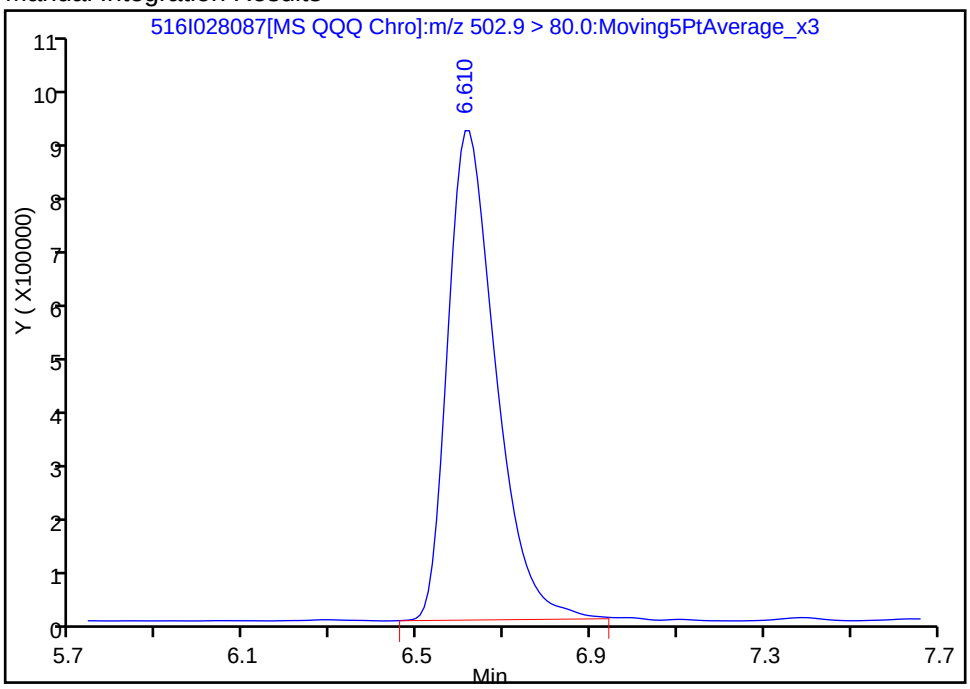
Processing Integration Results

RT: 6.61
Area: 2385521
Amount: 9.560000
Amount Units: ug/L



Manual Integration Results

RT: 6.61
Area: 6589929
Amount: 9.560000
Amount Units: ug/L



Reviewer: fiedlerh, 29-Sep-2016 09:42:39
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Baseline

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/20/2016 16:19

Analysis Batch Number: 343000 End Date: 09/20/2016 22:53

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD0002 280-343000/3 IC		09/20/2016 16:19	1	PC516I020006.d	Gemini-NX
STD0005 280-343000/4 IC		09/20/2016 16:31	1	PC516I020007.d	Gemini-NX
STD0010 280-343000/5 IC		09/20/2016 16:43	1	PC516I020008.d	Gemini-NX
STD0020 280-343000/6 ICISAV		09/20/2016 16:56	1	PC516I020009.d	Gemini-NX
STD0050 280-343000/7 IC		09/20/2016 17:08	1	PC516I020010.d	Gemini-NX
STD0100 280-343000/8 IC		09/20/2016 17:20	1	PC516I020011.d	Gemini-NX
STD0200 280-343000/9 IC		09/20/2016 17:33	1	PC516I020012.d	Gemini-NX
STD0500 280-343000/10 IC		09/20/2016 17:45	1	PC516I020013.d	Gemini-NX
STD1250 280-343000/11 IC		09/20/2016 17:57	1	PC516I020014.d	Gemini-NX
ICB 280-343000/12		09/20/2016 18:10	1	PC516I020015.d	Gemini-NX
ICV 280-343000/13		09/20/2016 18:22	1	PC516I020016.d	Gemini-NX
DLCK 280-343000/14		09/20/2016 18:34	1	PC516I020017.d	Gemini-NX
ZZZZZ		09/20/2016 18:47	1		Gemini-NX
ZZZZZ		09/20/2016 18:59	1		Gemini-NX
ZZZZZ		09/20/2016 19:11	1		Gemini-NX
ZZZZZ		09/20/2016 19:24	1		Gemini-NX
ZZZZZ		09/20/2016 19:36	1		Gemini-NX
ZZZZZ		09/20/2016 19:48	1		Gemini-NX
ZZZZZ		09/20/2016 20:01	1		Gemini-NX
ZZZZZ		09/20/2016 20:13	1		Gemini-NX
ZZZZZ		09/20/2016 20:25	1		Gemini-NX
ZZZZZ		09/20/2016 20:38	1		Gemini-NX
CCV 280-343000/25		09/20/2016 20:50	1		Gemini-NX
ZZZZZ		09/20/2016 21:02	1		Gemini-NX
ZZZZZ		09/20/2016 21:15	1		Gemini-NX
ZZZZZ		09/20/2016 21:27	1		Gemini-NX
ZZZZZ		09/20/2016 21:39	1		Gemini-NX
ZZZZZ		09/20/2016 21:51	1		Gemini-NX
ZZZZZ		09/20/2016 22:04	1		Gemini-NX
ZZZZZ		09/20/2016 22:16	1		Gemini-NX
ZZZZZ		09/20/2016 22:28	1		Gemini-NX
ZZZZZ		09/20/2016 22:41	1		Gemini-NX
CCV 280-343000/36		09/20/2016 22:53	1		Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/28/2016 19:37

Analysis Batch Number: 344279 End Date: 09/28/2016 23:56

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-344279/3		09/28/2016 19:37	1	PC516I028079.d	Gemini-NX
ZZZZZ		09/28/2016 19:49	2		Gemini-NX
MB 280-343904/1-A		09/28/2016 20:02	1	PC516I028081.d	Gemini-NX
LCS 280-343904/2-A		09/28/2016 20:14	1	PC516I028082.d	Gemini-NX
LCSD 280-343904/3-A		09/28/2016 20:27	1	PC516I028083.d	Gemini-NX
280-88381-16		09/28/2016 20:39	1	PC516I028084.d	Gemini-NX
280-88381-17		09/28/2016 20:51	1	PC516I028085.d	Gemini-NX
280-88381-17 MS		09/28/2016 21:04	1	PC516I028086.d	Gemini-NX
280-88381-17 MSD		09/28/2016 21:16	1	PC516I028087.d	Gemini-NX
280-88381-18		09/28/2016 21:28	1	PC516I028088.d	Gemini-NX
280-88381-19		09/28/2016 21:41	1	PC516I028089.d	Gemini-NX
CCV 280-344279/14		09/28/2016 21:53	1	PC516I028090.d	Gemini-NX
280-88381-20		09/28/2016 22:05	1	PC516I028091.d	Gemini-NX
280-88381-21		09/28/2016 22:18	1	PC516I028092.d	Gemini-NX
ZZZZZ		09/28/2016 22:30	1		Gemini-NX
ZZZZZ		09/28/2016 22:42	1		Gemini-NX
ZZZZZ		09/28/2016 22:55	1		Gemini-NX
ZZZZZ		09/28/2016 23:07	1		Gemini-NX
ZZZZZ		09/28/2016 23:19	1		Gemini-NX
ZZZZZ		09/28/2016 23:31	1		Gemini-NX
ZZZZZ		09/28/2016 23:44	1		Gemini-NX
CCV 280-344279/24		09/28/2016 23:56	1	PC516I028100.d	Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/28/2016 23:56

Analysis Batch Number: 344280 End Date: 09/29/2016 05:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-344280/24		09/28/2016 23:56	1	PC516I028100.d	Gemini-NX
MB 280-343884/1-A		09/29/2016 00:08	1	PC516I028101.d	Gemini-NX
LCS 280-343884/2-A		09/29/2016 00:21	1	PC516I028102.d	Gemini-NX
LCSD 280-343884/3-A		09/29/2016 00:33	1	PC516I028103.d	Gemini-NX
280-88381-1		09/29/2016 00:46	1	PC516I028104.d	Gemini-NX
280-88381-2		09/29/2016 00:58	1	PC516I028105.d	Gemini-NX
280-88381-3		09/29/2016 01:10	1	PC516I028106.d	Gemini-NX
280-88381-4		09/29/2016 01:22	1	PC516I028107.d	Gemini-NX
280-88381-5		09/29/2016 01:35	1	PC516I028108.d	Gemini-NX
280-88381-6		09/29/2016 01:47	1	PC516I028109.d	Gemini-NX
280-88381-7		09/29/2016 01:59	1	PC516I028110.d	Gemini-NX
CCV 280-344280/35		09/29/2016 02:12	1	PC516I028111.d	Gemini-NX
280-88381-8		09/29/2016 02:24	1	PC516I028112.d	Gemini-NX
280-88381-9		09/29/2016 02:36	1	PC516I028113.d	Gemini-NX
280-88381-10		09/29/2016 02:49	1	PC516I028114.d	Gemini-NX
280-88381-11		09/29/2016 03:01	1	PC516I028115.d	Gemini-NX
280-88381-11 MS		09/29/2016 03:13	1	PC516I028116.d	Gemini-NX
280-88381-11 MSD		09/29/2016 03:26	1	PC516I028117.d	Gemini-NX
280-88381-12		09/29/2016 03:38	1	PC516I028118.d	Gemini-NX
280-88381-13		09/29/2016 03:50	1	PC516I028119.d	Gemini-NX
280-88381-14		09/29/2016 04:03	1	PC516I028120.d	Gemini-NX
280-88381-15		09/29/2016 04:15	1	PC516I028121.d	Gemini-NX
CCV 280-344280/46		09/29/2016 04:27	1	PC516I028122.d	Gemini-NX
ZZZZZ		09/29/2016 04:39	1		Gemini-NX
ZZZZZ		09/29/2016 04:52	1		Gemini-NX
ZZZZZ		09/29/2016 05:04	1		Gemini-NX
ZZZZZ		09/29/2016 05:16	1		Gemini-NX
ZZZZZ		09/29/2016 05:29	1		Gemini-NX
CCV 280-344280/52		09/29/2016 05:41	1		Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 09/29/2016 13:53

Analysis Batch Number: 344348 End Date: 09/29/2016 14:17

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-344348/3		09/29/2016 13:53	1	PC516I029039.d	Gemini-NX
280-88381-6 DL		09/29/2016 14:05	4	PC516I029040.d	Gemini-NX
CCV 280-344348/5		09/29/2016 14:17	1	PC516I029041.d	Gemini-NX

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Batch Number: 343884 Batch Start Date: 09/27/16 10:45 Batch Analyst: Frey, Alan C

Batch Method: 3535 Batch End Date: 09/27/16 14:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00087	PFC_Surr&IS 00026
MB 280-343884/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-343884/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-343884/3		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-88381-A-1	PFC-MW-4	3535, DV-LC-0012	T	298.7 g	30.9 g	267.8 mL	5 mL		0.1 mL
280-88381-A-2	CB2K	3535, DV-LC-0012	T	305.5 g	29.1 g	276.4 mL	5 mL		0.1 mL
280-88381-A-3	CB9A	3535, DV-LC-0012	T	285.3 g	29.4 g	255.9 mL	5 mL		0.1 mL
280-88381-A-4	W6	3535, DV-LC-0012	T	298.5 g	29.8 g	268.7 mL	5 mL		0.1 mL
280-88381-A-5	ANG-CB-EB-091516	3535, DV-LC-0012	T	321.4 g	28.4 g	293 mL	5 mL		0.1 mL
280-88381-A-6	D27	3535, DV-LC-0012	T	312.1 g	27.9 g	284.2 mL	5 mL		0.1 mL
280-88381-A-7	D15-A	3535, DV-LC-0012	T	300.7 g	29.2 g	271.5 mL	5 mL		0.1 mL
280-88381-A-8	ANG-MW-EB-091516	3535, DV-LC-0012	T	292.6 g	27.8 g	264.8 mL	5 mL		0.1 mL
280-88381-A-9	ANG-CB-FB-091516	3535, DV-LC-0012	T	316.0 g	30.1 g	285.9 mL	5 mL		0.1 mL
280-88381-B-10	STM-UP	3535, DV-LC-0012	T	304.8 g	28.8 g	276 mL	5 mL		0.1 mL
280-88381-A-11	CB	3535, DV-LC-0012	T	298.5 g	29.5 g	269 mL	5 mL		0.1 mL
280-88381-B-11 MS	CB	3535, DV-LC-0012	T	318.6 g	30.2 g	288.4 mL	5 mL	0.1 mL	0.1 mL
280-88381-C-11 MSD	CB	3535, DV-LC-0012	T	336.4 g	28.6 g	307.8 mL	5 mL	0.1 mL	0.1 mL
280-88381-A-12	C17	3535, DV-LC-0012	T	298.1 g	42.9 g	255.2 mL	5 mL		0.1 mL
280-88381-A-13	D8	3535, DV-LC-0012	T	315.4 g	28.6 g	286.8 mL	5 mL		0.1 mL
280-88381-A-14	CB-DUP	3535, DV-LC-0012	T	325.0 g	28.6 g	296.4 mL	5 mL		0.1 mL
280-88381-A-15	PFC-MW-2	3535, DV-LC-0012	T	321.1 g	27.7 g	293.4 mL	5 mL		0.1 mL

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Batch Number: 343884 Batch Start Date: 09/27/16 10:45 Batch Analyst: Frey, Alan C

Batch Method: 3535 Batch End Date: 09/27/16 14:50

Batch Notes	
Acid ID	2% FormicAci_000101
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	S/S:Watson D. / Alan Frey(trainer)/David Watson(trainee), reviewer Kyle Isberg
First End time	9.26.16 @ 1412
H2O ID	HPLC_Water_00679
Pipette ID	O,SPE-1
Reagent ID	10% NH4OH
Reagent Lot Number	10%NH4OH_00079
Solvent Lot #	HPLC_MeOH_00141
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	9.26.16 @ 1205

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Batch Number: 343904 Batch Start Date: 09/27/16 10:55 Batch Analyst: Frey, Alan C

Batch Method: 3535 Batch End Date: 09/27/16 15:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00087	PFC_Surr&IS 00026
MB 280-343904/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-343904/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-343904/3		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-88381-A-16	MW-DUP	3535, DV-LC-0012	T	317.3 g	29.1 g	288.2 mL	5 mL		0.1 mL
280-88381-B-17	PFC-MW-3	3535, DV-LC-0012	T	309.5 g	51.7 g	257.8 mL	5 mL		0.1 mL
280-88381-A-17 MS	PFC-MW-3	3535, DV-LC-0012	T	308.4 g	47.8 g	260.6 mL	5 mL	0.1 mL	0.1 mL
280-88381-C-17 MSD	PFC-MW-3	3535, DV-LC-0012	T	321.1 g	55.1 g	266 mL	5 mL	0.1 mL	0.1 mL
280-88381-A-18	CB-FB-0914-16	3535, DV-LC-0012	T	311.6 g	27.5 g	284.1 mL	5 mL		0.1 mL
280-88381-A-19	CB-EB-091416	3535, DV-LC-0012	T	311.7 g	27.4 g	284.3 mL	5 mL		0.1 mL
280-88381-B-20	ANG-CB-EB-091616	3535, DV-LC-0012	T	316.6 g	29.0 g	287.6 mL	5 mL		0.1 mL
280-88381-A-21	ANG-FB-091616	3535, DV-LC-0012	T	309.8 g	28.2 g	281.6 mL	5 mL		0.1 mL

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-88381-1

SDG No.:

Batch Number: 343904 Batch Start Date: 09/27/16 10:55 Batch Analyst: Frey, Alan C

Batch Method: 3535 Batch End Date: 09/27/16 15:25

Batch Notes	
Acid ID	2% FormicAci_00101
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	S/S:Watson D. / Alan Frey(trainer)/David Watson(trainee), reviewer Kyle Isberg
First End time	9.26.16 @ 1425
H2O ID	HPLC_Water_00679
Pipette ID	O,SPE-1
Reagent ID	10% NH4OH
Reagent Lot Number	10%NH4OH_00079
Solvent Lot #	HPLC_MeOH_00141
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	9.26.16 @ 1220

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice) Melissa Lamacchia	Samplers Name (Printed) Scott G. Englert	Site/Project Identification SWF PFC
Company HDR	P. O. #	State (Location of site): NJ: ☐ NY: ☐ Other:
		Regulatory Program: DKQP: ☐
Address 1 International Blvd.	Analysis Turnaround Time: Standard ☐	
City Mahwah State NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone 201 335 9300 Fax		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of Cont.	PFC (MOD	MS/MSD									LAB USE ONLY Sample Numbers
PFC-MW-4	9/15/16	1240	W	2	X										
CB2K	9/15/16	1340	W	2	X										
CB9A	9/15/16	1405	W	2	X										
W6	9/15/16	1435	W	2	X										
ANG-CB-EB-091516	9/15/16	1445	W	2	X										
D27	9/15/16	1515	W	2	X										
D15-A	9/15/16	1600	W	2	X										
ANG-MW-EB-091516	9/15/16	1300	W	2	X										
ANG-CB-FB-091516	9/15/16	1610	W	2	X										
STM-UP	9/15/16	1350	W	2	X										
Soil:															
Water:					1	3									

LAB USE ONLY: Project No: ____ Job No: ____

280-88381 Chain of Custody

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____

Special Instructions _____ Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1)	HDR	9/16/16 1900	1)	TAL 9/17/16 0845
Relinquished by 2)	Company	Date / Time	Received by 2)	Company
Relinquished by 3)	Company	Date / Time	Received by 3)	Company
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0715)

Massachusetts (M-NJ312), North Carolina (No. 578)

16.6+0.0 IR#5 TAL 9/17/16

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Melissa Lamendola	Samplers Name (Printed): Scott G. Englert	Site/Project Identification: SWF PFC
Company: HDR	P. O. #	State (Location of site): NJ: ☐ NY: ☒ Other:
		Regulatory Program: DKQP: ☐
Address: 1 International Blvd.	Analysis Turnaround Time: Standard ☐	
City: Mahwah State: NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone: 201-335-9300 Fax:		

Sample Identification	Date	Time	Matrix	No. of Cont.	PFC (MOD)	MS/MSD									LAB USE ONLY Sample Numbers
CB	9/14/16	0857	W	~~16~~	X	X									
~~B17~~ C17	9/14/16	0830	W	2	X										
D8	9/14/16	0930	W	2	X										
~~FIELD DUPE CB~~	~~9/14/16~~														
CB-DUP	9/14/16	1000	W	2	X										
PFC-MW-2	9/14/16	1205	W	2	X										
MW-DUP	9/14/16	1230	W	2	X										
PFC-MW-3	9/14/16	1625	W	6	X	X									
CB-FB-0914-16	9/14/16	1650	W	2	X										
CB-EB-091416	9/14/16	1655	W	2	X										
Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH				Soil:											
6 = Other _____, 7 = Other _____				Water:	1	1									

Special Instructions _____ Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1)	HDR	9/16/16 1900	1)	THC 9/17/16 0845
Relinquished by 2)	Company	Date / Time	Received by 2)	Company
Relinquished by 3)	Company	Date / Time	Received by 3)	Company
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0715)

Massachusetts (M-NJ312), North Carolina (No. 578)

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Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice) Melissa LaMacchia	Samplers Name (Printed) Scott G. Englert	Site/Project Identification SWF PFC
Company HDR	P. O. #	State (Location of site): NJ: ☐ NY: ☒ Other:
		Regulatory Program: DKQP: ☐
Address 1 International Blvd.	Analysis Turnaround Time: Standard ☐	
City Mawah State NJ	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone 201-335-9300 Fax		

Sample Identification	Date	Time	Matrix	No. of Cont.	PFC (MOD)										LAB USE ONLY Sample Numbers
ANG-CB-EB-091616	9/16/16	1540	W	2	X										
ANG-FB-091616	9/16/16	1550	W	2	X										
Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH 6 = Other _____, 7 = Other _____				Soil:	2										
				Water:	1										

LAB USE ONLY: Project No: | Job No:

Special Instructions _____ Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) Scott G. Englert	HDR	9/16/16 1900	1)	TAD 9/17/16 0845
Relinquished by 2)	Company	Date / Time	Received by 2)	Company
Relinquished by 3)	Company	Date / Time	Received by 3)	Company
Relinquished by 4)	Company	Date / Time	Received by 4)	Company

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132). TAL - 0016 (0715)

Massachusetts (M-NJ312), North Carolina (No. 578)

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-88381-1

Login Number: 88381
List Number: 1
Creator: White, Denise E

List Source: TestAmerica Denver

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

ATTACHMENT C – DOWNHOLE GEOPHYSICS REPORT AND LOGS

LaMacchia, Melissa

From: Robert Garfield <rob@hager-richter.com>
Sent: Friday, October 21, 2016 5:42 PM
To: LaMacchia, Melissa
Subject: Stewart ANG - Newburgh, NY - Borehole Geophysical Logging - Data Report
Attachments: Stewart ANG - Newburgh, NY - Borehole Geophysical Logging - Data Report.pdf

Melissa,

Attached please find the revised data report for the borehole geophysical logging conducted at the Stewart Airport Air National Guard in Newburgh, New York. Borehole geophysical logging was conducted in 8 boreholes, 6 existing boreholes (TE Well 1 to TE Well 6) and 2 newly drilled boreholes (PFC-MW-3 and PFC-MW-4). The existing boreholes were all cased throughout the boreholes with 4-inch PVC casing and the newly drilled boreholes were all cased throughout the boreholes with 2-inch steel casing. Natural gamma ray and electromagnetic (EM) induction conductivity data were acquired through the PVC casing of the 6 existing boreholes. Only natural gamma ray data were acquired through the steel casing in the 2 newly drilled boreholes; EM induction data cannot be acquired through steel casing due to interference from the steel.

Boring logs were provided by HDR for the newly drilled boreholes, which HDR had drilled. The boring logs were used as ground truth for the natural gamma ray data. The objective of the borehole geophysical logging program was to determine the depths of variation in the sediments encountered in the 6 existing boreholes, specifically the depths of sand layers in the predominately clay-rich overburden. Included on each of the borehole geophysical logs is our interpretation of depth intervals with increased or decreased clay content in the predominantly clay-rich overburden at the site. The borehole construction reported on the logs is based on information provided by HDR and represents the borehole construction at the time of logging.

The datum for depths in the results is the top of the casing at each borehole. Based on the boring log for borehole PFC-MW-4, shale bedrock was encountered in the borehole at a depth of approximately 30-35 feet, which corresponds with an increase in natural gamma ray data at approximately 35 feet. However, based on the boring log for borehole PFC-MW-3, bedrock was not encountered in the borehole, which is approximately 56 feet deep.

Based on the natural gamma ray data signature from PFC-MW-4, it is possible that shale bedrock, or clay-rich overburden, was encountered in TW Well 2 at a depth of approximately 27.5 feet and in TE Well 5 at a depth of approximately 55 feet.

Lower than baseline natural gamma ray data, which are due to decreases in clay content interpreted as higher sand and/or gravel content, is interpreted at the following approximate depth intervals in the existing boreholes:

- TE Well 1: 19-30 feet
- TE Well 2: 20-27 feet
- TE Well 3: 17-36 feet
- TE Well 4: 24-26 feet & 30-32 feet
- TE Well 5: 48-51 feet
- TE Well 6: 17-26 feet

Should you have any questions or would like additional information, feel free to contact us at your convenience.

Thanks,

Rob

ROBERT GARFIELD, P.G.
Vice President | Senior Borehole Geophysicist

HAGER-RICHTER GEOSCIENCE, INC.
846 Main Street | Fords, NJ 08863
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GEOSCIENCE, INC.

CONSULTANTS IN GEOLOGY AND GEOPHYSICS
846 MAIN STREET
FORDS, NEW JERSEY 08863
TELEPHONE (732) 661-0555
FAX (732) 661-0123

BOREHOLE GEOPHYSICAL LOGGING - DATA REPORT
STEWART AIRPORT AIR NATIONAL GUARD
NEWBURGH, NEW YORK

Prepared for:

HDR, Inc.
1 International Boulevard
10th Floor, Suite 1000
Mahwah, New Jersey 07495

Prepared by:

Hager-Richter Geoscience, Inc.
846 Main Street
Fords, New Jersey 08863

File 16RG80
October, 2016

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HAGER-RICHTER GEOSCIENCE, INC.

846 Main Street
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Fax: 732-661-0123

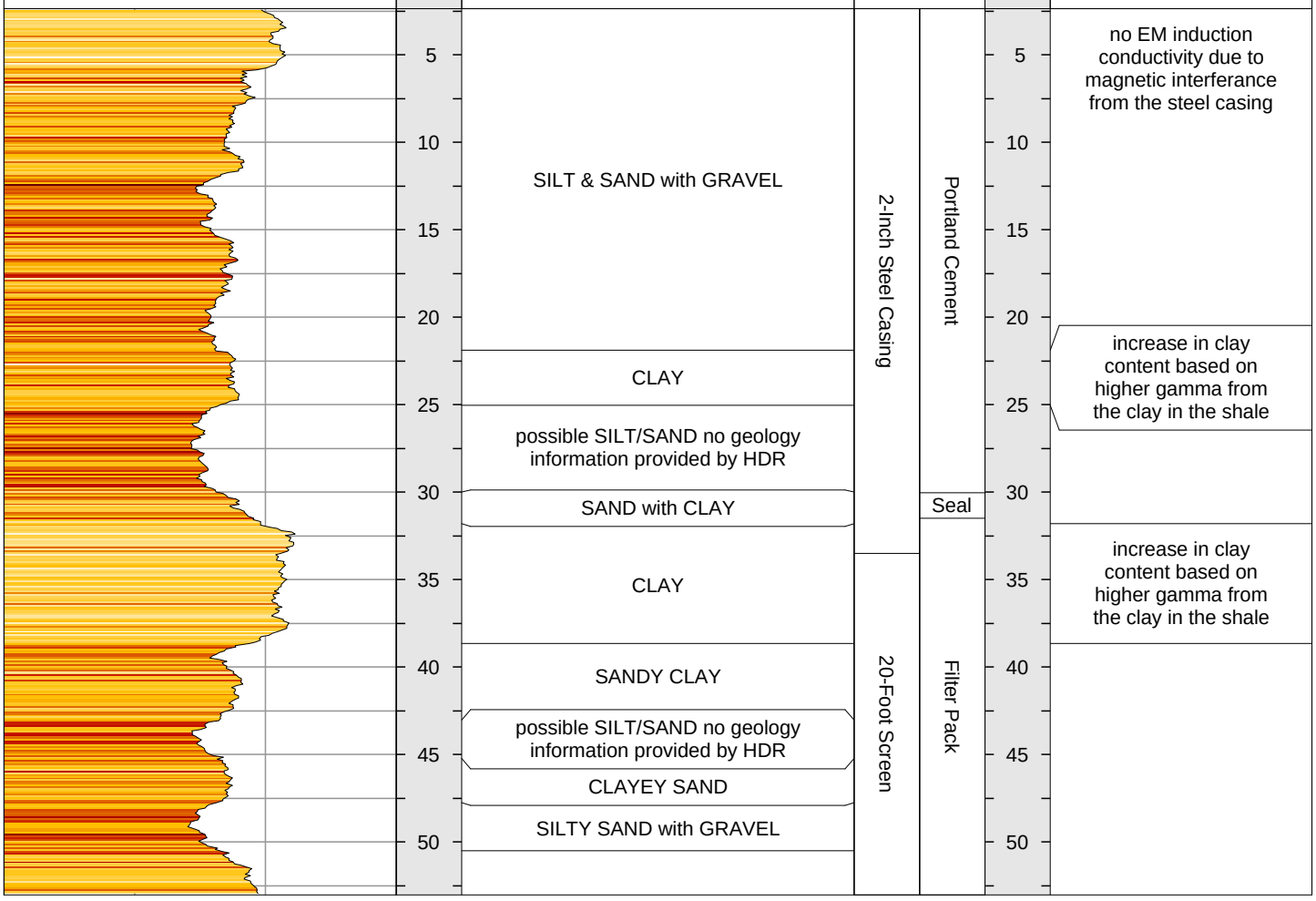
PFC-MW-3 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: September 15, 2016

CLIENT:	HDR, Inc.	HAGER-RICHTER FILE:	16RG80
PROJECT:	Stewart Airport Air National Guard	LOG DATUM:	Top of the Steel Casing
CITY, STATE:	Newburgh, New York	WELL CONSTRUCTION:	2-Inch Steel
LOGGING GEOPHYSICIST(S):	Alexis Martinez	PROJECT REP(S) ON-SITE:	Scott Englert

NOTES: The geology and well construction information provided in the logs below were provided by HDR. The well construction information represent the well construction at the time of logging.

PFC-MW-3 - Borehole Geophysical Logs



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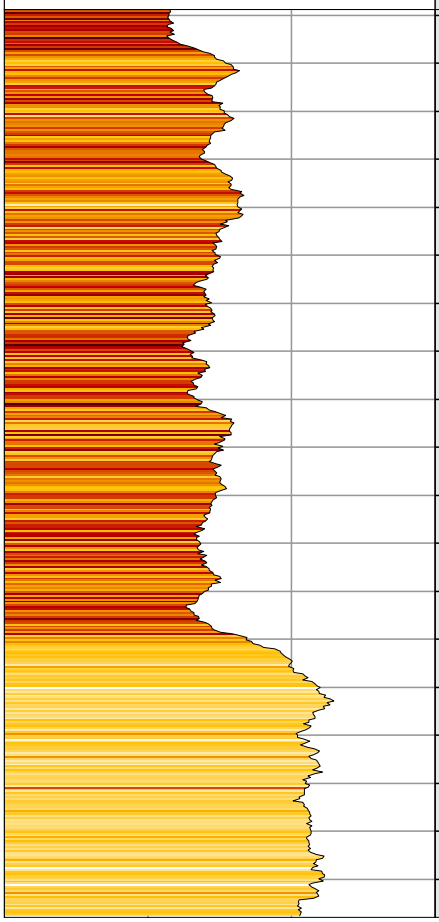
PFC-MW-4 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: September 15, 2016

CLIENT:	HDR, Inc.	HAGER-RICHTER FILE:	16RG80
PROJECT:	Stewart Airport Air National Guard	LOG DATUM:	Top of the Steel Casing
CITY, STATE:	Newburgh, New York	WELL CONSTRUCTION:	2-Inch Steel
LOGGING GEOPHYSICIST(S):	Alexis Martinez	PROJECT REP(S) ON-SITE:	Scott Englert

NOTES: The geology and well construction information provided in the logs below were provided by HDR. The well construction information represent the well construction at the time of logging.

PFC-MW-4 - Borehole Geophysical Logs



Depth (Feet)	Geology	Well Construction	Depth (Feet)	Comments
5	SILT with GRAVEL	2-Inch Steel Casing / Portland Cement	5	no EM induction conductivity due to magnetic interferance from the steel casing
10			10	
15			15	
20			20	
25			25	
30			30	
35	weathered SHALE bedrock	Seal	35	
40	SHALE bedrock	10-Foot Screen / Filter Pack	40	increase in clay content based on higher gamma from the clay in the shale
45			45	

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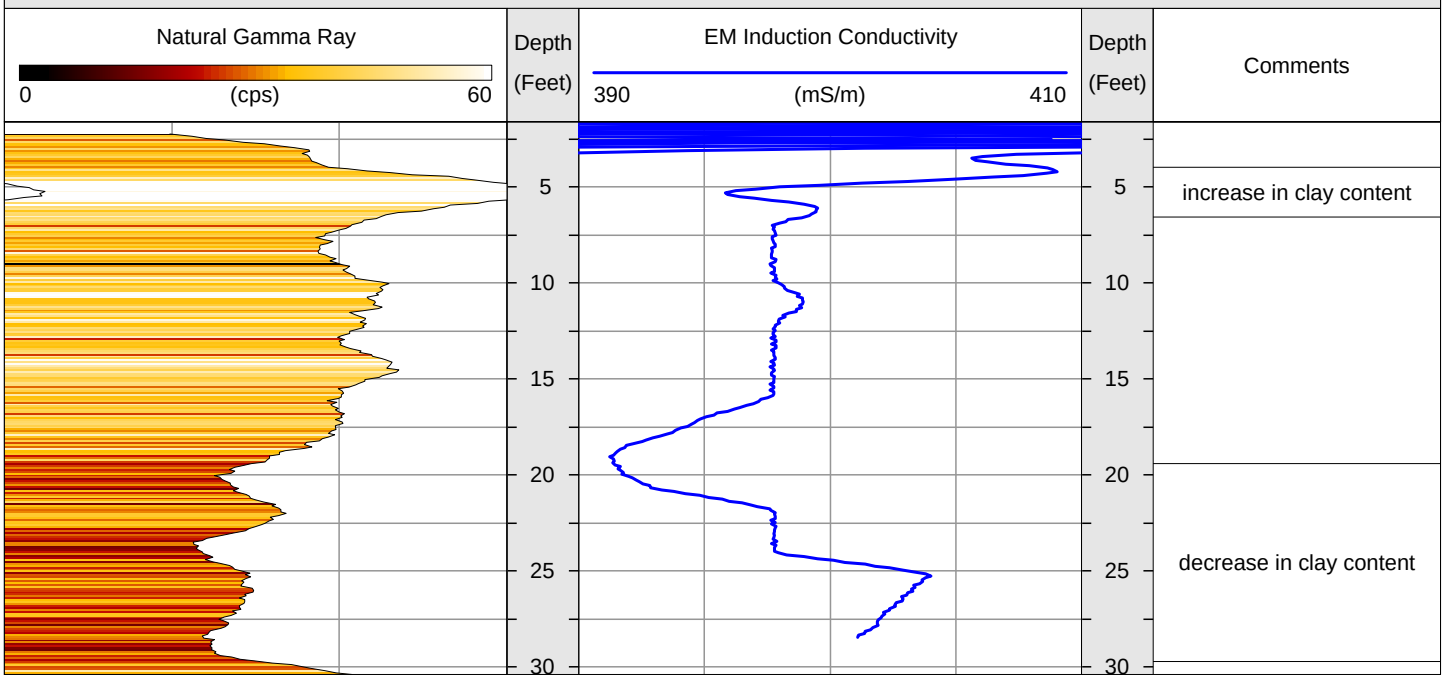
TE WELL 1 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: September 15, 2016

CLIENT:	HDR, Inc.	HAGER-RICHTER FILE:	16RG80
PROJECT:	Stewart Airport Air National Guard	LOG DATUM:	Top of the PVC Casing
CITY, STATE:	Newburgh, New York	WELL CONSTRUCTION:	4-Inch PVC
LOGGING GEOPHYSICIST(S):	Alexis Martinez	PROJECT REP(S) ON-SITE:	Scott Englert

TE Well 1 - Borehole Geophysical Logs



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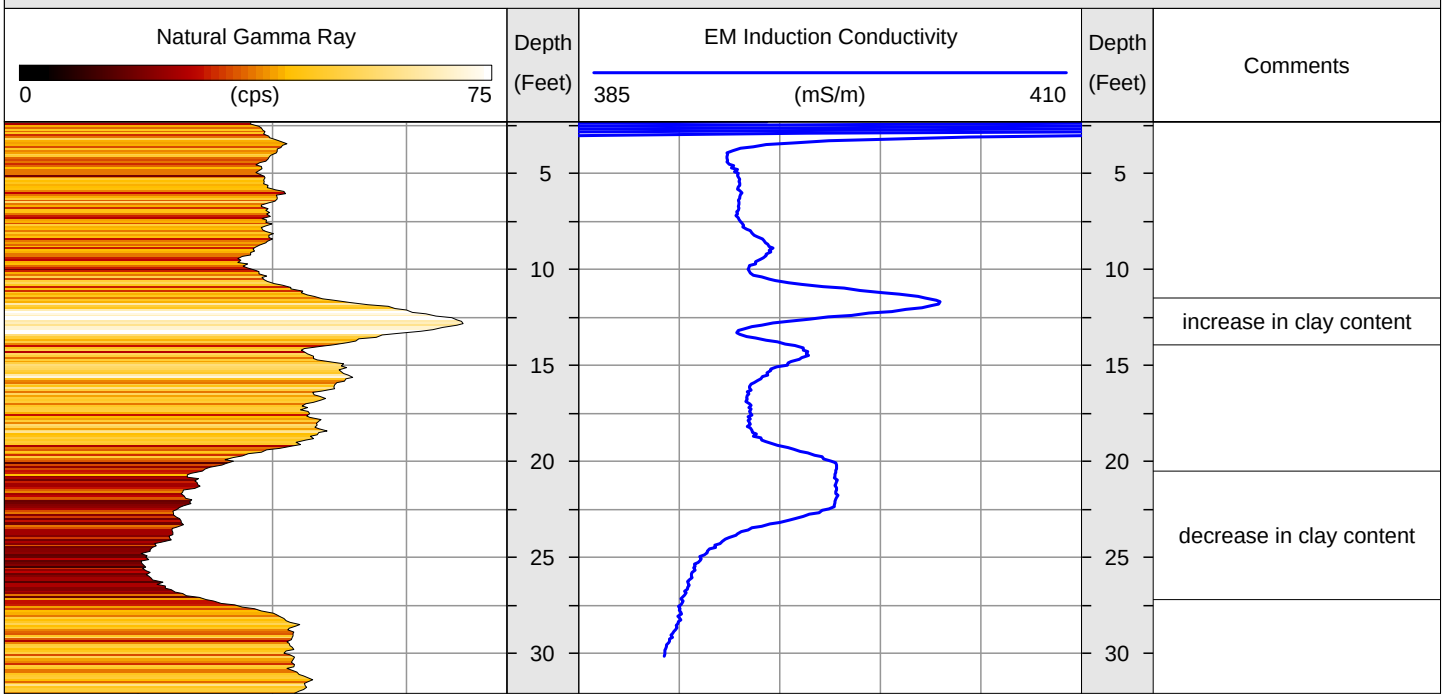
TE WELL 2 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: September 15, 2016

CLIENT:	HDR, Inc.	HAGER-RICHTER FILE:	16RG80
PROJECT:	Stewart Airport Air National Guard	LOG DATUM:	Top of the PVC Casing
CITY, STATE:	Newburgh, New York	WELL CONSTRUCTION:	4-Inch PVC
LOGGING GEOPHYSICIST(S):	Alexis Martinez	PROJECT REP(S) ON-SITE:	Scott Englert

TE Well 2 - Borehole Geophysical Logs



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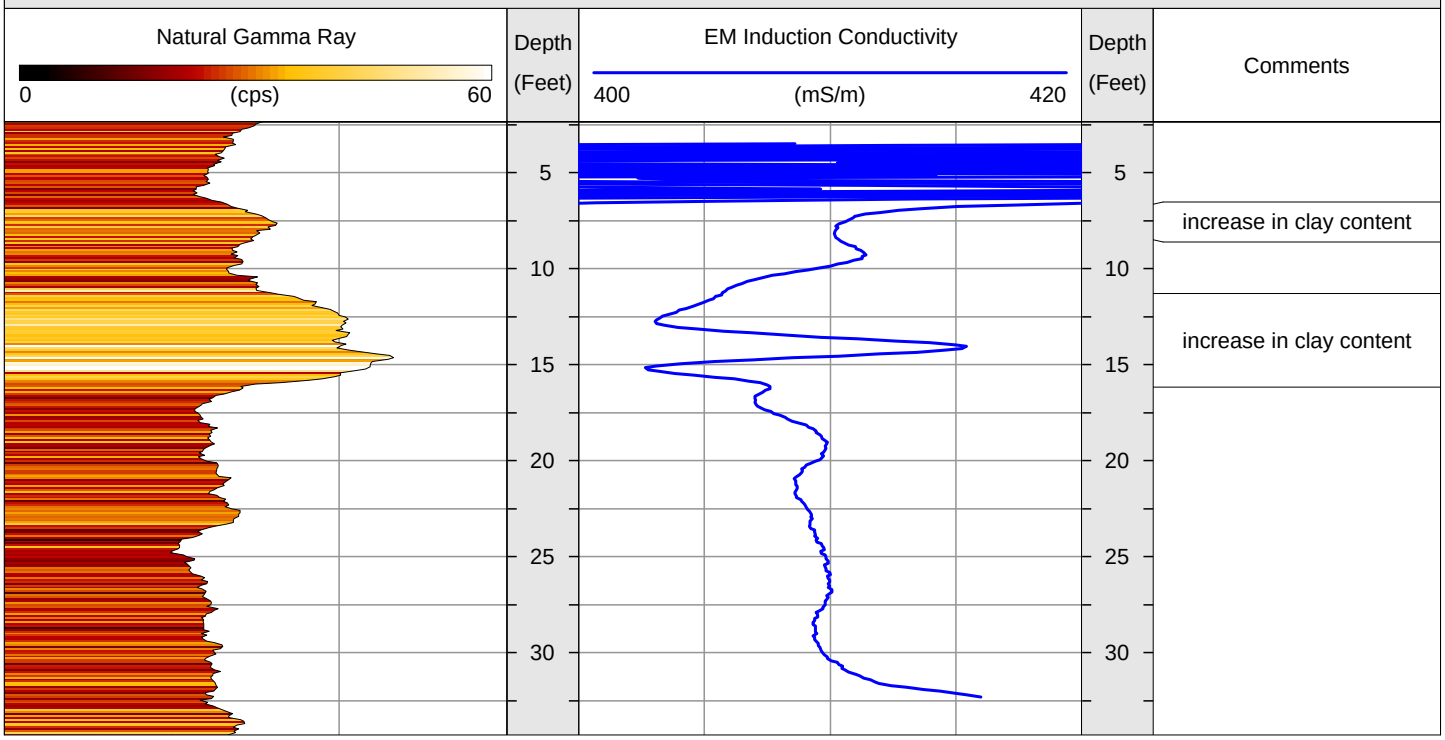
TE WELL 3 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: September 15, 2016

CLIENT:	HDR, Inc.	HAGER-RICHTER FILE:	16RG80
PROJECT:	Stewart Airport Air National Guard	LOG DATUM:	Top of the PVC Casing
CITY, STATE:	Newburgh, New York	WELL CONSTRUCTION:	4-Inch PVC
LOGGING GEOPHYSICIST(S):	Alexis Martinez	PROJECT REP(S) ON-SITE:	Scott Englert

TE Well 3 - Borehole Geophysical Logs



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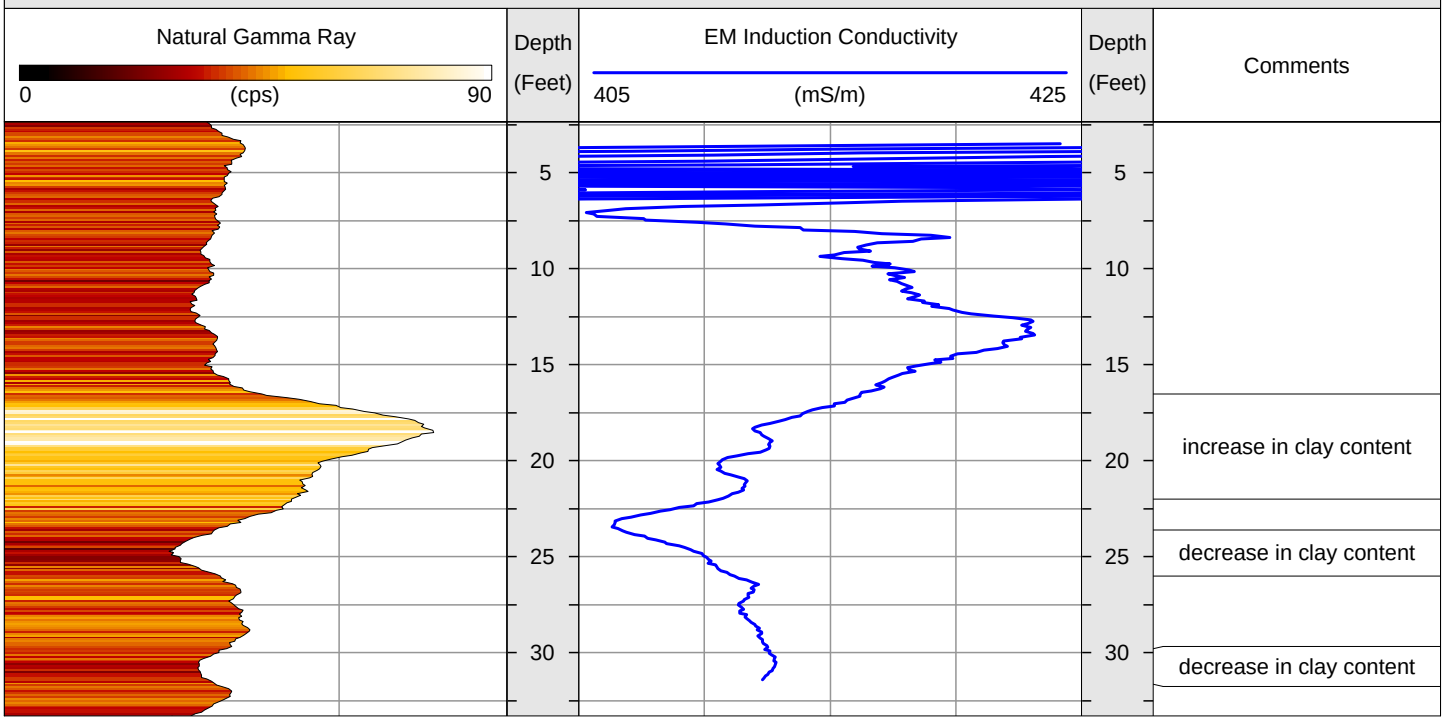
TE WELL 4 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: September 15, 2016

CLIENT:	HDR, Inc.	HAGER-RICHTER FILE:	16RG80
PROJECT:	Stewart Airport Air National Guard	LOG DATUM:	Top of the PVC Casing
CITY, STATE:	Newburgh, New York	WELL CONSTRUCTION:	4-Inch PVC
LOGGING GEOPHYSICIST(S):	Alexis Martinez	PROJECT REP(S) ON-SITE:	Scott Englert

TE Well 4 - Borehole Geophysical Logs



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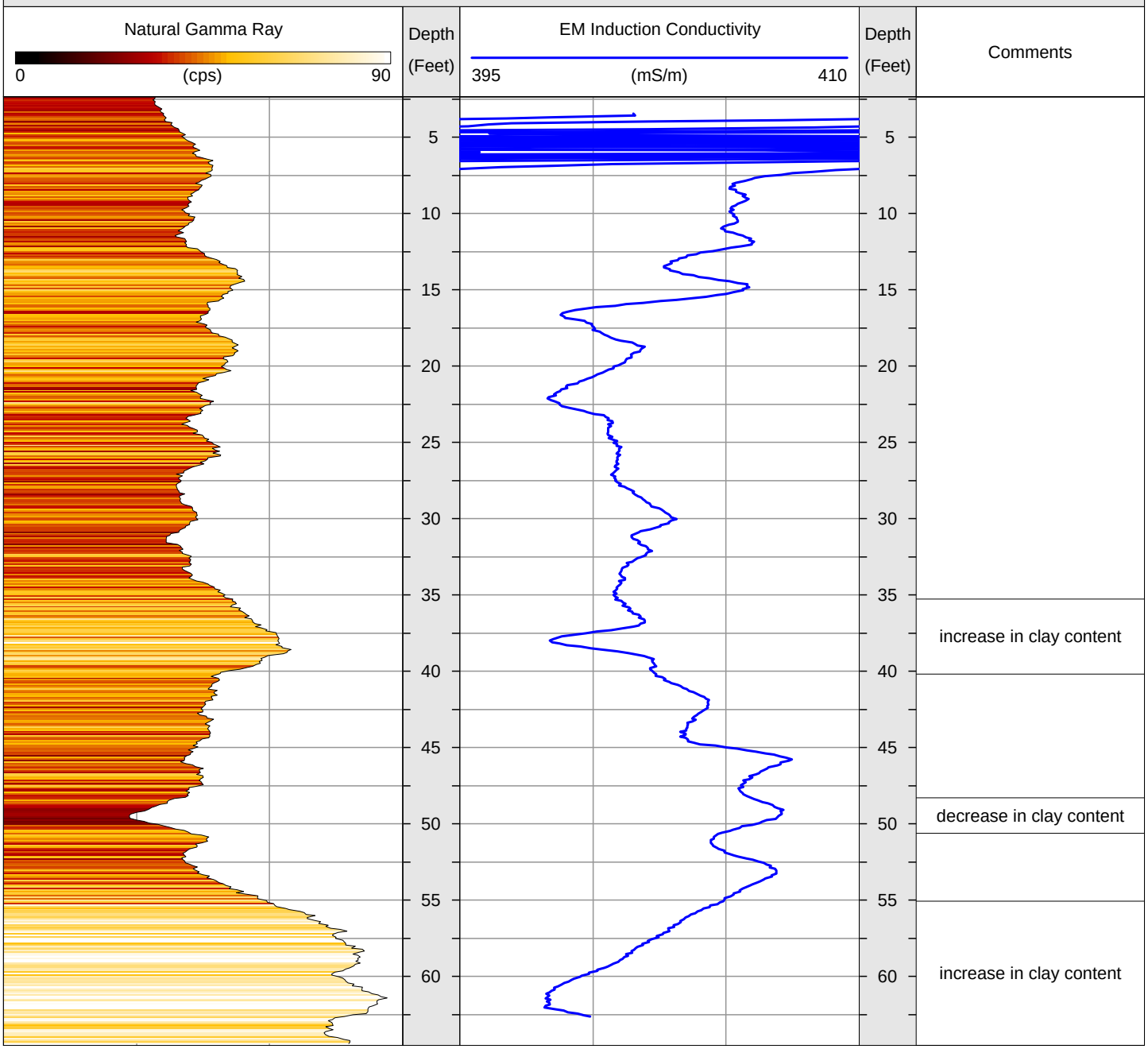
Fax: 732-661-0123

TE WELL 5 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: September 15, 2016

CLIENT:	HDR, Inc.	HAGER-RICHTER FILE:	16RG80
PROJECT:	Stewart Airport Air National Guard	LOG DATUM:	Top of the PVC Casing
CITY, STATE:	Newburgh, New York	WELL CONSTRUCTION:	4-Inch PVC
LOGGING GEOPHYSICIST(S):	Alexis Martinez	PROJECT REP(S) ON-SITE:	Scott Englert

TE Well 5 - Borehole Geophysical Logs



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Fax: 732-661-0123

TE WELL 6 - BOREHOLE GEOPHYSICAL LOGS

DATE(S) LOGGED: September 15, 2016

CLIENT:	HDR, Inc.	HAGER-RICHTER FILE:	16RG80
PROJECT:	Stewart Airport Air National Guard	LOG DATUM:	Top of the PVC Casing
CITY, STATE:	Newburgh, New York	WELL CONSTRUCTION:	4-Inch PVC
LOGGING GEOPHYSICIST(S):	Alexis Martinez	PROJECT REP(S) ON-SITE:	Scott Englert

TE Well 6 - Borehole Geophysical Logs